ENCYCLOPÆDIA BRITANNICA

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THE

ENCYCLOPÆDIA BRITANNICA,

OR

DICTIONARY

OF

ARTS, SCIENCES, AND GENERAL LITERATURE.

EIGHTH EDITION.

WITH EXTENSIVE IMPROVEMENTS AND ADDITIONS;
AND NUMEROUS ENGRAVINGS.

VOLUME X.

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FRANCE.

Introduction.

In treating of France, a subject in itself of great magnitude, but one which, in a work like this, embracing the entire circle of human knowledge, can only be delineated in outline, we shall endeavour to observe the same method which was followed in treating of England, and to place before our readers condensed abstracts of the History, Statistics, Government, and Laws of that great country, long remarkable for its high civilization.

I. HISTORY.

Merovingians and Carlovingians.

About half a century before the commencement of our era, Gaul, then inhabited by a race of Celtic origin and descent, was subdued by Cæsar, and for the space of nearly five centuries continued under the sway of the Romans. During the first half of this period, which was in a great measure one of repose, the country made considerable advances in improvement, and in fact received its full share in that civilization with which Rome usually repaid the turbulent independence destroyed by her conquests. Political union, internal tranquillity, and the security resulting from the firm and impartial administration of an admirable system of laws, were amongst the direct advantages which the people derived from their subjugation; whilst, collaterally, agriculture was improved, commerce extended, industry encouraged, wealth accumulated, and the general happiness promoted. To the wild and pernicious liberty enjoyed by warlike savages had succeeded the vigorous but wise government of an enlightened conqueror, whose policy it was to efface the recollection of independence by positive benefits conferred, and to secure to the people those substantial advantages without the enjoyment of which liberty is no better than an empty name. Even the climate was ameliorated in proportion as industry extended its dominion; and the soil, rendered capable of producing and maturing the choicest fruits, amply repaid the labour employed in its cultivation. The vine, the olive, and other useful plants, were introduced by the Romans; and even Christianity itself was amongst the boons which this people latterly conferred on the subject nations in return for their political independence. But during the latter half of the period above mentioned, when the ancient Roman valour and discipline had begun to decline, and degeneracy of manners had sapped the foundations of Roman power, the province of Gaul became exposed to the incursions, and was finally overwhelmed by the settlement, of barbarian invaders.

Of the natural boundaries of the Roman province of Gaul, the Rhine was by far the most important, as forming the line of demarcation between the empire on the one hand, and the multitudinous tribes of savage nations which swarmed beyond the stream on the other. On one side were wealth and civilization; on the other, want and barbarism. Principles the most irreconcilable, and inveterately hostile, were only separated by the breadth of the river. But the genius of barbarism, hanging on the outskirts of civilization, is essentially aggressive, and continually seeking to destroy the monuments which the latter has reared. In a word, the natural state between such neighbours is one of war. As long, however, as the Roman legions preserved their ancient discipline and spirit, the turbulence of the German tribes was repressed, and the barrier of the empire maintained; one or two defeats, which imprudence or temerity had entailed, were severely avenged; and the Roman generals, penetrating at different intervals into the country of the barbarians, chastised their audacity, and taught them to regard with salutary awe the power which they had dared to defy. But the Germans, though little versed in policy, began in time to be sensible that their frequent defeats were owing to their disunion; that whilst dispersed in different tribes, without any solid or permanent bond of connection, they could never hope to contend with success against the disciplined force of a great empire, impelled by and obedient to one supreme directing mind. They now perceived that their former leagues, hastily formed, were as easily dissolved; that something more than a sort of wild, irregular co-operation was necessary; and that, without coherence and consistence, it would be vain to expect success in any offensive enterprise. The consciousness of this defect produced in the third century those extensive confederacies in which many tribes united permanently under one common name, and frequently under one chief or sovereign, some assuming the appellation of Alemanni, descriptive of the combination which had been formed, and others taking that of Franks, indicative of the spirit or freedom in which they rejoiced.

The first mention made of the Franks by the historians of the empire is about the middle of the third century. Of their origin various and discordant accounts have been given; but the most probable supposition seems to be that, about the time of the emperor Gordian, the people inhabiting the banks of the Lower Rhine entered into a confederacy with those who dwelt on the Weser, and that the tribes thus united assumed the name of Franks or Freemen. The chief seat of this confederacy, therefore, appears to have been the marshy territory overflowed and divided into islets by the Rhine, from the spot where the river begins to run in a westerly direction, to its junction with the sea. Their first irruption took place in the year 254, and the second in the reign of Valerian. On the latter occasion they were but few in number, and were easily repulsed by Valerian, who afterwards became emperor. Not discouraged by this check, however, they returned in greater numbers about two years afterwards, and were again defeated by Gallienus, whom Valerian had now chosen as his associate in the empire. But as fresh swarms still continued to pour in from their native fastnesses, Gallienus, being no longer in a condition to expel them by force of arms, adopted the perilous expedient of negotiation, and, by means of advantageous offers, engaged one of their chiefs to defend the frontier against his own countrymen as well as against other invaders. Such an admission of weakness, however, could only have the effect of provoking further aggression. In the year 260 the Franks, taking advantage of the defeat and captivity of Valerian in Persia, broke into Gaul, and afterwards into Italy, committing everywhere the most dreadful ravages; and five years afterwards they invaded Spain, which they occupied, or rather desolated, for the space of twelve years. But in the year 275 they were completely overthrown and driven out of Gaul by the emperor Probus, who pursued them into their own country, and there built several forts to keep them in awe. Intimidated by this defeat, they remained quiet until 287, when, in conjunction with Saxon pirates, they plundered the coasts of Gaul, and carried off from thence an immense booty. To revenge this insult the emperor Maximian, the following year, entered their country, which he laid waste with fire and sword, at the same time compelling two of their chiefs to submit to his arms; whilst to such of the common people as chose to remain in Gaul he allotted lands in the neighbourhood of Treves and Cambray. The restless disposition of the Franks, however, did not suffer them to remain long at peace; and about the year 293 they made themselves masters of Batavia and part of Flanders; but they were once more entirely defeated, and compelled to surrender at discretion, by Constantius, the father of Constantine the Great, who allotted them settlements in Gaul. In 306 their countrymen in Germany renewed their depredations, though with little success; for having been overtaken by Constantine, they were completely routed, and two of their kings who fell into his hands were thrown to wild beasts during the sports exhibited in honour of the victory. All these reverses, however, were insufficient to prevent the incursions of this restless and turbulent people. In the year 355 they again invaded Gaul, and made themselves masters of forty cities in that province. But they were soon afterwards defeated by the emperor Julian, who also drove the Alemanni within their ancient boundaries; and again by Theodosius, father of the emperor of that name, who expelled the invaders, and pursued them with great slaughter. They returned, however, in the year 388, when they ravaged the province with greater fury than ever, cut off the Roman army which was sent against them, and in some measure established themselves in the country which they had so frequently overrun. In fact, the western empire was now reduced to so low an ebb that the Franks, until their progress was checked by Ætius, experienced more interruption from other barbarians roving in quest of new settlements, than from the armies of Rome, which had so often repulsed preceding invaders.

The commencement of the fifth century was marked by an overwhelming irruption into Gaul of the barbarian hosts, who, pouring in from different points, rolled on like a sudden inundation, sweeping away every thing in their destructive course. The church alone towered aloft above the general desolation; her bulwarks were strong enough to resist the shock of that fierce torrent of barbarism by which they were assailed; and had it not been for this circumstance, all the records and traditions of the past must have perished amidst the general ruin. But the progress of the invaders was nevertheless destined to experience a vigorous check. When the contest with Ætius commenced, the Franks were governed by Pharamond, the first of their kings or leaders of whom any distinct account has been preserved. This chief or prince is supposed to have reigned from the year 417 or 418 to 428, and is generally believed to have been killed in the war with Ætius. He is understood to have compiled the Salic laws, with the assistance of four sages named Wisegast, Losegast, Widegast, and Solegast; but Valesius is of opinion that the Franks had no written laws until the time of Clovis. Pharamond was succeeded by his son Clodio, who is said to have received a terrible overthrow from Ætius near the city of Lens. But notwithstanding this defeat he advanced to Cambray, of which he made himself master, extended his conquests as far as the river Somme, and destroyed the cities of Treves and Cologne, Tournay and Amiens. He died in the year 448, and was succeeded by Merovæus. It is uncertain whether the new king was brother, or son, or in fact any relation at all, to Clodio; it seems probable, indeed, that he was of a different family, as from him the first race of French kings were styled Merovingian. He was honoured and respected by his people, but did not greatly enlarge the boundaries of his kingdom. Merovæus, who died in 458, was succeeded by his son Childeric, who being no longer kept in check by Ætius, made war upon the Romans, extended his conquests as far as the river Loire, and took the city of Paris after a lengthened siege. Childeric was succeeded by Clodovæus, Clovis, or Louis; and as the Roman power in Italy had now been totally destroyed, the latter set himself to make an entire conquest of Gaul. Part of the province was still retained by a Roman named Syagrius, the son of Ægidius, who, like his father, governed and was even said to have reigned at Soissons, where the former had established himself on the downfall of the western empire in 476. But Syagrius was defeated and taken prisoner by Clovis, who afterwards caused him to be beheaded, and soon reduced his dominions under subjection.

Establishment of the French monarchy by Clovis.

The French monarchy was thus established in the year 487 by Clovis, who possessed all the country situated between the Rhine and the Loire. The secret of the rise of this conqueror, originally the chief or king of a small colony of Franks established at Tournay, may be easily explained. Of all the nations which overran Gaul, that which eventually subdued all the others, and gave its name both to the country and the people, was the most disunited and the least advanced in the arts of life. The Goths and the Burgundians were much more civilized than the Franks; for, whilst the former constituted each a separate nation and race, which obeyed one monarch or family of monarchs, the latter consisted of different tribes united in a species of temporary confederacy, the ties of which became more and more relaxed in proportion as they advanced from the Rhine. Each town or territory had its petty independent sovereign; and, anterior to the time of Clovis, they do not appear to have had any supreme chief or a general capital. Whether this was or was not an advantage, we do not pretend to determine. But it obviously left them in a great measure free to engage in any enterprise in which they chose to embark; and it also laid open the chieftaincy to the ambition of the first leader distinguished for boldness and pre-eminent talents; whilst, on the other hand, the vague comprehensiveness of their name was calculated to congregate under their banner such roving bands as might be in search of either plunder or establishments. The principle of their confederacy was such that any tribe or race might easily be admitted within its pale. Of this Clovis skilfully took advantage, and, by availing himself of its elasticity (if we may be allowed the expression), became the founder of the French monarchy.

Clovis had been educated in paganism, and continued to profess it until the thirtieth year of his age; but notwithstanding this circumstance, he allowed his subjects full liberty of conscience. When he married Clotilda, daughter of the Duke of Burgundy, this princess, who was a zealous Christian, used all her influence to persuade him to embrace her religion. For some time, however, he continued to waver between Christianity and paganism; but having gained a battle against the Germans near Cologne, where, when in great danger, he had invoked the God of Clotilda and the Christians, he afterwards lent a favourable ear to the discourses of Remigius bishop of Rheims, and having declared himself a convert, was baptized in the year 496. But his acknowledgment of the truths of Christianity was not followed by any amendment of life; on the contrary, he employed the remainder of his life in aggrandizing himself, and extending his dominions, by means of treachery, fraud, and violence. In his attacks on Armorica or Bretagne, however, he proved unsuccessful. The inhabitants of this country, which comprehended the maritime part of ancient Gaul, had united for their common defence, and, though abandoned by the Romans, made a vigorous resistance against the barbarians, who assaulted them on all sides. Clovis, finding them too powerful to be subdued by force, proposed an union with his people, which they readily accepted, chiefly on account of his professing Christianity. Thus the new religion of Clovis proved subservient to the purposes of his ambition, and his power became gradually formidable. At this time the Burgundians, under Gondebaud, the uncle of Clotilda, possessed all the country from the forest of Vosges to the sea at Marseilles; and their chief, to secure his own authority, had put to death two of his brothers, one of whom was the father of the French queen. But the third brother, Godagesil, whom he had spared and allowed to possess the principality of Geneva, conspired with Clovis to expel Gondebaud from his dominions. A war accordingly commenced between the French and Burgundian monarchs, and the latter being deserted in battle by the faithless Godagesil, was obliged to fly to Avignon, leaving his antagonist undisputed master of the cities of Lyons and Vienne. The conqueror next laid siege to Avignon; but the place was defended with such vigour, that Clovis thought proper to accept of a large sum of money and an annual tribute from Gondebaud, who was likewise obliged to cede to Godagesil the city of Vienne, and several other places taken during the war. Gondebaud, however, no sooner found himself at liberty from his enemies, than he assembled a powerful army, with which he advanced towards Vienne, where Godagesil then resided. The place was garrisoned by five thousand Franks, and might have made considerable resistance; but Gondebaud being admitted into the city through an aqueduct, massacred most of the Franks, sent the rest as prisoners to the king of the Visigoths, and put Godagesil to death. This was speedily followed by the submission of all the other places which had owned the authority of Godagesil; and Gondebaud considering himself in a condition to resist the power of Clovis, intimated his determination to withhold the promised tribute; a defection which Clovis, though exceedingly mortified, found himself obliged for the present to overlook.

The next expedition undertaken by Clovis was directed against the Visigoths, who possessed considerable territories on both sides of the Pyrenean mountains. His motives for this enterprise were expressed in a speech which he delivered to his nobility when assembled in the city of Paris, which he considered as the capital of his dominions. "It is with concern," said the monarch, "that I suffer the Arians to possess the most fertile part of Gaul; let us, with the aid of God, march against them, and, having conquered them, annex their kingdom to our dominions." The nobility approved of the scheme; and Clovis marched against a prince for whom he had lately professed the greatest regard, vowing to erect a church in honour of the holy apostles if he succeeded in his unrighteous enterprise. Alaric the king of the Visigoths, though personally brave, was destitute of military experience, and therefore hesitated not to engage with his antagonist; but, unable to contend with the veteran troops of Clovis, his army was utterly defeated on the banks of the Clain, near Poictiers, in the year 507, and Alaric himself slain. After this victory the province of Aquitaine submitted; Toulouse soon afterwards surrendered, and the royal treasures of the Visigoths were transported to Paris. Angoulême was next reduced, and the city of Arles invested. But here the victorious career of Clovis was stopped by Theodoric, king of the Ostrogoths, who had overturned the dominion of Odoacer in Italy. He had married the sister of Clovis, but having also given his own daughter in marriage to the king of the Visigoths, he had endeavoured, as far as possible, to preserve a good understanding between the two sovereigns. This, however, he found to be impossible; and, convinced that no bounds could be set to the ambition of Clovis by peaceful means, he sent against him one of his generals with a powerful army, by which the French monarch was defeated with the loss of thirty thousand men. This discomfiture obliged Clovis to raise the siege of Arles; but the Franks still retained the greater part of their conquests, and the province of Aquitaine was indissolubly annexed to their empire. In 509 Clovis received the title of Roman consul, and was thus supposed to be invested with a just title to all his conquests, in whatsoever manner they had been acquired. He was solemnly invested with the new dignity in the church of St Martin, in the city of Tours. Clovis now proceeded to confirm his power by the murder of his kinsmen the princes of the Merovingian race. Amongst those who perished in virtue of this bloody policy were Sigebert king of Cologne, with his son Cloderic; Cararic, another prince whose dominions have not been accurately pointed out by historians; Ranacaire, who governed the diocese of Cambray; and Renomer, king of the territory of Maine. All these murders, however, were supposed to be expiated by the zeal which he expressed in behalf of Christianity, and his liberality towards the church. Clovis died in the year 511, after having reformed and published the Salic laws; a few lines of which, excluding women from inheriting any part of the Salic lands, have been extended so far as to deprive the females of the royal family of France of their right of succession to the throne of that kingdom.

Clovis has been compared to Constantine, and they had certainly this in common, that each embraced Christianity in circumstances nearly similar, and from motives much more closely allied to self-interest than conviction. In both cases, too, the change of religion, instead of tempering their passions, or exercising a benign influence over their conduct, appears rather to have exasperated their natural ferocity and blood-thirstiness. The domestic murders committed by Constantine find their parallel in the assassinations perpetrated by Clovis, who equalled the Roman emperor in cruelty, and perhaps surpassed him in perfidy. In the abuse of the doctrines of confession and absolution each found an opiate to lull the remonstrances of conscience; and as the church encouraged errors calculated to augment its wealth and extend its power, the natural obstacles to the commission of crime were thus removed, and eventual impunity secured to the greatest offender, provided his means bore any proportion to his criminality. The founder of the French monarchy, therefore, is to be regarded rather as a daring and fortunate ruffian than as a great conqueror or an able leader; one who reaped the fruits of the crimes he had committed, and around whom success had thrown that false glare which so much misleads the moral judgments of men.

The dominions of Clovis were divided amongst his four sons. Thierri, or Theodoric, the eldest, received the eastern part of the empire, and as he made the city of Metz his capital, he is commonly styled the king of Metz; Clodomir, the eldest son by Clotilda, obtained the kingdom of Orleans; whilst to Childebert and Clotaire, both infants, were allotted the kingdoms of Paris and Soissons, under the tutelage of their mother. During eight years the prudence of Clotilda maintained tranquillity in all parts of the empire; but about the year 520 a numerous fleet of Danes arrived at the mouth of the Meuse, and their king Cochiliac having landed his forces, began to desolate the country with fire and sword. Against the invaders Thierri sent his son Theodobert, who defeated the Danish army, killed their king, and forced the remainder to retire with precipitation. In 522 Hermanfroi, king of Thuringia, having put to death one of his brothers named Berthaire, and seized on his dominions, applied to Thierri for assistance against his other brother Balderic, whom he intended to dispose of in the same manner. Thierri assented, and embarked in this creditable enterprise, upon condition that he should have one half of Balderic's dominions; but after the unhappy prince had been overcome and killed in battle, Hermanfroi, forgetting or despising the compact, seized upon all his dominions. Thierri had no opportunity of revenging himself till the year 531, when, perceiving that the power of the Ostrogoths, whom he greatly dreaded, had been considerably lessened by the death of king Theodoric, he engaged his brother Clotaire to assist him. They accordingly entered Thuringia with two powerful armies, which formed a junction as soon as they had passed the Rhine, and were soon afterwards reinforced by a considerable body of troops under the command of Theodobert. The army of Hermanfroi was advantageously posted; but being attacked by a superior force, it was totally defeated, and Hermanfroi himself forced to fly from place to place in disguise. His capital was soon afterwards taken, and Hermanfroi himself being invited to a conference by Thierri, was treacherously murdered; after which his extensive dominions became feudatory to the murderer. In the mean time Clotilda had excited her children to make war on the Burgundians, in order to avenge the death of her father Chilperic, whom Gondebaud, king of Burgundy, had caused to be murdered. Gondebaud, who was now dead, had left his dominions to his sons Sigismund and Godemar. The former was speedily defeated, and soon afterwards delivered up to Clodomir, who caused him to be thrown into a pit, where he perished miserably. Clodomir now marched against Godemar, who, by the death of his brother, had become sole master of Burgundy, and completely defeated him also; but having pursued his victory too eagerly, he was surrounded by his enemies and slain. After the reduction of Thuringia, however, Childebert and Clotaire entered the kingdom of Burgundy at the head of a powerful army, and in 534 completed the conquest of that country.

Clotaire sole monarch of France.

In 560 Clotaire having murdered the sons of Clodomir, who had been killed in Burgundy as already related, and Thierri and his children, as also Childebert, being now dead, became sole heir to the dominions of Clovis. He had five sons, the eldest of whom, named Chramnes, had some time previously rebelled against his father in Auvergne. As long as Childebert lived he had supported the young prince; but on his death Chramnes was obliged to implore the clemency of his father, by whom he was pardoned. But he soon began to cabal afresh, and engaged the Count of Bretagne to assist him in another rebellion. The Bretons, however, were defeated, and Chramnes resolved to make his escape; but perceiving that his wife and children were surrounded by his father's troops, he made an effort to rescue them. In this attempt, however, he failed, and being taken prisoner, he was with his family thrust into a thatched cottage near the field of battle, which the king commanded to be set on fire, and all that were in it perished in the flames.

The empire again divided.

Clotaire did not long survive this barbarous execution, but died in 562, and after his death the French empire was divided amongst his four remaining sons, Caribert, Gontran, Sigebert, and Chilperic. Caribert, the eldest, received the kingdom of Paris; Gontran, the second, obtained Orleans; Sigebert got Metz, or Austrasia; and Chilperic had Soissons; whilst Provence and Aquitaine were possessed by all of them in common. The peace of the empire was first disturbed in 563 by an invasion of the Abares, a barbarous nation, believed to have been the remains of the Huns. They entered Thuringia, which belonged to the dominions of Sigebert, but were totally defeated, and obliged to repass the Elbe. Sigebert pursued them closely, but on hearing that his brother Chilperic had invaded his dominions, and taken Rheims, with some other places in the neighbourhood, he concluded a peace with the vanquished barbarians. Sigebert then marched with his victorious army against Chilperic, made himself master of Soissons, and seized his eldest son Theodobert. He then defeated Chilperic in battle, recovered the places which he had seized, and conquered the greater part of his dominions; but, on the mediation of the other two brothers, Sigebert abandoned all his conquests, set Theodobert at liberty, and thus restored peace to the empire.

Soon after this event Sigebert married Burnehaut, daughter to Athanagilde, king of the Visigoths in Spain; and Caribert, king of Paris, having died, his dominions were divided amongst his three brothers. In 567 Chilperic married Galswintha, Brunehaut's eldest sister, and before her arrival dismissed his mistress, Fredegonde, a woman of great ability and firmness of mind, but ambitious, and capable of committing the darkest crimes to gratify her ambition. The queen, who had brought with her immense treasures from Spain, and who made it her sole study to please the king, was for some time entirely acceptable to him. But by degrees Chilperic suffered Fredegonde to re-appear at court, and was even suspected of having renewed his intercourse with this profligate woman; a circumstance which gave such offence to the queen, that she desired permission to return to her own country, at the same time promising to leave behind her all the wealth she had brought. Aware that this would render him extremely odious, the king found means to dissipate his wife's suspicions, and soon afterwards caused her to be privately strangled, upon which he publicly married the harlot Fredegonde. Such an atrocious action could not fail to excite the greatest indignation against Chilperic. His dominions were immediately invaded by Sigebert and Gontran, who conquered the greater part of them; but having effected this, they suddenly made peace, on Chilperic consenting that Brunehaut should enjoy those places which he had bestowed upon Galswintha, namely, Bordeaux, Limoges, Cahors, Bigorre, and the town of Bearn. The French princes, however, did not long continue at peace among themselves; and a war having ensued, Gontran and Chilperic made common cause against Sigebert. But the latter prevailed, and, having forced Gontran to conclude a separate peace, seemed determined to make Chilperic pay dear for his perfidy, when he was assassinated by a contrivance of Fredegonde, who thus saved herself and Chilperic from the most imminent danger. Immediately on his death Brunehaut fell into the hands of Chilperic; but Gondebaud, one of Sigebert's best generals, having made his escape into Austrasia with Childebert, the only son of Sigebert, an infant of about five years of age, the latter was immediately proclaimed king. In a short time, however, Merovæus, eldest son to Chilperic, fell in love with Brunehaut, and married her without acquainting his father. On receiving information of this, Chilperic went to Rouen, where Merovæus and his consort were living; and having seized them, sent Brunehaut and her two daughters to Metz, and carried Merovæus to Soissons. Soon afterwards one of his generals being defeated by Gontran, who had espoused Brunehaut's cause, Chilperic in a fit of rage caused Merovæus to be shaved and confined in a monastery. From this he found means to make his escape, and arrived in Austrasia, where Brunehaut would gladly have protected him; but the jealousy of the nobles proved so strong that he was forced to leave that country; and being betrayed into the hands of his father's forces, he was murdered at the instigation of Fredegonde.

The French empire was at this time divided between Gontran king of Orleans, called also king of Burgundy, Chilperic king of Soissons, and Childebert king of Austrasia. But Chilperic found his affairs in a very disagreeable situation. In 579, having a dispute with Varoc count of Bretagne, who refused to do him homage, he dispatched against his vassal a body of troops, who were defeated, and he was in consequence forced to submit to a disadvantageous peace. Meanwhile his brother and nephew, whom he had reason to dread, lived in the strictest union; his subjects, oppressed with heavy taxes, were poor and discontented; Clovis, his son by a former queen named Andovera, hated Fredegonde, and made no secret of his aversion; and, to add to his embarrassment, the seasons were for a long time so unfavourable that the country was threatened with famine and pestilence. The king and queen were both attacked by an epidemic which then raged; and though they recovered, their three sons Clodobert, Samson, and Dagobert, all died. After this, the sight of Clovis became so hateful to Fredegonde that she caused him to be murdered, as she likewise did his mother Andovera, lest Chilperic's affection for that lady should return after the tragical death of her son. In 583 Chilperic himself was murdered by some unknown assassins, when his dominions were on the point of being conquered by Gontran and Childebert. After his death Fredegonde implored the protection of Gontran, which he readily granted, and obliged Childebert to put an end to the war. Gontran died on the 28th of March 593, having lived upwards of sixty years, and reigned thirty-two; and Childebert succeeded to the kingdom without opposition, but did not long enjoy it. His dominions were on his death divided between his two sons Theodobert and Thierri; the former being declared king of Austrasia, and the latter king of Burgundy. But as Theodobert was only in his eleventh, and Thierri in his tenth year, Brunehaut governed both kingdoms with absolute sway. Fredegonde, however, availing herself of the opportunity offered by the death of Childebert, made herself mistress of Paris and some other places on the Seine; upon which Brunehaut sent against her the best part of the forces in Austrasia. The latter, however, were totally defeated; but Fredegonde died before she had time to improve her victory, leaving her son Clotaire heir to her dominions.

For some time Brunehaut preserved her kingdom in peace; but her own ambition in the end proved her ruin. Instead of instructing Theodobert in what was necessary for a prince to know, she took care to keep him in ignorance, and even suffered him to marry a young and handsome slave of his father's. But the new queen being possessed of ability and good nature, so gained the affection of her husband that he consented to the banishment of Brunehaut. Upon this disgrace she in 599 fled to Thierri king of Burgundy, by whom she was kindly received; and, instead of exciting jealousies or misunderstandings between the two brothers, she engaged Thierri to attempt the recovery of Paris and the other places which had been wrested from their family by Fredegonde. This measure was so acceptable to Theodobert, that he likewise raised a numerous army, and in conjunction with his brother invaded Clotaire's dominions. A battle ensued, in which the forces of Clotaire were completely defeated, and he himself obliged to sue for peace, which was not granted except on condition of his yielding up the best part of his dominions. This treaty was concluded in the year 600; but three years afterwards it was broken by Clotaire, who was again attacked by the two brothers. The war was carried on with great vigour until the next spring, when Thierri having forced Landri, Clotaire's general, to accept battle, overthrew him, and put to death the king's infant son Merovæus, whom he had sent with Landri. After this victory, Thierri, intent on the destruction of his cousin, marched directly to Paris. But Theodobert no sooner heard of the victory gained by Thierri, than, becoming jealous of his success, he offered Clotaire such conditions as speedily compelled Thierri also to listen to terms of accommodation. This conduct of Theodobert greatly provoked his brother; and his resentment was still more inflamed by Brunehaut, who never forgot the disgrace of having been banished from his court. A war was therefore commenced in 605; but being disapproved of by the nobility, Thierri found himself obliged to put an end to it. The tranquillity which ensued, however, was again disturbed in 607, when Theodobert sent an embassy to demand part of Childebert's dominions, which by the will of that monarch had been added to those of Burgundy. But the nobility of both kingdoms were exceedingly averse to war, and constrained their kings to consent to a conference, attended by an equal number of troops. By a scandalous breach of faith, however, Theodobert brought double the number agreed on, and compelled his brother to submit to whatever terms he pleased to dictate. This act of treachery instantly brought on a war. Thierri was bent on revenge, and his nobility no longer opposed him. Having secured the neutrality of Clotaire by a promise of restoring those parts of his dominions of which he had formerly been despoiled, Thierri entered Theodobert's territories, defeated him in two battles, took him prisoner, and treated him with the greatest indignity. Meanwhile Clotaire, thinking that the best method of making Thierri keep his word was to seize upon those places which the latter had promised to restore to him as the price of his neutrality, did so accordingly; upon which Thierri sent to him a messenger to require him to withdraw his forces, and in the event of a refusal, to declare war. Clotaire was prepared for such a proceeding, and immediately assembled his forces. But before Thierri could reach his enemies, he was seized with a dysentery, of which he died, in the year 612.

On the death of Thierri, Brunehaut immediately caused his eldest son Sigisbert, then in the tenth year of his age, to be proclaimed king. It is probable that she intended to govern in his name with an absolute sway; but Clotaire did not allow her time to discover her intentions. Knowing that the nobility both in Burgundy and Metz were disaffected to Brunehaut, he declared war against her; and the unfortunate queen having been betrayed by her generals, fell into the hands of her enemies. Clotaire gave her up to the nobles, who generally hated her, and treated their captive in the most barbarous manner; for, after having led her about the camp, exposed to the insults of all who had the meanness to insult her, she was tied by the leg and arm to the tail of an untamed horse, which, setting off at full speed, quickly dashed out her brains. Thus, in the year 613, Clotaire became sole monarch of France, and quietly enjoyed his kingdom till his death, which happened in 628.

Brunehaut put to death.

This prince was succeeded by Dagobert, who proved a great and powerful sovereign, and raised the kingdom of France to a high degree of splendour. Dagobert was succeeded by his sons Sigebert and Clovis; the former of whom obtained the kingdom of Austrasia, and the latter that of Burgundy. Both the kings were minors at the time of their accession to the throne, which gave an opportunity to the mayors of the palace, the highest officers under the crown, to usurp the whole authority of the state. Sigebert died in 640, after a short reign of one year, leaving behind him an infant son named Dagobert, whom he strongly recommended to the care of Grimoalde, his mayor of the palace. The minister caused Dagobert to be immediately proclaimed king, but did not long suffer him to enjoy that honour. He had not the cruelty, however, to put him to death, but sent him to a monastery in one of the western islands of Scotland; and then, giving out that he was dead, advanced his own son Childebert to the throne. Childebert was expelled by Clovis king of Burgundy, who placed on the throne Childeric, the second son of Sigebert. Clovis died soon after the revolution, and was succeeded in his dominions by his son Clotaire, who also died in a short time without issue. He was succeeded by his brother Childeric, who, after a brief reign, was murdered, with his queen, at that time big with child, and an infant son named Dagobert, though another, named Daniel, had the good fortune to escape.

Miserable situation of France.

The affairs of the French were now in the most deplorable situation. The princes of the Merovingian race had been for some time entirely deprived of their power by their officers called mayors of the palace. In Austrasia the administration had been totally engrossed by Pepin and his son Grimaulde, whilst Archambaud and Ebroin followed the same course in Neustria and Burgundy. On the reunion of Neustria and Burgundy with the rest of the French dominions, this minister ruled with such despotic sway that the nobility of Austrasia, provoked to a revolt, elected as their dukes two chiefs named Martin and Pepin. The forces of the confederates, however, were defeated by Ebroin; and Martin having surrendered upon a promise of safety, was treacherously put to death. Pepin lost no time in recruiting his shattered forces; but before he had an opportunity of trying his fortune a second time in battle, the assassination of Ebroin delivered him from all apprehensions in that quarter. Pepin now carried every thing before him; overthrew the royal army under the command of the new minister Bertaire; and having obtained possession of the capital, caused himself to be declared mayor of the palace, in which station he continued to govern with absolute sway during the remainder of his life. Pepin, who had obtained the surname of Heristal, from his palace on the Meuse, died in the year 714, having enjoyed unlimited power for twenty-six years; and appointed his grandson Theudobalde, then only six years of age, to succeed him in his post of mayor of the palace. This happened during the reign of Dagobert already mentioned; but as the latter had too much spirit to suffer himself to be deprived of his authority by an infant, the adherents of the young mayor were defeated in battle; and this discomfiture was soon followed by his death.

Charles Martel.

But Charles, the illegitimate son of Pepin, was now raised to the dignity of duke by the Austrasians; and by his great qualities he seemed in every respect worthy of this honour. The murder of Dagobert freed him from a powerful opponent; and the young king Chilperic, who after Dagobert's death had been brought from a cloister to the throne, was not qualified to cope with so experienced an antagonist. On the 19th of March 717, Charles had the good fortune to surprise the royal camp as he passed through the forest of Ardennes; and soon afterwards a battle ensued, in which the king's forces were entirely defeated. Upon this Chilperic entered into an alliance with Eudes duke of Aquitaine, whose friendship he purchased by the final cession of all the country which Eudes had seized for himself. Charles, however, having placed on the throne another of the royal family, named Clotaire, advanced against Chilperic and his associate, whom he entirely defeated near Soissons. After this disaster Eudes, despairing of success, delivered up Chilperic into the hands of his antagonist; having stipulated for himself the same terms which had been formerly granted him by the captive monarch. Charles being now advanced to the summit of power, treated Chilperic with the greatest respect, and on the death of Clotaire caused him to be proclaimed king of Austrasia; but by this proceeding his own power was in no degree diminished, and henceforth the authority of the kings of France became merely nominal; indeed so inactive and indolent were they accounted, that historians have bestowed upon them the epithet of *rois fainéans*, indolent or lazy kings. Charles, however, had still one competitor to contend with. This was Rainfroy, who had been appointed mayor of the palace, and who made so vigorous a resistance, that Charles was obliged to allow him to retain peaceable possession of the country of Anjou. But no sooner had he thus set himself at liberty from domestic enemies, than he was threatened with destruction by foreign invaders. The Suevians, Frisians, and Alemanni, were successively encountered and defeated; Eudes also, who had perfidiously violated the treaties by which he had bound himself, was twice repulsed; after which Charles invaded Aquitaine, and obliged the treacherous duke to hearken to reason. This however had scarcely been accomplished when he found himself engaged with a more formidable enemy than any he had yet encountered. The Saracens having overrun the greater part of Asia, now turned their victorious arms westward, and threatened Europe with total subjugation. Spain had already received their yoke; and having crossed the Pyrenees, they next invaded France, appearing in vast numbers under the walls of Toulouse. Here they were encountered and defeated by Eudes; but this proved only a partial check. The barbarians having once more passed the Pyrenees, entered France with a powerful army, which Eudes was no longer able to resist. He encountered them indeed with his accustomed valour; but being obliged to yield to superior force, he solicited the protection and assistance of Charles. Upon this occasion the latter, on account of his valour and personal strength, acquired the name of *Martel*, or the Hammer, in allusion to the violence of the strokes which he bestowed on his enemies. Three hundred and seventy-five thousand Infidels, amongst whom was their commander Abderrahman himself, are said to have perished in a single battle fought near Poictiers. But notwithstanding this slaughter, they soon made another irruption, though with no better success, being again defeated by

Charles, who by so many victories established his power on the most solid foundation. Having also defeated the Frisians, and with his own hand killed their duke, he assumed the sovereignty of the dominions of Eudes. At length his fame became so great that he was chosen by Gregory III. as his protector. The latter also offered to shake off the yoke of the Greek emperor, and to invest Charles with the dignity of Roman consul, sending him at the same time the keys of the tomb of St Peter; but whilst this negotiation was going on successfully, the pope, the emperor, and Charles Martel himself, all died.

France divided among the sons of Charles.

After the death of Martel, which happened in the year 741, his dominions were divided among his three sons, Carloman, Pepin, and Grippon, according to dispositions which he had made in his lifetime. Carloman, the eldest, received Austrasia; Pepin, the second, obtained Neustria and Burgundy; but Grippon, the third, had only some lands assigned him in France. This inequality displeased him so much that the tranquillity of the empire was soon disturbed. With the assistance of his mother Sonnechilde he seized upon the city of Lahon, where he sustained a siege; but in the end he was obliged to submit; when Sonnechilde was put into a monastery, and Grippon imprisoned in a castle at Ardennes. The two brothers, having thus freed themselves from their domestic enemy, continued to govern the empire with uninterrupted harmony, until its tranquillity was disturbed by the intrigues of Sonnechilde. That enterprising and ambitious woman having negotiated a marriage between Odilon duke of Bavaria, and Hiltrude the sister of the two princes, instigated Odilon, who, alarmed at the growing power of the two princes, entered into an alliance with Theodobald duke of the Alemanni, and Theodoric duke of the Saxons. Having assembled a formidable army, he advanced directly against the princes, and took post in an advantageous manner, with the Lech in front. But Carloman and Pepin having passed the river at different fords in the night time, attacked the camp of the allies, and entirely routed the Bavarians and Saxons, and compelled the vanquished dukes to submit to the clemency of the victors. During their absence on this expedition Hunalde duke of Aquitaine passed the Loire, ravaged the open country, and burned the magnificent cathedral of Chartres. But the invader was speedily obliged to retreat, and afterwards to withdraw into a convent, after resigning his dominions to his son. This was soon followed by the resignation of Carloman, who, notwithstanding his uninterrupted success, suddenly took the resolution of retiring into a convent, and persisted in his design, in spite of the entreaties of Pepin, who ostensibly did all he could to dissuade him.

Pepin.

By the resignation of Carloman, which happened in the year 746, Pepin became sole master of France; and in this exalted station he acquitted himself in such a manner as to render his name deservedly illustrious. One of his first acts was to release from prison his brother Grippon. That treacherous prince, however, had no sooner regained his liberty than he again excited the Saxons to take up arms. But his enterprise proved unsuccessful. The Saxons were defeated, their duke was taken prisoner, and his subjects were obliged to submit to the will of the conqueror. Grippon then fled to Hiltrude, whom, in requital of a favourable reception, he betrayed, and afterwards assumed the title of Duke of Bavaria; but being driven by Pepin from the throne he had usurped, he was obliged to implore his clemency, which was once more granted. Pepin having thus subdued all his enemies within and without, resolved to assume the title of king, after having so long exercised the regal power. His wishes in this respect were quite agreeable to those of the nation in general; but the nobility were bound by an oath of allegiance to Childeric the nominal monarch, and this oath could not be dispensed with except by the authority of the pope. A dispensation was therefore procured; the unfortunate Childeric, degraded from his dignity, was sent to a monastery; Pepin assumed the title of King of France, and the line of Clovis was finally set aside.

This revolution took place in the year 751. The first claim on the attention of the new monarch was a revolt of the Saxons; but they were soon reduced to subjection, and obliged to pay an additional tribute. In the mean time Pepin continued to advance his fortune. The submission of the Saxons was soon followed by the reduction of Bretagne, and the recovery of Narbonne from the Infidels. His next exploit was the protection of Pope Stephen III. against the king of the Lombards, who had seized on the exarchate of Ravenna, and insisted on being acknowledged king of Rome. The pope, unable to contend with so powerful a rival, hastened to cross the Alps and implore the protection of Pepin, who received him with all the respect due to his character, and attended him in person during a dangerous sickness with which he was seized. On his recovery Stephen solemnly placed the diadem on the head of his benefactor, bestowed the regal unction on his sons Charles and Carloman, and conferred on the three princes the title of patricians of Rome. In return for these honours, Pepin accompanied the pontiff into Italy at the head of a powerful army, and obliged Astolphus to renounce all pretensions to the sovereignty of Rome, as well as to restore the city and exarchate of Ravenna, and to pay an annual tribute. Pepin returned to France in triumph; but the peace of his dominions was soon disturbed by another revolt of the Saxons. Their attempt, however, proved unsuccessful; and they were obliged to submit and purchase their pardon by a renewal of their tribute, and an additional supply of three hundred horse. But whilst the king was absent on this expedition, Vaisar duke of Aquitaine ravaged Burgundy, carrying his devastations as far as Chalons. Pepin returned, and entering the dominions of Vaisar, committed similar devastations, and would have reduced the whole of Aquitaine, had he not been interrupted by the hostile preparations of the Duke of Bavaria. This, however, was ultimately effected, and the duchy of Aquitaine once more annexed to the crown of France. But Pepin had scarcely time to indulge himself with a view of his new conquest when he was seized with a slow fever, which in 768 put an end to his life, in the fifty-fourth year of his age and seventeenth of his reign. Being of short stature, he had the surname of *Le Bref;* but his great actions justly entitled him to the character of a hero. Under the succeeding reign, however, his own fame seemed to have been entirely forgotten; and on his tomb was only inscribed, "Here lies the father of Charlemagne." Pepin was succeeded by his sons Charles and Carloman, to whom he bequeathed his dominions, and who continued to reign jointly for some time; but the active and enterprising spirit of Charles gave such umbrage to the weak and jealous Carloman, that he regarded him with envy, and was on the point of coming to an open rupture with him, when he himself was removed by death, and thus the tranquillity of the empire was preserved.

Charlemagne.

The death of Carloman, which happened in the year 771, left Charles sole master of France; but the revolt of the Saxons involved him in a series of wars, from which it required thirty-three years to extricate himself. The latter had long been tributaries to the French, but frequently revolted; and now, when freed from the terror of Pepin's arms, they thought they had a right to shake off the yoke altogether. Charles entered their country with a powerful army; and having defeated them in a number of small engagements, advanced towards Eresburg, near Paderborn, where was the image of their god Irminsul, represented as a man completely armed, and standing on a column. The

Saxons made an obstinate defence, but were at last obliged to submit; and Charles employed his army three days in demolishing the monuments of idolatry in this place. But the news which Charles now received from Italy induced him to relax a little the severity with which he was otherwise disposed to treat the Saxons. He had concluded a marriage with the daughter of Didier king of the Lombards, but this had been dissolved by the pope; and as the Lombard monarchs appear to have had a kind of natural antipathy to the popes, this feeling now broke out with uncommon fury. Didier having seized on and terrified to death Pope Stephen IV. used his utmost endeavours to reduce his successor Adrian I. to a state of entire dependence. The pontiff applied to the French monarch, who was inclined to grant the necessary assistance; but as the nobility were averse to an Italian war, he was obliged to act with circumspection. Several embassies were therefore sent to Didier, entreating him to restore to the pope those places which he had taken from him, and even offering him a large sum of money if he would do so. But these propositions being rejected, Charles obtained the consent of his nobility to make war on the Lombards. Didier, however, disposed his troops with such ability, that the officers of Charles were of opinion it would be impossible to force a passage; but, either by the superior skill of Charles, or from the effect of panic, this was accomplished; after which Didier, with the Duke of Aquitaine, who had taken refuge at his court, shut themselves up in Pavia, whilst Adalgise, the only son of the Lombard monarch, together with the widow and children of Carloman, fled to Verona. The latter city was immediately invested, and in a short time obliged to submit; but Adalgise had the good fortune to escape to Constantinople. After paying a short visit to Rome, Charles returned to the siege of Pavia. The place was vigorously defended, but famine and pestilence ultimately obliged the inhabitants to implore the clemency of the conqueror. Hunalde fell a sacrifice to his own obstinacy in opposing the intention of the people; Didier was taken prisoner and carried into France; his kingdom was totally dissolved, and Charles crowned king of Lombardy at Milan in the year 774.

Having received the oaths of allegiance from his new subjects, Charles set out for Saxony, the inhabitants of which had again revolted, and re-possessed themselves of Eresburg, their capital. The king however soon recovered this important post; but a detachment of his army having been cut off, and new troubles having arisen in Italy, he was obliged to accept the proposals of the Saxons, though distrustful of their sincerity. Having strengthened the fortifications of Eresburg, and left a sufficient garrison in the place, he set out for Italy; where his presence restored tranquillity; but the Saxons having in the meanwhile retaken Eresburg, and destroyed the fortifications, threatened to annihilate the French power in that quarter. On his return Charles found them employed in the siege of Sigeburg. But his sudden arrival struck them with such terror that they instantly sued for peace, which the king once more granted; but, to secure their obedience, he constructed a chain of forts along the river Lippe, and repaired the fortifications of Eresburg. An assembly of the Saxon chiefs was then held at Paderborn, and a promise extracted from them that the nation should embrace the Christian religion.

His next enterprise was an expedition to Spain, undertaken in 778 at the request of Ibunala, the Moorish sovereign of Zaragoza, who had been driven from his territory. Having reduced the cities of Pampeluna, Zaragoza, and Barcelona, and also the kingdoms of Navarre and Aragon, Charles restored Ibunala; but, on his return, he met with a severe check from the Gascons, who attacked and defeated with great slaughter the rear-guard of his army, in a pass of the Pyrenean mountains. This encounter, the result of which seems to imply some defect in the prudence or military skill of Charles, has been much celebrated among romance writers, on account of the death of Roland, which took place on this occasion.

The following year Charlemagne paid a visit to Italy with his two sons Carloman and Louis, and having passed the winter at Pavia, entered Rome next spring amidst the acclamations of the inhabitants. Here, in the thirty-ninth year of his age, he divided his dominions between his two sons Carloman and Louis; the former, who now took the name of Pepin, receiving Lombardy, and the latter Aquitaine. Having then received the submission of the Duke of Bavaria, he set out for Saxony, where the people had once more revolted, and where he now inflicted a severe chastisement for the many treacheries of which they had been guilty. This insurrection had been stirred up by a chief named Witikind, who having twice before fled from the victorious arms of Charles, and taken refuge at the court of Denmark, had returned in the king's absence, and roused his countrymen to arms, whilst the generals of Charles, divided among themselves, and neglecting to take the proper measures for putting down the revolt, were entirely defeated on the banks of the Weser, in the year 782. Charles arrived in time to prevent the total destruction of his troops, and having penetrated into the heart of the country, Witikind, unable to resist his antagonist, once more fled into Denmark; but four thousand five hundred of his followers perished at once by the hands of the executioner. A general insurrection ensued; and though during three years the French monarch was constantly successful in the field, he found it impossible to subdue the spirit of the people, and was at last obliged to have recourse to negotiation. Witikind and several other chiefs were invited to an interview, and Charles having represented to them in strong colours the ruin which must ensue to their country from persisting in an obstinate and fruitless opposition, they were induced not only to persuade their countrymen finally to submit, but also to embrace the Christian religion.

Having thus brought his affairs in Saxony to a satisfactory conclusion, Charles turned his arms against Tassilon duke of Bavaria, who had secrectly supported the Saxons in their revolts; and having entered that country with a powerful army in the year 787, he advanced so rapidly, that seeing his destruction inevitable, Tassilon privately entered his camp, and threw himself at his feet. Charles looked with pity on his faithless kinsman; but no sooner did the latter find himself at liberty, than he stirred up the Huns, the Greek emperor, and the fugitive Adalgise, and also fomented the discontents of the factious nobles of Aquitaine and Lombardy. His subjects, however, fearing lest these intrigues should involve them in destruction, made a discovery of the whole; upon which Tassilon was arrested by order of the French monarch, and being brought to a trial, and found guilty, he was condemned to lose his head; a sentence which was afterwards mitigated to perpetual confinement in a monastery. The duchy of Bavaria was then annexed to the dominions of Charles.

But the Huns and other enemies of the French monarch, disregarding the fate of Tassilon, continued to prosecute their enterprises against him. Their attempts, however, only served to enhance the fame of Charles, who defeated the Huns in Bavaria, and the Greek emperor in Italy, at the same time obliging the latter to renounce for ever the fortunes of Adalgise. As the Huns, not disheartened by their defeat, continued to infest the French dominions, Charles entered their country at the head of a formidable army; and having forced their intrenchments, penetrated as far as Raab on the Danube; but he was compelled by an epidemic to retire before he had completed the conquest of this people. On his return to his own dominions, he had the mortification to learn that his eldest son Pepin had conspired against his life. The plot having been discovered by a priest, Pepin was seized, and condemned to expiate his offences by spending the remainder of his days in a monastery. But Charles was no sooner freed from this danger than he was again called to arms by a revolt of the Saxons on the one hand, and a formidable invasion of the Moors on the other, whilst the Huns at the same time renewed their predatory attacks on his dominions. As to the Moors, the king foresaw that they would be called off by their Christian enemies in Spain; and this accordingly happened, the victories of Alonso the Chaste having obliged them to quit France. Charles then marched in person to attack the Saxons and Huns, the former of whom again consented to receive the Christian religion, and were likewise obliged to deliver up a third part of their army to be disposed of at the king's pleasure; but the latter defended themselves with incredible vigour, and the war was only terminated by the death of their king, and an almost total destruction of the people.

These exploits occurred between the years 793 and 798. Charles next invaded and subdued the islands of Majorca and Minorca. But the satisfaction he received from this new conquest was soon damped by the troubles which broke out in Italy. After the death of Adrian, his nephew aspired to the papal dignity; but a priest named Leo having been preferred, the disappointed candidate determined on revenge, yet managed matters so well as to conceal for four years his design. At last, on the day of a procession, a furious assault was made on the person of Leo, and the unfortunate pontiff was left for dead on the ground. But having with difficulty recovered, and made his escape to the Vatican, he was protected by the Duke of Spoleto, general of the French forces, and his cause was warmly espoused by Charles, who invited him to his camp at Paderborn in Westphalia. Leo accepted the invitation, and not long afterwards returned, with a numerous guard, to Rome, which the French monarch promised soon to visit, and there redress all grievances. Having constructed forts at the mouths of most of the navigable rivers, and further provided for the defence of his territories against the descents of the Normans, by instituting a regular militia, and appointing proper squadrons to cruise against the invaders, he set out for the fourth and last time to Rome, where he was received with the highest possible honours. Leo was now permitted to clear himself by oath of the crimes laid to his charge by his enemies, whilst his accusers were sent into exile.

Charles rowned mperor of he west.

At length, on the festival of Christmas in the year 800, after Charles had made his appearance in the cathedral of St Peter, and assisted devoutly at mass, the pope suddenly put a crown on his head; and the place instantly resounded with acclamations of "Long life to Charles the August, crowned by the hand of God; long life and victory to the great and pacific emperor of the Romans." His body was then consecrated and anointed with the royal unction; and after being conducted to a throne, he was treated with all the respect usually paid to the ancient Cæsars; from this time also he was honoured with the title of *Charlemagne*, or Charles the Great. In private conversation, however, he usually protested that he was ignorant of the pope's intention, and that, had he known it, he would have disappointed it by absenting himself; but these protestations were not generally believed, and the care he took to have his new title acknowledged by the eastern emperors evidently showed that the conduct of his holiness on this occasion was neither unexpected nor disagreeable. Being now raised to the supreme dignity in the west, Charlemagne proposed to unite in his own person the whole power of the first Roman emperors, by marrying Irene, the empress of the east. But in this he was disappointed by the marriage of that princess to Nicephorus, who, however, acknowledged the new dignity of Augustus bestowed on his rival, and the boundaries of the two empires were amicably settled. Charles was further gratified by the respect paid him by the renowned Haroun Al-Raschid, caliph of the Saracens, who yielded to him the sacred city of Jerusalem, together with the holy sepulchre. But in the mean time his empire was threatened with the invasion of a formidable enemy, whom even the power of Charles would have found it difficult to resist. We allude to the Normans, who were at this time under the command of Godfrey, a celebrated warrior, and who by their adventurous spirit and skill in maritime affairs threatened all the western coasts of Europe with desolation. From motives of mutual convenience, a temporary peace was concluded, and Charles employed the interval thus afforded to settle the final distribution of his dominions. Aquitaine and Gascony, with the Spanish Marche, were assigned to his son Louis; Pepin had Italy confirmed to him, to which was added the greater part of Bavaria, with the country now possessed by the Grisons; whilst Charles, the eldest, had Neustria, Austrasia, and Thuringia. This division, however, had scarcely taken place when the princes were all obliged to defend their dominions by force of arms. Louis and Pepin were attacked by the Saracens, and Charles by the Sclavonians. All these enemies were indeed defeated; but whilst Charles hoped to spend the remainder of his days in tranquillity, he was once more called into the field by the hostile demeanour of the Norman chief. Charles sent him a message of defiance, which was returned in the same style by Godfrey; but, by artfully fomenting divisions amongst the northern tribes, Charles prevented for a time the threatened danger. When these disturbances were quelled, however, the Normans renewed their depredations, and Charles was obliged to confront them in the field. But an engagement was prevented by the death of Godfrey, who was assassinated by a private soldier; and the Norman army having retreated, the dominions of the empire remained free from these invaders. Still the latter days of Charles were embittered by domestic misfortunes. His favourite daughter Rotrude died, as did also Pepin king of Italy; and these misfortunes were soon followed by the death of his eldest son Charles. The emperor then resolved to associate with himself in the government his only surviving son Louis; and this was formally executed at Aix-la-Chapelle. But Charles survived the transaction only a few months; and his death, which happened on the 27th of January 814, in the seventy-first year of his age and forty-seventh of his reign, removed the last remaining barrier against the confusion and anarchy which ensued.

By the martial achievements of this hero the French monarchy was raised to the highest pitch of splendour. He had added the province of Aquitaine to the territories of his ancestors; he had confined the inhabitants of Bretagne to the shores of the ocean, and obliged them to submit to annual tribute; and he had reduced under his dominion all that part of Spain which extends from the Pyrenees to the Ebro, including the kingdoms of Roussillon, Navarre, Aragon, and Catalonia. He possessed Italy from the Alps to the borders of Calabria; but the duchy of Beneventum, including the greater part of the present kingdom of Naples, escaped from his yoke after a transitory submission. Charles also added to his territories the whole of Germany and Pannonia; so that the French jurisdiction extended from the Ebro in Spain to the Vistula in Poland, and from the duchy of Beneventum in Italy to the river Eyder, the boundary between Germany and the dominions of Denmark. In acquiring these extensive dominions, Charles had committed frequent and barbarous massacres, for which he had no other excuse than the fierce and rebellious disposition of the people with whom he had to deal. But in establishing schools throughout the conquered provinces, he showed an inclination to govern his subjects in peace, and to take means for promoting their civilization; though many parts of his conduct still evinced no small inclination to cruelty, particularly the fate of the sons of Carloman, of whom no distinct account could ever be obtained. His advice to his son Louis was indeed excellent: in exhorting the latter to consider his people as his children, to be mild and gentle in his administration, but firm in the execution of justice, to reward merit, to promote his nobles gradually, to choose ministers deliberately, and not remove them capriciously or without sufficient reason, he displayed a degree of sense and wisdom worthy of his fame. But these prudent maxims were insufficient to enable Louis to govern dominions so extensive, or to restrain people so turbulent as he had to deal withal.

At the time of the decease of his father this prince was about thirty-six years of age, and had married Ermengarde, daughter of the Count of Hesbai, of the diocese of Liege, by whom he had three sons, Lothaire, Pepin, and Louis. Lothaire, the eldest, was associated with himself in the empire, and the two others were intrusted with the governments of Aquitaine and Bavaria. But these princes proved unfaithful to their father, as well as enemies to one another. The death of Ermengarde, and the marriage of the emperor with Judith, a princess of Bavaria, artful but accomplished, proved the first source of calamity to the empire. In the year 823 was born Charles, the emperor's youngest son; and his pretensions eventually became more fatal to the public tranquillity than the ambition and disobedience of all the others. Various parts of the imperial dominions were likewise attacked by foreign enemies. The inhabitants of Bretagne and Navarre revolted, and the Moors invaded Catalonia; whilst the ambition of Judith produced a war amongst the brothers themselves. Charles at first had been appointed sovereign of that part of Germany which is bounded by the Danube, the Maine, the Neckar, and the Rhine, together with the country of the Grisons and Burgundy, comprehending Geneva and the Swiss Cantons; but this was opposed by the three elder sons. Pepin and Louis advanced with the united forces of Aquitaine and Bavaria, whilst the imperial forces deserted their standard and joined the malcontents. The emperor was taken prisoner, and the empress retired to a monastery. Lothaire, the eldest of the young princes, was the person who retained the emperor in his possession; but, notwithstanding his breach of duty, his heart was touched with remorse on account of the crimes he had committed. Dreading the reproach of the world at large, and threatened with the censures of the church, he threw himself at his father's feet, begged pardon for his offence, and consented to relinquish the power he had unjustly usurped. Being thus re-established in his authority by the diet of the empire, which had met to depose him, Louis recalled his empress from the monastery to which she had retired; but this princess, implacable in her resentment, so persecuted Lothaire that he was obliged to join his two brothers Pepin and Louis in a confederacy against their father. The old emperor attempted to check this rebellious disposition by revoking his grant of Aquitaine to Pepin, and bestowing it on his youngest son Charles, then only nine years of age; but Pope Gregory IV. conferred the imperial dignity itself on Lothaire, deposed the unhappy monarch, and again sent the empress to a nunnery in the forest of Ardennes. As the unnatural behaviour of his son, however, had once more excited the compassion of his subjects, Dreux, the bishop of Mentz, used his interest with Louis of Bavaria to arm in defence of his father and sovereign. In this enterprise the Bavarian monarch was joined by the French and the Saxons; and the aged emperor was again restored, the empress being released from her nunnery, and Charles from his prison, in the year 833. But the ambition of Judith again kindled the flame of discord. Taking advantage of the affection of her husband, she persuaded him to invest her son Charles with the sovereignty of Neustria, as well as the dominions formerly assigned him; a proceeding which was productive of great discontent on the part of Lothaire and Pepin. But their power was now too much broken to enable them to accomplish any thing by force of arms; and the death of Pepin, which happened soon afterwards, produced a new division of the empire. The claims of Pepin and Charles, the sons of the deceased prince, were entirely disregarded, and his French dominions divided between the two brothers Charles and Lothaire, the latter of whom was named guardian to his infant nephew. This enraged Louis of Bavaria, whose interest was entirely neglected in the partition, and induced him to revolt; but the unexpected appearance of the Saxons obliged him to submit and ask pardon for his offence. Still, however, the ambition of the empress kept matters in a continual ferment, and the empire was again threatened with all the calamities of civil war; but this was prevented by the death of the emperor, which took place in 841, after a most unfortunate reign of twenty-seven years. Louis was eminent for his mild manners and peaceful virtues, which procured him the title of *Le Debonnaire;* but such was the excessive turbulence and barbarity of the age in which he lived, that his virtues, instead of procuring him respect and esteem, were productive only of contempt and rebellion.

Civil war: partitions, &c.

The decease of the emperor was followed by a civil war among his sons. In 842, the united forces of Lothaire and his nephew Pepin were defeated by those of Charles and Louis in a bloody battle on the plains of Fontenoy, where a hundred thousand Franks perished. This victory, however, did not decide the fortune of the war. The conquerors having, from motives of interest or jealousy, retired each into his own dominions, Lothaire found means to recruit his shattered forces, and even pressed the other two princes so vigorously that they were glad to consent to a new partition of the empire. By this Lothaire was allowed to possess the whole of Italy, with the tract of country situated between the rivers Rhone and Rhine, as well as that between the Meuse and Scheldt; Charles obtained Aquitaine, with the country situated between the Loire and the Meuse; whilst Louis received Bavaria, with the rest of Germany, and from this was distinguished by the appellation of Louis the German. By this partition Germany and France were disjoined in such a manner as never afterwards to be united under one head. That part of France which was allowed to Lothaire was from him called *Lotharingia,* and afterwards, by the gradual corruption of the word, Lorraine. The sovereignty, however, which that prince had pursued at the expense of every filial duty, and purchased with so much blood, afforded him so little satisfaction, that, disgusted with the cares and anxieties of his situation, he sought relief in a monastery in the year 855. On his retreat from the throne, he allotted to his eldest son Louis II. the sovereignty of Italy; to his second son Lothaire the territory of Lorraine, with the title of king; and to his youngest son Charles, surnamed the Bald, Provence, Dauphiné, and part of the kingdom of Burgundy; so that he may be considered as properly the king of France. From the year 845 to 857 the provinces subjected to his jurisdiction had been infested by the annual depredations of the Normans, from whom Charles was at last glad to purchase peace at a greater expense than might have carried on a successful war. The people of Bretagne had also revolted; and though obliged, by the appearance of Charles at the head of a powerful army, to return to their allegiance, they no sooner perceived him again embarrassed by the incursions of the Normans, than they threw off the yoke, and under the conduct of their duke

Louis subdued the neighbouring diocese of Rennes; after which the latter assumed the title of king. By this bold usurper Charles was totally defeated; and his subjects, perceiving the weakness of their monarch, put themselves under the protection of Louis the German, whose ambition prompted him to give a ready ear to the proposal. Taking the opportunity of Charles's absence in repelling an invasion of the Danes, he marched with a formidable army into France, and was solemnly crowned by the Archbishop of Sens in the year 857. But being too confident of success, and fancying himself already established on the throne, he was persuaded to dismiss his German forces; upon which Charles marched against him with an army, and compelled Louis to abandon his new kingdom. Notwithstanding this success, however, the kingdom of Charles still continued in a very tottering condition. Harassed by the Normans on one side, and by the king of Bretagne on another, he marched against the latter in 860; but had the misfortune to sustain a total defeat, after an engagement which lasted two days. The victory was chiefly owing to a noted warrior named Robert le Fort, or the Strong, who commanded the Bretons; but Charles found means to gain over the latter to his interest, and for some time the abilities of Robert afforded support to his tottering throne. The difficulties, however, returned on the death of that hero, who was killed in repelling an invasion of the Danes. Some amends were indeed made for his loss by the death of the king of Lorraine in 869, by which event the territories of Charles were augmented by the cities of Lyons, Vienne, Toul, Besançon, Verdun, Cambray, Viviers, and Urez, together with the territories of Hainault, Zealand, and Holland; whilst Cologne, Utrecht, Treves, Mentz, Strasburg, with the rest of the territories of Lothaire, were assigned to Louis the German.

All this time the Normans still continued their incursions; but Solomon king of Bretagne having joined his forces to those of Charles, in order to repel the common enemy, the Normans were besieged in Angiers, and obliged to purchase leave to depart by relinquishing all the spoil they had taken. Thus freed from a formidable enemy, Charles began to aspire to the imperial crown, which soon became vacant by the death of Louis. This indeed belonged of right to Louis the German; but Charles, having assembled a powerful army, marched into Italy; and being favourably received at Rome, the imperial crown was placed on his head by the pope, in the year 873. Enraged at his disappointment, Louis discharged his fury on the defenceless country of Champagne; and though the approach of Charles obliged him to retire, he continued his preparations with such vigour that Charles would probably have found him a formidable adversary, had he not been removed by death in 877. Informed of his brother's decease, Charles invaded the dominions of his son Louis, who possessed Franconia, Thuringia, and Lower Lorraine, with some other territories. But the enterprise proved unsuccessful. Charles, though at the head of superior numbers, was defeated with great slaughter, and had scarcely time to reunite his scattered forces when he received information that the Normans had invaded his territories, laid waste part of the country, and taken possession of Rouen. These disasters affected him so deeply that he fell dangerously ill, and he had scarcely recovered when he was called into Italy to assist the pope against the Saracens. Charles passed into Italy with a few followers; but when he arrived at Pavia, where the pontiff had appointed to meet him, he was informed that Carloman, king of Bavaria, son of Louis the German, was already in Italy with a powerful army, and laid claim to the imperial title. Charles accordingly prepared to oppose him by force of arms; but his generals conspired against him, and the soldiers declared their resolution not to pass the Alps. This obliged him to retire to France at the moment when Carloman, dreading his power, was preparing to return to Germany. This was the last enterprise of Charles. His journey brought on a relapse of illness, which was rendered fatal through the treachery of a Jewish physician named Zedechius, who administered poison to him under the pretence of curing his malady; and he expired in a miserable cottage upon Mount Cenis, in the fifty-fourth year of his age, and thirty-eighth of his reign over the kingdom of France.

Louis the Stammerer.

The ambition of Charles had been productive of much distress both to himself and to his subjects. His son Louis, surnamed the Stammerer, from a defect in his speech, was of a different disposition; but his feeble administration was ill calculated to retrieve the fortunes of his country. He died on the 10th of April 879, whilst on a march to suppress some insurrections in Burgundy, leaving his queen Adelaide pregnant; and some time after his decease the latter was delivered of a son, named Charles. His death was followed by an interregnum, during which a faction was formed for setting aside the children of Louis the Stammerer, in favour of the German princes, sons to Louis the brother of Charles the Bald. But this scheme proved abortive; and the two sons of the late king, Louis and Carloman, were crowned kings of France. But in 881 both princes died; Louis, as was suspected, of poison; and Carloman of a wound he had received whilst hunting. This produced a second interregnum, which ended in calling in Charles the Gross, emperor of Germany, whose reign was even more unfortunate than that of any of his predecessors. The Normans, whom he had allowed to settle in Friesland, having sailed up the Seine with a fleet, and laid siege to Paris, Charles, unable to force them to abandon their undertaking, prevailed on them to depart by a large sum of money. But as he could not advance the money at once, he permitted them to remain during the winter in the neighbourhood of Paris, which they in return plundered without mercy. After this disgraceful transaction Charles returned to Germany in a declining state of health; and having quarrelled with his empress, he was abandoned by all his friends, deposed, and reduced to the greatest distress.

Charles the Simple.

On the deposition of Charles the Gross, Eudes count of Paris, chosen king by the nobility during the minority of Charles son of Adelaide, afterwards named Charles the Simple, defeated the Normans, and repressed the power of the nobility. On this account a party was formed in favour of Charles, who was sent for from England; but Eudes having peaceably resigned the greater part of the kingdom, consented to do homage for the remainder, and died soon after the agreement, in 898. During the reign of Charles the Simple, the French government declined. By the introduction of fiefs, those noblemen who had obtained the possession of governments, and got these confirmed to themselves and their heirs for ever, became in a manner independent sovereigns; and as the great lords had others under them, and these in like manner others who again had their vassals, instead of the easy and equal government which formerly prevailed, a vast number of insupportable little tyrannies was erected. The Normans, too, ravaged the country, and desolated some of the finest provinces of France. But Charles at length ceded the duchy of Neustria to Rollo, the chief of these barbarians, who having become a Christian, changed his own name to Robert, and that of his principality to Normandy.

Hugh Capet.

During the remainder of the reign of Charles the Simple, and the entire reigns of Louis IV. surnamed the Stranger, Lothaire, and Louis V. the power of the Carlovingian race continually declined, till at last they were supplanted by Hugh Capet, who had been created Duke of France by Lothaire. This revolution happened in the year 987, and was brought about much in the same manner as the former

History. 987–1094.

one had been by Pepin. Capet proved an active and prudent monarch, and possessed other qualities requisite for keeping his tumultuous subjects in awe. He died on the 24th of October 997, leaving his dominions in perfect quiet to his son Robert.

Robert. The new king inherited the eminent qualities of his father. In his reign the kingdom was enlarged by the death of Henry duke of Burgundy, to whom he became heir. This new accession of territory, however, was not obtained without a war of several years continuance; and had it not been for the assistance of the Duke of Normandy, it is doubtful whether the king would have succeeded. As Robert was of opinion that peace and tranquillity were preferable to wide and extended dominions held by a precarious tenure, he refused the kingdom of Italy and the imperial crown of Germany, both which were offered him, and died on the 20th of July 1030.

Henry I. Robert was succeeded by his eldest son Henry I. In the beginning of his reign he met with great opposition from his mother, who had always hated him, and preferred his younger brother Robert, in whose favour she now raised an insurrection. With the assistance of Robert duke of Normandy, however, Henry overcame all his enemies, and established himself firmly upon the throne. In return for this service he supported William, Robert's natural son, and subsequently king of England, in the possession of the duchy of Normandy. Afterwards, however, having become jealous of the power of the future conqueror, he not only supported secretly the pretenders to the duchy of Normandy, but actually invaded that country. This enterprise, however, proved unsuccessful, and Henry was obliged to make peace; but no sincere reconciliation ever followed; for the king retained a deep sense of the disgrace he had met with, and the duke never forgave him for invading his dominions. The treaty was therefore speedily broken; and Henry once more invaded Normandy with two armies, one commanded by himself, and the other by his brother. The first was harassed by continual skirmishes, and the last totally defeated; after which Henry was obliged to agree to such terms as the duke thought proper to dictate. But the rancour which had been generated between them never ceased, and was in reality the cause of that implacable aversion which for a long series of years produced perpetual quarrels between the kings of France and those of the Norman race in England.

Philip. Henry died in 1059, not without suspicion of being poisoned, and was succeeded by his eldest son Philip, at that time in the eighth year of his age. Baldwin earl of Flanders was appointed his guardian, and died in the year 1066, about the time that William of Normandy became king of England. After the death of his tutor, Philip began to show an insincere, haughty, and oppressive disposition. He engaged in a war with William the Conqueror, and supported his son Robert in a rebellion against him. (See article ENGLAND.) But after the death of William, he assisted Robert's brothers against him, by which means the latter was forced to consent to a partition of his dominions. In 1092, Philip, being wearied of his queen Bertha, procured a divorce under pretence of consanguinity, and afterwards demanded in marriage Emma, daughter of Roger, count of Calabria. The treaty of marriage was concluded; and the princess was sent over, with jewels and a considerable sum in ready money. But the king, instead of espousing her, retained her fortune; dismissed the princess herself; carried off the countess of Anjou, esteemed the handsomest woman in France, from her husband, and, not satisfied with the illegal possession of her person, procured a divorce from her husband, whilst he prevailed upon some Norman bishops to solemnize a marriage with her. But these transactions were so scandalous, that the pope, having caused them to be revised in a council held at Autun in the year 1094, pronounced sentence of excommunication against Philip in case he did not part with the countess. On his professing repentance, however, the censure was taken off; but as the king paid no regard to his promises, he was in 1095 excommunicated a second time. He again professed repentance, and was again absolved; but as he still lived with the Countess of Anjou as formerly, he was soon afterwards excommunicated a third time. This unworthy conduct exposed him to the contempt of the people. But too many of the nobility followed his example, at the same time that they despised his authority. In the year 1100 Philip prevailed on the court of Rome to have this affair reviewed in an assembly at Poictiers; where, notwithstanding his utmost efforts, sentence of excommunication was a fourth time pronounced against him. Yet, in spite of all these sentences, as Bertha was now dead, and the Count of Anjou offered, for a large sum of money, to give whatever assistance might be requisite for procuring a dispensation, Philip at last prevailed, and the countess was proclaimed queen of France. But though his domestic concerns were now in some measure arranged, his negligence in public matters had thrown the affairs of the nation into the greatest disorder. He therefore associated with him in the government his eldest son Louis, a prince the reverse of his father, and who by his activity and resolution kept constantly in the field with a considerable body of forces, reduced the rebellious nobility to subjection, and saved the state from being utterly subverted. For these services the queen looked upon the prince with so jealous an eye, that he found it necessary to retire for a time into England; but he had not been long at the English court before Henry I. received a letter from Philip, urging him, for certain important reasons, to throw his son into close confinement, or even to dispatch him. The king of England, however, instead of complying with this infamous request, showed the letter to Louis, and sent him home with all imaginable marks of respect. Immediately on his return he demanded justice; but the queen caused poison to be administered to him, which operated so violently that his life was for a time despaired of. A stranger, however, undertook the cure, and succeeded. On his recovery, the prince was on the point of avenging his quarrel by force of arms; but his father having caused the queen to make the most humble submissions to him, his resentment was appeased, and a reconciliation took place.

History. 1094–1108.

Louis the Gross. Philip died in the year 1108, and was succeeded by his son Louis, surnamed the Gross. The first years of his reign were disturbed by insurrections of his lords, which proved the more troublesome as they were secretly fomented by Henry I. of England, that by weakening the power of France his duchy of Normandy might be the more secure. This quickly brought on a war, in which Henry was defeated, and his son William obliged to do homage for Normandy. As the kings of England and France, however, were rivals, the latter espoused the cause of William the son of Robert duke of Normandy, whom Henry had unjustly deprived of that duchy; and this brought on a new war, in which Louis, having sustained a defeat, was obliged to make peace upon such terms as his antagonist thought proper to prescribe. The pacification, however, was but of short duration. Louis renewed his intrigues in favour of William, and endeavoured to form a confederacy against Henry; but the latter found means not only to dissipate this confederacy, but to prevail upon Henry V. emperor of Germany to invade France with the whole strength of the empire on one side, whilst he prepared to attack it on the other. But Louis having collected an army of two hundred thousand men, both thought proper to desist from the attempt. Upon this the king of France desired to march into Normandy to put William in possession of that duchy; but his great vassals refused to assist in such an enterprise, alleging that they had assembled to defend the territories of France from the invasion of a foreign prince, and not to enlarge his power by destroying the balance produced by the king of England possessing Normandy, which they reckoned necessary for their own safety. This was followed by a peace, which was concluded on pretty equal terms, and maintained during the life of Louis, who died in 1137, leaving the kingdom to his son Louis VII.

Louis VII.

The young king was not endowed with any of those qualities which constitute a great monarch. From the superstition of the age in which he lived, he undertook an expedition into the Holy Land, whence he returned without glory. In this expedition he took his queen Eleanor along with him; but was so much offended with her gallantries during her stay in Palestine, as well as her behaviour afterwards, that he divorced her, and returned the duchy of Guienne, which he had received as her portion. Six weeks after this she married Henry duke of Normandy, count of Anjou and Maine, and heir apparent to the crown of England. This marriage proved a very great mortification to Louis, and, on account of the folly of his conduct, procured him an unenviable cognomen. His reign was wholly undistinguished. He died on the 18th of September 1180, leaving the kingdom to his son Philip.

Philip the Great.

This prince, surnamed The Gift of God, The Magnanimous, and The Conqueror, during his life-time, and styled Augustus after his death, is reckoned by some historians one of the greatest princes who ever sat on the throne of France. It does not appear, however, that these titles were at all deserved. In the beginning of his reign he was opposed by a strong faction excited by his mother, which he suppressed with a vigour and spirit that did him honour; but his having taken part with the children of Henry II. of England, in their unnatural contests with their father, and his treacherous combination with John to seize his brother's kingdom when he was detained in prison by the emperor of Germany, are indelible stains in his character. In military skill and personal valour he was inferior to Richard I. of England; nor can his recovering the provinces held by the English in France from such a mean and dastardly prince as John entitle him with any justice to the surname of Conqueror. In politics he was evidently the dupe of the pope, who made use of him to intimidate John into a submission, by promising him the kingdom of England, which he never meant that he should enjoy. For an account of these transactions, see the article ENGLAND.

Reign of Louis IX.

Philip died in 1223, and was succeeded by his son Louis VIII. who, again, was, in 1226, succeeded by Louis IX. afterwards styled St Louis. This prince was certainly possessed of many good qualities, but deeply tinctured with the superstition of the times, which induced him to engage in two crusades. In the first of these, against the Saracens of Egypt, he was taken prisoner, and treated with great cruelty; but ultimately obtained his deliverance, on condition of paying a million of pieces of gold, and surrendering the city of Damietta. No sooner had he regained his liberty than he entered Syria with a view of doing something worthy of his character. But from this expedition he was obliged to return sooner than he intended, by the news of the decease of his mother, Queen Blanch, whom he had appointed regent in his absence, and who had managed the national affairs with great prudence. Upon his return, however, the king found many and great disorders in the kingdom, which he set himself to reform with the utmost diligence. The reputation of this monarch for candour and justice was so great that the barons of England, as well as King Henry III. consented to make him umpire of the differences which subsisted between them. But though he decided this matter justly, his decision was not productive of any good. At last the king, having settled every thing relating to his kingdom, set out on another crusade for Africa, where he died of the plague, on the 25th of August 1270.

Philip the Hardy.

Notwithstanding the misfortunes of Louis, his successor Philip, surnamed the Hardy, continued the war against the Infidels with great vigour. Being reinforced by his uncle Charles king of Sicily, he brought the contest to a more fortunate conclusion than his predecessor; the Saracens were defeated in two engagements; and the king of Tunis was obliged to sue for peace, offering at the same time to double the tribute which he formerly paid to the crown of Sicily, to reimburse the expenses of the war, and to permit the Christian religion to be freely propagated throughout his dominions. Having accomplished this, the two princes set sail for Europe; but the distemper which had infected the army in Africa not being eradicated, it broke forth on their arrival in Sicily, and for some time raged with great violence. On his return to France, Philip took possession of the counties of Provence and Toulouse; married his second son, though then very young, to the only daughter of the king of Navarre; and himself espoused Mary the daughter of the Duke of Brabant, reckoned one of the most beautiful princesses of the age. He steadily enforced the regulations of his predecessor, who had prohibited the barons from making private wars upon one another; secured the friendship of Edward I. of England, by ceding to him the county of Agenois; and entered into a war with Spain in support of the pretensions of his nephews, the Infants de la Cerda, to the throne of Castille. The events of this war were of no great importance; and the king's attention was quickly called away from them by the death of his eldest son Louis at the age of twelve years. This event happened in the year 1275, not without a suspicion of poison, which is common enough when princes are cut off by sudden deaths, and the king and queen were themselves loudly condemned. Meanwhile the Sicilians, over whom Charles of Anjou had established his authority, instigated by John of Procida, a noble exile, came to a determination of freeing themselves from the French yoke by a general massacre. This resolution was accordingly carried into execution, and the French, to the number of eight thousand, were murdered in one night; after which Pedro of Aragon sailed to the island, where he was received by the inhabitants as their king and deliverer. Charles was sensibly affected by this misfortune; and having laid siege to Messina, sailed directly to Marseilles, where he obtained a powerful reinforcement. But during his absence, his son, to whom he had entrusted the conduct of the siege, having rashly ventured an engagement with the Spanish fleet, was entirely defeated and taken prisoner. This so much affected the father that he died of grief, and Sicily became inseparably attached to the house of Aragon. The misfortunes of Charles were followed by others which equally affected Philip himself. Pope Martin IV. in the warmth of his zeal for the cause of the Duke of Anjou, had excommunicated Pedro of Aragon, and bestowed his kingdom on Charles of Valois, a younger son of the king of France. In attempting to defend himself against the execution of this unjust sentence, Pedro was mortally wounded; but, soon afterwards, the French fleet being defeated by that of Aragon, the king was so much affected by the misfortune that he fell sick, and expired at Perpignan, in 1285, in the forty-first year of his age and sixteenth of his reign.

Philip the Fair.

By the death of Philip the Hardy, the French crown devolved on his second son Philip the Fair, who had espoused the princess of Navarre, and who at the time of his accession was in his seventeenth year. By the marriage with this princess he had obtained the counties of Champagne and Brie; yet even with this increase of territory he found himself unable to support the war in which his predecessor had engaged, for which reason he abandoned the interest of the Infants de la Cerda, and settled the differences with Castille. The

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treaty was concluded through the mediation of Edward I. of England, by whose intercession Charles the Lame, son of the Duke of Anjou, was released from captivity, Edward himself paying part of his ransom. Charles consented to renounce his claim on Sicily; and Philip himself promised that his kinsman Philip of Valois should renounce all pretensions to the crown of Aragon. The tranquillity resulting from this treaty was, however, soon interrupted by differences with Edward, Pope Boniface VIII. and Guy de Dampier, count of Flanders. The difference with England arose by accident. A Norman and an English vessel having met off the coast of Bayonne, and having both occasion to water, the crews met and quarrelled at the same spring, and in the squabble a Norman was killed with his own weapon by an Englishman, whom it was alleged he had assaulted with it. But however this may have been, a complaint was made by the Normans to Philip, who, without giving himself much trouble to inquire into the merits of the cause, instantly allowed them to redress their supposed injuries. The consequence was, that a kind of piratical war commenced between the two nations; the Irish and Dutch seamen taking part with the English, and those of Flanders and Genoa with the French. Thus the force on both sides was gradually augmented, until at last the affair became so serious that in one engagement fifteen thousand French are said to have perished. Alarmed at such a carnage, Philip summoned the king of England as his vassal to attend; and, on his refusal, declared his estates in France forfeited. After a great deal of negotiation, however, Philip declared that he would be satisfied with the nominal cession of the province of Guienne; and Edward complied with his demands; but no sooner had the French monarch obtained possession of that country than he persisted in the forfeiture of the English possessions in France; and this treacherous proceeding instantly produced a war between the two nations. Edward, that he might the better defend himself against so formidable an adversary, concluded a treaty with the emperor Adolphus, and the courts of Bretagne, Holland, Bar, Juliers, Gueldres, and Flanders; whilst Philip strengthened himself by an alliance with John Baliol of Scotland, and thus laid the foundation of that intimate union which subsisted between France and Scotland for about two centuries. During this war the French made a descent upon the coast of England, and destroyed the town of Dover; whilst Edward, in revenge, landed in Gascony with a powerful army. But no great exploits were performed with this armament; and the belligerents, finding themselves equally matched, consented to a suspension of arms for two years, during which time a peace was finally concluded through the mediation of Boniface VIII. Guienne was restored; Edward espoused Margaret the sister of Philip; and his daughter Isabelle was given in marriage to the prince of Wales. Philip and Edward treated the allies whom they had engaged in their cause with equal perfidy. Baliol was abandoned by Philip to the resentment of Edward; and Guy, earl of Flanders, was left equally exposed to the vengeance of Philip.

The reconciliation between the French and English monarchs was soon followed by a difference with Pope Boniface, whom they had appointed mediator between them. Sensible of his assuming disposition, they had inserted in the reference made to him a provision, to the effect that he was chosen as a private individual, and not as the successor of St Peter. The pontiff, however, soon showed that he was not to be treated as a private person; and a contest with Philip quickly ensued. Boniface began with forbidding the clergy, under pain of excommunication, to grant the king any subsidies, without first obtaining the consent of the Holy See; and Philip revenged himself by prohibiting ecclesiastics from sending money out of the kingdom without his leave, and by protecting the Colonnas, the implacable enemies of Boniface. Irritated at this decided proceeding, his holiness sent an abusive letter to Philip, and then summoned the clergy of France to attend a council at Rome. Philip retaliated, by seizing the temporalities of those who obeyed the summons, and recalling his brother Charles of Valois, who was styled the pope's general. Sensible of the danger which attended this contest, however, Philip dispatched two emissaries under the pretence of conciliating differences, but in reality to levy a body of troops sufficient to execute his hostile purposes against the holy father; and with these he suddenly invested the pope in his native city of Anegnia; so that, whilst the bull was preparing to excommunicate Philip, and release his subjects from their obedience, the pope himself was obliged to surrender to the troops of the prince whom he intended to anathematize. But although Boniface had been delivered up to the troops of Philip through the treachery of the people of Anegnia, he was no sooner taken prisoner, and reduced to distress, than they rescued him from his guards, and conveyed him to Rome, where he soon afterwards died of chagrin and disappointment. Benedict, his successor, revoked the excommunication prepared by Boniface, and attempted to conciliate the good-will of Philip; but, before this could be effected, he was himself cut off by death, not without strong suspicions of poison. After the decease of Benedict, Philip offered to procure the papal chair for Bertrand, archbishop of Bordeaux, provided the latter would condemn the memory of Boniface, restore the honours and estates of the Colonnas, which had been forfeited, allow him the tenths of the clergy of France for five years, and grant other concessions which at that time it was not thought proper to divulge. Bertrand complied with the terms proposed by the king, and ascended the papal throne by the name of Clement V.; but narrowly escaped being killed on his return from the cathedral of Lyons, by the falling of a wall, by which accident the Duke of Bretagne was killed, and the king and Count of Valois were considerably bruised. The new pope fixed his residence at Avignon, where he punctually complied with all the conditions of the treaty, except that of condemning the memory of Boniface, which, instead of attainting, he vindicated with much solemnity. The condition which Philip had at first concealed was discovered by the death of the emperor Albert of Austria, after which he sought the assistance of Clement to place his brother Charles of Valois on the imperial throne. But his holiness, apprehensive of the danger which might arise from being surrounded with the powerful relations of Philip, urged the diet to proceed instantly to an election, and recommended to them Henry of Luxemburg as a proper person to fill the imperial throne. This scheme succeeded, and the election was concluded before Philip could arrive at Avignon; but, as some consolation for his disappointment, the latter took possession of the city of Lyons, which had hitherto been independent, but which was now induced to submit to the authority of Philip.

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Expedition against the Earl of Flanders.

In the mean time, Guy earl of Flanders having been abandoned by his ally Edward king of England, was obliged to throw himself on the clemency of the French monarch, who had sent his brother, Charles of Valois, with a powerful army to invade his dominions. From the latter indeed he had obtained a promise, that if he could not, within a year, settle the differences subsisting between him and Philip, he should be at liberty to retire and pursue whatever measures he pleased. But Philip, to gratify the resentment of his queen against the captive prince, detained him, with two of his sons, in close confinement; whilst he himself, having entered Flanders in triumph, was everywhere received as sovereign of the country, and at his departure appointed John de Chatillon, a relative of the queen, as governor of the newly-acquired territory. This person, however, being of a haughty and tyrannical disposition, treated the people so harshly that an insurrection speedily broke out. The commotion, nevertheless, was not general, and would have been effectually quelled by the diligence of the magistrates, had not Chatillon entered Bruges, and publicly displayed two hogsheads of ropes, which he threatened to employ in the execution of the inhabitants. Upon this the people flew to arms, and massacred fifteen hundred French, whilst Chatillon himself escaped their fury only by swimming across the town ditch. The insurgents daily gathered strength, and having assembled an army of sixty thousand men, laid siege to Courtray. Here they were rashly attacked in their trenches by the Count d'Artois, who met the reward of his temerity in being cut off, with twenty thousand of his troops. Determined on revenge, Philip, by debasing the coin of the kingdom, raised another army, and was thus enabled to enter Flanders with a force which would probably have subdued the whole country, had not Edward artfully communicated to the queen of France, as a secret, a feigned correspondence between the French nobility and the court of Rome; by which false intelligence the king was induced to abandon the enterprise without performing any thing worthy of the preparations he had made. The war was continued some time longer, but the attempts of Philip were constantly defeated by the steady valour of the Flemings; and the only recompense Philip obtained for all his trouble and expense was the city of Courtray.

The other remarkable transactions of this reign were the expulsion and confiscation of the estates of the Templars, who at that time enjoyed immense possessions in France. These confiscations took place without any form of trial, and upwards of fifty of the knights were put to death in a cruel manner. The grand master, with three of his principal officers, were burned by a slow fire in the presence of the king and his attendants. The whole body of these unfortunate knights had been accused of the most gross and abominable sensualities. The particulars were revealed, or pretended to be so, by two criminals, who received their pardon for the discoveries they made; and these discoveries were confirmed by the confession of the Templars themselves. But this confession was afterwards retracted, as being extorted from them by the fear of absolute destruction; and those who suffered asserted their purity to the last; so that, on the whole, it was believed that Philip consulted his avarice more than his justice by this cruel execution.

The latter part of his life was embittered by domestic misfortunes. His three daughters-in-law were accused of infidelity to their husbands, and, after a severe examination, two of them were condemned to perpetual imprisonment, whilst their paramours were flayed alive, and afterwards hung upon a gibbet, together with an usher of the chamber, who had been their confidant. The uneasiness of mind which Philip suffered on this account is supposed to have impaired his health, and he died of a consumption in the year 1314, being the forty-seventh of his age and thirtieth of his reign.

Louis the Boisterous.

On the accession of Louis surnamed the Boisterous, he found his treasury so much exhausted that he was obliged to delay for some time the ceremony of his coronation, and that of his queen Clemence, daughter of the king of Hungary. Having found the kingdom otherwise in a distracted state, he applied himself diligently to appease the discontents of his subjects, and conciliate their affection by every means in his power; and in this he was assisted by his uncle Charles of Valois, on whom he at length entirely devolved the government of the kingdom. This regent, however, behaved with a degree of cruelty which is supposed to have proved fatal to the king himself; for having put to death a nobleman who had enjoyed the confidence of the former king, this act was so much resented by his friends that they were thought to have administered poison to the king, who expired suddenly after drinking a glass of cold water, in the twenty-sixth year of his age and second of his reign. Immediately after his death, Charles prepared to dispute the sovereignty with the brothers of the deceased sovereign. Philip count of Poitou, the eldest brother, was at that time at Rome assisting in the election of a new pope; but on his arrival in France, the throne was assigned to him by the unanimous voice of the people. His prospects, however, were for a short time clouded by the queen dowager Clemence being delivered of a son, who has been enrolled amongst the kings of France under the name of John I.

Philip the Long.

The death of this infant in three weeks secured the throne to Philip. The conduct of this monarch, who, on account of his stature, was surnamed the Long, proved superior to that of his predecessor, who had unsuccessfully attempted to subdue the Flemings, and had even suffered himself to be duped by their count. By his vigorous policy Philip compelled their sovereign to consent to a peace upon honourable terms. He also summoned Edward II. of England to do homage for his possessions in France; but that monarch finding himself involved in difficulties which rendered the visit inconvenient, sent excuses to Philip, which the latter was pleased to sustain. As the French monarch had formerly taken the cross during the life-time of his father, he now proposed to perform his vow; but he was dissuaded by the pope himself; and, at the instance of the pontiff, he sent an army into Italy to put an end to the contending factions of the Guelphs and Ghibelines, who had long filled the country with violence and bloodshed. The event proved unfortunate; and the disgrace was rendered the more mortifying by a contagious distemper, which swept off many thousands of the French. The remaining part of the reign of Philip was spent in attempting to regulate the internal concerns of his kingdom. A design having been formed by his predecessors of establishing a certain standard for the coin, and also of weights and measures, throughout France, this was adopted by Philip, who, in order the more effectually to carry it into execution, purchased from the Counts of Valois, Clermont, and Bourbon, the right of coinage within their respective dominions. But notwithstanding all his endeavours the scheme misgave, and having failed to conciliate the affection of his subjects, he died of a fever and dysentery in the year 1322, being then in the twenty-eighth year of his age and sixth of his reign.

Charles the Fair.

By the death of Philip the crown of France devolved on his brother Charles IV., who had obtained the surname of the Fair. After settling some disputes with the Duke of Burgundy, he obtained the dissolution of his marriage with Blanch, who still continued in prison, and espoused Mary the daughter of Henry emperor of Germany. This marriage was contracted with a view to the imperial crown, which had been so long separated from that of France; and in 1325 an opportunity for Charles to gratify his ambition presented itself. At that time the imperial dignity was disputed between Louis of Bavaria and Frederic of Austria, the latter of whom had been taken prisoner in a battle with Louis. But Pope John, who entertained an implacable hatred towards Louis, fulminated sentence of excommunication against him; and the king of France was induced to embark in the same cause, by a promise of the spoils of Bavaria; whilst Frederic consented to relinquish his pretensions. Louis, however, by instantly releasing his prisoner, and dismissing him in an honourable manner, secured his friendship, and disarmed his most formidable antagonist. But the pope was not to be disappointed. A considerable sum of money induced Leopold, who had been intrusted with the execution of the excommunication, to persevere in hostilities; and it was determined that a new council of electors should be held in order to transfer the imperial crown to Charles. In pursuit of this scheme, the king of France set out with a splendid army for the frontiers of Germany; but he soon found it impossible to attain the object of his ambition. Leopold alone remained his friend, from motives of interest; the others showed the greatest indifference, and even his brother in-law, the king of Bohemia, absented himself from the diet; whilst in a short time the death of the queen put an end to all connection with that crown. On the deccase of Mary, Charles espoused Joanna, daughter of the Count d'Evreux, and, to avert the calamity of an infant succession, he entered into an alliance with Robert, king of Scotland, by which it was provided, that should either of the sovereigns die without an heir apparent, the states of the kingdom should fill the vacant throne, and the survivor of the two kings should with his whole force support the legality of such nomination against any other competitor. But even this proved insufficient to avert the danger which now threatened the kingdom.

The regency. Philip the Fortunate.

Charles died in the year 1328, leaving his queen pregnant; and as the succession depended on the fruit of the queen's pregnancy, a regent was in the mean time necessary. Two candidates accordingly appeared for this important office, urging at the same time their right to the crown as well as to the regency. These were, Philip of Valois, cousin-german of the deceased king; and Edward III., king of England, who aspired to the throne in right of his mother, and as nephew of Charles the Fair. The pretensions of the latter, however, were easily set aside, and Philip was confirmed in the regency; from which, on the queen being delivered of a daughter, he soon stepped on the throne, and acquired the surname of Fortunate. But though the pretensions of Edward, both to the regency and the crown, were rejected by the people, it was still impossible for Philip to think of the claims of such a formidable rival without uneasiness. He therefore summoned the English monarch to do homage for his possessions in France; and, upon the latter not answering his summons, forfeited them, and seized his revenues. This at last induced Edward to cross the sea and pay homage, which Philip consented to receive in any form, upon condition of a proper explanation being afterwards given; but as this was studiously delayed after the return of the king of England, the province of Guienne was again seized by the French monarch. Unwilling to lose his continental dominions, or involve himself in a war for the sake of a mere ceremony, Edward sent over a formal deed, by which he acknowledged that he owed liege homage to France. The flame was thus smothered for the present, and would perhaps have been entirely extinguished, had it not been for the intrigues of Robert of Artois, brother-in-law to the king of France himself, who had been expelled his country, and had taken refuge in England. For some time, indeed, neither party made any open declaration of hostility; but as both monarchs possessed great sagacity, they soon penetrated each other's designs. Philip, under pretence of taking the cross, began to make great preparations, strengthening himself at the same time by alliances on every side; whilst Edward, determined to renew his claim to the crown of France, projected the conquest of Scotland. This, however, he failed to accomplish; and in the mean time Philip, in order to favour the Scotch, with whom he was in alliance, suffered his subjects to make irruptions into Guienne.

Edward's first expedition.

But at length, in 1337, the war broke out in earnest. Philip having detached a squadron of his fleet against the Infidels, employed the rest, consisting chiefly of Genoese vessels, against the English. In this contest the Flemings, whose aid was of importance, were courted by both parties. Louis count of Flanders declared for Philip, but his subjects were more inclined to Edward. James Arteville, a brewer, the most able and artful man in the country, governed them at that time as if he had been their prince; and as the advantages arising from the English commerce determined him in favour of Edward, that prince, at his request, embarked with a numerous army for Sluys, where he arrived in 1338. Upon his landing it was resolved that the German princes in alliance with him should act against France. But for this a pretext was wanting. The vassals of the empire could not act by Edward's orders, nor even as his allies, without directions from the emperor, and he was in league with France. This difficulty, however, was soon overcome. The French had made themselves masters of Cambray, and the emperor resolved that it should be retaken. With this view he created Edward vicar-general of the empire; an empty title, but one which seemed to give him a right to command the services of the princes of Germany. The Flemings, who were vassals of France, likewise pretended scruples at invading the territories of their liege lord; but, to allay these, Edward, by the advice of Arteville, assumed the title of king of France, and in virtue of this claim challenged their assistance to dethrone Philip of Valois, the usurper of his kingdom. Such a step, which could scarcely fail to beget endless jealousies and animosities, Edward did not take without hesitation; and from this time may be dated the commencement of that animosity which the English have until very recently borne towards the French. Edward's first attempt was upon the city of Cambray, to which he laid siege; but in a short time he was prevailed upon by Robert of Artois to raise the siege and march into Picardy, which he entered with an army of about fifty thousand men, composed chiefly of foreigners. Philip came in sight with an army of nearly a hundred thousand men, composed chiefly of native subjects; and it was daily expected that a battle would ensue. But the English monarch was averse to engage against a force so greatly superior; and Philip thought it sufficient to elude the attacks of his enemy, without running any unnecessary hazard. The two armies faced each other for several days, and mutual defiances were exchanged; but Edward at last retired into Flanders, and dispersed his army. Such was the fruitless and almost ridiculous conclusion of Edward's first expedition, which had plunged him into the greatest difficulties. He had contracted nearly L.300,000 of debt; he had anticipated all his revenue; he had pledged every thing of value which belonged either to himself or his queen; and he was obliged in some measure even to pawn himself to his creditors, by desiring their permission to go over to England in order to procure supplies, and by promising on his word of honour to return in person if he did not remit their money. On his arrival in England, however, he obtained a large supply, sufficient to enable him to make all the necessary preparations for a new invasion; and so certain were the English that France would now be conquered, that the parliament, before Edward's departure, protested that they owed him no obedience as king of France, and that the two kingdoms must remain for every distinct and independent.

Edward's second expedition.

The king of England set out on his second expedition with a fleet of two hundred and forty vessels. Philip had prepared a fleet of four hundred vessels, manned with forty thousand men; which he stationed off Sluys, in order to intercept Edward on his passage. The two fleets met on the 13th of June 1340; but the English, either by the superior abilities of Edward, or the greater dexterity of his seamen, gained the wind of the enemy, and with this advantage began the action. The battle was fierce and bloody. The English archers, whose force and address were now much celebrated, galled the French on their approach; and when the ships grappled together, the example of the king and his nobility so animated the seamen and soldiers, that they maintained everywhere a superiority over the enemy. Meanwhile the Flemings observing the battle, hurried out of their ports, and brought a reinforcement to the English, which contributed to decide the fate of the action. Two hundred and thirty ships were taken, and thirty thousand Frenchmen, including two of their admirals, were killed; whilst the loss of the English was inconsiderable compared to the greatness and importance of the victory. After this brilliant victory Edward landed his forces and laid siege to Tournay. Philip marched to its relief with a numerous army, but acted with so much caution that Edward found himself in a manner blocked up in his camp. At length the Countess Dowager of Hainault, sister of Philip, and mother-in-law of Edward, interposed with so much spirit and address, that she engaged all parties to agree to a truce for a year, and might perhaps have brought about a peace if she had survived.

France invaded a third time.

In 1341, however, Edward's ambition was once more excited by the invitation of the Count de Montfort, who had possessed himself of the province of Bretagne, and applied to Edward to second his claims. An offer of this kind entirely coincided with Edward's views. He was happy in the promised assistance of Montfort, which thus opened to him an entrance into the heart of France. But this flattering prospect was for a time damped by the imprisonment of Montfort, who, on the discovery of his intentions, was besieged in the city of Nantes, and taken prisoner. But Jane of Flanders, his wife, courageously undertook to support the falling fortunes of her family. Having assembled the inhabitants of Rennes, where she then resided, she appeared before them carrying her infant son in her arms, and having deplored her misfortunes, attempted to inspire the citizens with an affection for her cause. The inhabitants of Nantes instantly espoused her interests, and all the other fortresses of Bretagne embraced the same resolution. The king of England being apprised of her exertions, was entreated to send succour with all possible expedition to the town of Hennebonc, in which place she had resolved to sustain the attack of the enemy. Charles de Blois, Philip's general, anxious to make himself master of so important a fortress as Hennebone, and still more to take the countess prisoner, sat down before the place with a large army, and conducted the siege with indefatigable industry. But the defence was not less vigorous than the attack, and several sallies were made by the garrison, in which the countess herself led the assailants. But at length the besiegers made several breaches in the walls, and a general assault was hourly expected. A capitulation was therefore proposed, and a conference already commenced, when the countess, who had ascended a high tower, and was looking with great impatience towards the sea, descried some ships in the distance, and, immediately exclaiming that reinforcements had arrived, forbade any further negotiation. Nor was she disappointed. The fleet which she had descried carried a body of English gentlemen, with six thousand archers, whom Edward had prepared for the relief of Hennebone, but who had been long detained by contrary winds. This seasonable relief entered the harbour under the conduct of Sir Walter Manny, one of the most gallant commanders of his time, and served to keep up the spirits of the Bretons until the expiration of the truce, when Edward would be at liberty to renew the war in regular form.

The succours under Sir Walter Manny were speedily followed by a more considerable reinforcement commanded by Robert of Artois, who soon after his arrival made himself master of Vannes; but the French speedily recovered that city, and Robert was compelled to relinquish his prize after receiving a mortal wound. Edward, eager to revenge the death of his ally, soon landed at Morbihan, near Vannes, at the head of an army of twelve thousand men; and with this small force he undertook at once the siege of Vannes, Nantes, and Rennes; but having divided his troops, he failed in every enterprise, and gave John duke of Normandy, the king of France's eldest son, an opportunity of besieging him in his camp. In this situation his provisions began to fail; and, notwithstanding all his valour, Edward would have been obliged to surrender, had he not, by a train of artful negotiations, induced Philip to relinquish the advantage he had obtained, and consent to a truce of three years, which was brought about by the mediation of the court of Rome.

Philip now endeavoured to secure himself against the power of his rival by alliances, and by purchasing the city of Montpellier from the king of Majorca. But in the mean time the English, under the command of the Earl of Derby, invaded Guienne, and, having twice defeated the French army, commanded by the Count de Lisle, made themselves masters of a great number of towns. Philip, by reason of the exhausted state of his treasury, was for some time incapable of making any opposition; and, to recruit his finances, he was obliged to impose a duty on salt, which gave great offence to his subjects. But when these discontents were allayed, he soon raised an army of a hundred thousand men, whose courage was excited by the presence of the Dukes of Normandy and Burgundy. The English general was therefore compelled to act on the defensive, and one fortress after another surrendered to the French, until at length the total extinction of the power of England upon the Continent appeared inevitable. In this situation Edward resolved to bring relief in person to his distressed subjects and allies; and accordingly embarked in 1346, at Southampton, on board a fleet of near a thousand sail. Besides the chief nobility of England, he carried along with him his eldest son the prince of Wales, afterwards surnamed the *Black Prince*, from the colour of his armour, a youth of about fifteen years old, and already remarkable for understanding and valour far above his age. His army, which consisted of four thousand men at arms, ten thousand archers, ten thousand Welsh infantry, and six thousand Irish, were all landed in safety at La Hogue, a port in Normandy. The intelligence of Edward's landing, and the devastation caused by his troops, who dispersed themselves over the whole country, soon spread consternation in the French court. The rich city of Caen was taken and plundered by the English; the villages and towns as far as Paris shared the same fate; and the French had no other resource but to break down the bridges, in order to check the advance of the invader. In the mean time Philip was not idle in making preparations to oppose the enemy. Having stationed one of his generals, Godemar de Faye, with an army on the opposite side of the river Somme, which Edward had to cross, whilst he himself, at the head of a hundred and twenty thousand fighting men, advanced to give the English battle, he so hemmed in Edward that the latter found himself exposed to the danger of being enclosed and starved in an enemy's country. In this dilemma he offered a large reward to any one who should bring him information of a passage across the river Somme; and a peasant of the country, named Gobin Agace, having discovered a ford, Edward had just time to get his whole army across the river, when Philip appeared in his rear. A battle ensued, in which the French were overthrown with great slaughter, and which, under the name of Crescy, the place where it was fought, is equally memorable in the annals of England and France. Edward next laid siege to Calais, which was then defended by John de Vienne, an experienced commander, and supplied with every thing necessary for defence; but it was nevertheless taken, after a twelvemonth's siege, the defenders having been reduced to the last extremity by fatigue and famine.

From the beginning of this unfortunate war, Philip had invariably showed himself desirous of peace, and the victory of Crescy rendered him still more so. Edward also, notwithstanding his successes, found himself unable any longer to support the expenses of the war. The mediation of the court of Rome was therefore readily accepted, and a truce for three years concluded. At the same time, Philip met with some recompense for the losses he had sustained, by the acquisition of Dauphiné, which afterwards gave the title of Dauphin to the eldest son of the king of France. The subsequent events of his reign are unimportant, and he expired in the year 1350, at the age of fifty-seven.

King John.

On the death of Philip, his eldest son John took possession of the kingdom; but scarcely was he seated on the throne when he disgusted his nobility by a most unseasonable act of severity. Robert de Brienne, count of Eu and Guisnes, had been taken prisoner by the king of England at Caen, and, under pretence of negotiating his ransom, had passed several times between France and England; but being accused of maintaining a treasonable correspondence with Edward, he was suddenly arrested, condemned, and beheaded, without any form of trial. At his death he is said to have confessed his treasonable practices, but this has not been authenticated by any historian of credit. Having been constable of France, the sword, the badge of his office, was delivered to Charles de la Carda; but the fate of the latter was not less unfortunate than that of his predecessor, inasmuch as he was soon afterwards assassinated by Charles king of Navarre, surnamed The Wicked. This prince, celebrated for his personal qualifications, but detested for his crimes, was the son-in-law of John. He had demanded the duchy of Angoulême of the king; but as the latter had thought proper to bestow it upon Carda, he sought to revenge himself by assassinating his rival. John did not fail to show a proper resentment; but such was the weakness of his government, that the king of Navarre set him at defiance, and would not even condescend to go through the ceremony of asking pardon until John had sent him his second son as an hostage for his personal security. To these offences the king of Navarre added another still more atrocious, namely, that of aiming at the crown of France, to which, as grandson by the female side to Louis the Boisterous, he pretended a title in right of his mother. But his more immediate demand was that the countries of Champagne and Brie should be given up to him. To obviate all difficulties on this head, however, John bestowed the duchy of Normandy on his eldest son Charles, and commanded him to seize the estates of the king of Navarre; upon which the latter soon made his appearance at Paris, and John found himself obliged to appease his opposition at the expense of a hundred thousand crowns.

During all this time the truce with England had been but ill observed on both sides; the French had possessed themselves of the port of St Jean d'Angeli, and the English had surprised the town of Guisnes. The rival houses of Montfort and Blois also indulged their animosities, whilst Edward continued to threaten war. The king of Navarre also persevered in his intrigues, and even the dauphin was drawn into a confederacy against his father; but John, being informed of their machinations, found means to defeat them. The dauphin was reclaimed by pointing out to him the impropriety of his conduct, and the disadvantage which must unavoidably ensue to himself from the connections which he had formed. The king of Navarre, with his principal adherents, were invited to an entertainment, where they were unexpectedly arrested; the former being sent prisoner to Chateau Gaillard, and several of the most obnoxious of the latter put to death. But the rest of the conspirators, instead of being dismayed by this check, immediately broke out in open rebellion; and finding themselves unable to gain their point without further assistance, they immediately invited Edward to come over from England.

France again invaded by Edward.

That warlike and enterprising monarch had never lost sight of the object which he had originally contemplated; and on the expiration of the truce had sent his son, the prince of Wales, surnamed the Black Prince, with a squadron towards the coast of France. With this force the prince entered the mouth of the Garonne, burned the towns and villages of Languedoc, and then retired with his plunder into the country of Guienne, whilst Edward himself, who had likewise passed over to the Continent, wasted the country as far as St Omer; but the French king, notwithstanding all these provocations, determined to avoid a battle, and accordingly prohibited his general, the constable of Bourbon, from coming to an engagement, though his army was much superior to that of the prince of Wales. With the flower of his troops, however, he pursued Edward from St Omer to Hesdin, where he defied him to a pitched battle; but the latter, without minding his bravadoes, continued his march towards Calais, whence he embarked for England. After his departure, John called an assembly of the states at Paris, where he explained the distressed situation of his finances, and showed so fully the necessity of their assisting him in the defence of the kingdom, that they consented to maintain an army of thirty thousand men during the war. To supply the other exigencies of government, they revived the duty upon salt, and added a variety of other imposts; but at the same time appointed a committee of their own number to take care that the money should be strictly appropriated to the public service. But the satisfaction which John received from these grants, and from the suppression of some disturbances which happened about this time, was soon overcast by the news that the prince of Wales had marched with an army of twelve thousand men from Bordeaux, and, after ravaging the Agenois, Quercy, and the Limousin, had entered the province of Berry. The young warrior had penetrated into the heart of France with this trifling body of forces, in hopes of joining the Duke of Lancaster in Guienne. But he soon found that his scheme was impracticable. The country before him was too well guarded to permit him to advance further; and all the bridges behind were broken down, which effectually barred a retreat. In this embarrassing situation his perplexity was increased by being informed that the king of France was actually marching at the head of sixty thousand men to intercept him. He at first thought of retreating; but soon finding it impossible to retrograde, he determined calmly to wait the approach of the enemy, and, notwithstanding the disparity of forces, to commit all to the hazard of a battle.

At a place called Maupertuis, near Poitiers, both armies arrived in sight of each other. The French king might easily have starved the English into terms; but such was the impatient valour of the French nobility, and such their confidence of success, that it might have been equally fatal to attempt repressing their ardour to engage. In the mean time, whilst both armies were drawn up in order of battle, and expecting the signal to advance, they were stopped by the appearance of the Cardinal of Perigord, who attempted to act as mediator between them. But as John, who made himself sure of victory, would listen to no terms which did not include the restitution of Calais, the Black Prince refused to listen to such a proposition, and the combat was deferred till the next morning, for which both sides waited in anxious suspense. During this interval the young prince strengthened his position with new intrenchments, and placed three hundred men in ambush, with as many archers, who were commanded to attack the enemy in flank during the heat of the engagement. Having taken these precautions to ensure success, he drew up his army in three divisions; the van commanded by the Earl of Warwick, the rear by the Earls of Salisbury and Suffolk, and the main body by himself. The king of France also arranged his forces in three divisions; the first commanded by the Duke of Orleans, and the second by the dauphin, attended by his younger brothers, whilst he himself directed the main body, seconded by his youngest son, then about fourteen years of age. As the English could be attacked only by marching along a narrow defile, the French suffered greatly from the English archers, who were posted on each side behind the hedges. Nor were they in a better situation upon emerging from this pass, being met by the Black Prince himself, at the head of a chosen body of troops, who made a furious onset upon their troops, already in great disorder. A dreadful overthrow ensued. Those who were as yet in the defile recoiled upon their own forces; whilst the English troops who had been placed in an ambush took the opportunity, by a flank attack, to increase the confusion and confirm the victory. The dauphin and the Duke of Orleans were amongst the first who fled. The king of France himself made great efforts to retrieve by valour what rashness had forfeited; but his courage was unable to check that panic which had now become general throughout his army; and his cavalry soon flying, he found himself exposed to the whole fury of the enemy. At length, overpowered with fatigue, and despairing of success, he thought of yielding himself a prisoner, and frequently cried out that he was ready to deliver himself to his cousin the prince of Wales. But the honour of taking him was reserved for a more ignoble hand; he was seized by Dennis de Morbec, a knight of Arras, who had been obliged to fly from his country for murder.

This defeat, which happened in the year 1356, almost entirely ruined the French affairs; and the miseries which ensued were greatly augmented by internal commotions. The dauphin, who had now assumed the government, was altogether unfit to govern a turbulent and seditious people at a crisis like this. An assembly of the states, which he called, took the opportunity to limit the power of the prince, to impeach the former ministers, and to demand the liberty of the king of Navarre; and the treasurer of the crown was basely murdered by one Marcel, a partisan of that worthless prince, who had filled the city of Paris with confusion by his intrigues. The public disorders were also augmented by the escape of the king of Navarre; and, though the dauphin was even assured that this royal ruffian had administered poison to him, he was nevertheless obliged to pay him some appearance of regard. A scheme was even formed by the chiefs of the sedition to change the government, to vest all the power in the commons, and to leave the king no more than an empty title; but though this was favourably received by the city of Paris, the other cities of the kingdom refused to concur in the project. The dauphin was likewise recognised as regent by the states-general, and the inhabitants of Picardy and Champagne took up arms in his cause. In this disastrous state of affairs, the miseries of the people were heightened by a new and unexpected evil. The peasants, who had all along been oppressed by the nobles, were now treated in such a manner that, having risen in great numbers to revenge themselves, the castles of the nobility were razed to the ground, their wives and daughters ravished, and themselves put to the most cruel torments. At last they were obliged to arm in their own defence. The Duke of Orleans cut off ten thousand of the insurgents in the neighbourhood of Paris; twelve thousand were massacred by the king of Navarre; and nine thousand who had laid siege to the town of Meaux, where the dauphiness and three other ladies of the first rank resided, were routed and pursued with dreadful slaughter by an officer in the service of Edward. Amidst these confusions, Marcel, the seditious leader already mentioned, perished in a tumult of his own raising; and the most virtuous and prudent people of the nation supported the pretensions of the dauphin. But his most dangerous enemy was the king of Navarre, who had enticed to his standard numbers of those Norman and English adventurers who had followed Edward into France, and remained there to seek their fortunes, having associated themselves under the name of the *Companions*. By this formidable competitor the dauphin was reduced almost to the last extremity, when his hopes were revived by an unexpected proposal of peace upon equitable and moderate terms. Historians in general have ascribed this to the natural levity of the king of Navarre; but some have been of opinion that he acted from prudential motives, and that he justly supposed it would be more easy to deal with the dauphin, who was his own kinsman, and humbled by so many misfortunes, than with a haughty and imperious conqueror like Edward.

A new invasion of France by Edward.

On the expiration of the truce in the year 1359, Edward, having again set sail for France, anchored before Calais with a fleet of eleven hundred sail, assumed the title of King of France, and augmented his army to a hundred thousand men. The dauphin, finding himself unable to oppose so great a force, was obliged to act upon the defensive; and having chosen the city of Paris as his station, he allowed the English to ravage the open country. Thus they were suffered to penetrate through Picardy into Champagne; but the city of Rheims, where Edward designed to have been crowned king of France, baffled his utmost efforts. From Champagne, therefore, which had already been laid waste, the English monarch marched into Burgundy, pillaging Tonnere, Gaillon, and Avalon. Burgundy was saved by the payment of a hundred thousand merks, and an equal sum was paid for Nivernois. At last, after a long and destructive march, Edward arrived at the gates of Paris; but the prudence of the dauphin and the citizens had rendered it impregnable to the attacks of famine as well as the assaults of an army. The war proceeded, however, till the year 1360, when the king of England showed himself inclined for peace. Notwithstanding all the victories he had gained, the French nation evinced not the least favour to his claim of succession; the king of Navarre was a dangerous rival; and the caution of the dauphin, in avoiding an engagement, deprived him of the advantages he expected from his valour and military skill. Conferences for a peace were accordingly opened at Bretigny in the Chartraine, and it was at last concluded, on the conditions that King John should pay for his ransom, at different periods, three millions of crowns of gold, or about a million and a half of our money; and that Edward should for ever renounce all claim to the kingdom of France, and remain possessed of the territories of Poitou, Xaintonge, l'Agenois, Perigord, the Limousin, Quercy, Rouvergne, l'Angoumois, and other districts in that quarter, together with Calais, Guisnes, Montreuil, and the county of Ponthieu. Some other stipulations were also made in favour of the allies of England, as a security for the execution of these conditions. But, upon John's return to his dominions, he found himself unable to ratify the terms of peace which had just been concluded. At the head of an exhausted state, his soldiers were without discipline, and his peasants without subordination. The latter had in fact risen in great numbers, and one of their chiefs had assumed the title of The Friend of God and the Terror of Man. A citizen of Sens, named John Gouge, also got himself acknowledged king, by means of his robberies, and soon caused almost as many calamities by his depredations as the real king had brought on by his misfortunes. Such was the state of France on the return of its captive monarch; yet so incredible was his absurdity, that he had scarcely been replaced on the throne when he prepared for a crusade into the Holy Land. But this folly was prevented by the exhausted state of the country, and the misery of the people, who, in fact, were even unable to pay the king's ransom. In these circumstances, however, the conduct of John was truly noble. "Though good faith should be banished from the rest of the earth," said he, "yet she ought still to retain her habitation in the breasts of kings." He accordingly returned once more to England, and yielded himself a prisoner, since he could not be honourably free. It has indeed been said by some, that his passion for the Countess of Salisbury was the real cause of his journey; but there seems to be no foundation for a report so injurious to his honour. During his captivity he resided in the Savoy, and afterwards closed a long and unfortunate reign by his death, which happened in the year 1364.

Charles the Prudent.

Charles, surnamed the Prudent, succeeded his father upon the throne of France; and by a finely-conducted policy, even though he suffered some defeats, restored his country once more to tranquillity and power. He dispersed a horde of banditti, who having associated themselves under the name of Companions, had long been a terror to the peaceable inhabitants. He had them even enrolled into a body, and led them into the kingdom of Castille against Peter, surnamed the Cruel, whom his subjects had dethroned, and who, by means of an alliance with the English, endeavoured to get himself reinstated in power. The consequence was, that the English and French again came to an engagement; the army of the former being commanded by the Black Prince, and that of the latter by Henry of Transtamarre, and Bertrand du Guesclin, one of the most consummate generals and accomplished men of the age in which he lived. The usual good fortune of the English prince however prevailed, and the French lost above twenty thousand men, whilst only four knights and forty private men were slain on the side of the English. Nevertheless these victories were attended with but little effect. The English, by frequent levies, had become quite exhausted, and were unable to continue an army in the field. Charles, on the other hand, cautiously avoided coming to a decisive engagement, but contented himself with allowing his enemies to waste their strength in attempts to plunder a fortified country; and when they retired, he then sallied forth, possessing himself of such places as they were not strong enough to defend. He first fell upon Ponthieu; the citizens of Abbeville opened their gates to receive him; those of St Valois, Rue, and Crotoy, imitated the example; and the whole country was in a little time reduced to submission. The southern provinces were in the same manner invaded by his generals with equal success; whilst the Black Prince, destitute of supplies from England, and wasted by a cruel disorder, was obliged to return to his native country, leaving affairs in the south of France in a desperate condition. In this exigency the resentment of the king of England was excited to the utmost pitch, and he resolved to take signal vengeance on his enemies of the Continent. But the fortunate occasion had now passed, and all his succeeding designs were unsuccessful. The Earl of Pembroke and his whole army were intercepted at sea, and taken prisoners, by Henry king of Castille. Sir Robert Knolles, at the head of thirty thousand men, was defeated by Bertrand du Guesclin; and the Duke of Lancaster, at the head of twenty-five thousand men, had the mortification of seeing his troops diminished without even coming to a battle. At length, when the affairs of the English were totally ruined by the death of the Black Prince and of King Edward, the armies of Charles attacked the English on all sides. One, under the command of the Duke of Burgundy, entered Artois; another, under the command of the Duke of Berry, penetrated into Auvergne; that which acted in Guienne was commanded by the Duke of Anjou; the forces in Bretagne were under the constable Guesclin; and the king put himself at the head of a powerful body of troops, that he might be able to repair any accident to which the chance of war might give rise. The constable having found it difficult to oppose Sir Thomas Felton and the seneschal of Bordeaux, was joined by the Duke of Burgundy, and soon afterwards attacked and defeated both, making them prisoners of war. At the close of the campaign of 1377, Bayonne and Bordeaux, with the surrounding districts, and the fortress of Calais with its dependencies, were all that England had now left on the Continent. But Charles having thus once more established the house of Valois on the throne of France, did not long live to enjoy his good fortune. He died in the year 1379, at the age of forty-four, in consequence of the poison formerly administered to him by the king of Navarre, and the immediate operation of which had been suspended by the skill of a physician sent by the emperor Charles IV.

Charles VI.

Charles V. was succeeded by his son Charles VI. surnamed the Well-beloved, who, at the time of his accession to the throne, was only twelve years of age. The Duke of Anjou, eldest brother to the late king, had been appointed guardian during the minority of the prince; but being totally unfit for the office, and distinguished only for his ambition and rapacity, he resigned his charge to the Dukes of Burgundy and Bourbon, the former being uncle to the king by his father's side, the latter by his mother's. None of these tutors, however, proved faithful to the trust reposed in them. At this time Joan, infamous for her profligacy, reigned in Naples, where she had appointed one Charles Durazzo, her relation, to succeed her on the throne; but the inhuman wretch murdered his benefactress, who with her last breath revoked her grant of the kingdom to him, and bestowed it upon the Duke of Anjou. The influence of the latter at the French court enabled him to waste the treasures of the kingdom in support of his pretensions; but he proved ultimately unsuccessful, his forces having been defeated, and his designs frustrated, by the superior skill of his adversary. Meanwhile the citizens of Paris, oppressed with taxes, broke out into tumults, and were with difficulty quelled; and the mal-administration of the duke soon involved the nation in hostilities with the Flemings, whose country he invaded at the head of an army of eighty thousand men, accompanied by the young king and by the principal nobility of France. The first operations of the war were favourable to the Flemings; but they were at length totally defeated on the banks of the river Lis, where their leader, with twenty-five thousand men, perished in the field. This victory was followed by the submission of the whole country; but the satisfaction which this event afforded the king was disturbed by new seditions and revolts in Paris and other great towns. His return, however, at the head of a victorious army soon reduced them to their duty, and several of the revolted cities were severely punished; at the same time that the death of the Duke of Anjou having freed him from the immediate dependence on his tutors, enabled him to assume the reins of government, in the year 1384.

The genius which Charles displayed in his early years raised the hopes of the nation; but these were soon overcast, and greater misfortunes than any which had yet occurred were in reserve. His administration was for some time prudent and vigorous. He conciliated the affections of his people by restoring their privileges, punishing their oppressors, and relieving them from the taxes which had been imposed in his minority. He compelled the Flemings to submit to the authority of his uncle the Duke of Burgundy, and detached fifteen thousand archers and fifteen hundred men-at-arms to assist the Scotch in their incursions into England. Lastly, in 1385 he fitted out a mighty armament against England. A vast fleet assembled in the harbour of Sluys, and a numerous army was collected in the neighbourhood. According to some writers, the armament consisted of twelve hundred ships, twenty thousand foot variously armed, twenty thousand cavalry, and twenty thousand cross-bow men. There was besides a vast wooden edifice or floating town, which had been contrived for the protection of the soldiers when landed. But all these preparations came to nothing through the obstinacy of the Duke of Berry, who, having been originally opposed to the expedition, conducted his part of the armament so slowly that he did not arrive at Sluys till the middle of September, when the season was too far advanced, and an invasion impracticable. In addition to this, a storm which happened soon afterwards drove the greater part of the fleet on shore, and beat down the wooden edifice, and completely shipwrecked the whole project.

But the destruction of the French fleet was only a prelude to calamities of a more extraordinary description. The Sieur de Craon, a profligate nobleman, having been intrusted by the court of France with a considerable sum destined for the support of the Duke of Anjou during his Italian expedition, had dissipated this money at Venice; but, by the credit of the Duke of Orleans, the king's brother, he had obtained his pardon, and even returned to court, where he sought to gratify his private resentment by the assassination of the constable Oliver Clisson, whom he suspected of having promoted his disgrace. The latter was attacked on his return from the Hôtel de St Pol, by a band of twenty ruffians, against whom he defended himself with wonderful intrepidity, but at last fell, after receiving more than fifty wounds. Happily, however, the veteran recovered from his wounds; and the assassin, in order to screen himself from vengeance, fled for protection to the Duke of Bretagne. The king demanded the surrender of Craon; and the duke having professed that he knew nothing of him, he marched with all his forces into Bretagne. But when the army had arrived at Mons, the king was seized with a slow fever, during which he became delirious, and killed several persons with his own hand. When the excitement subsided he fell down and lay as if he had been dead; upon which he was taken up, bound in a waggon, and carried back to Mons, where he lay two days in a lethargy, from which he recovered a little, and expressed great sorrow on account of the blood he had shed in his delirium. But it was soon discovered that he no longer possessed that strength of judgment and understanding for which he had formerly been remarkable; and hence a regency became indispensably necessary. The competition for this office brought to light the characters of the queen and the Duke of Orleans, which had not hitherto been displayed to public view. The former was a beautiful and accomplished princess, but vindictive, suspicious, and intriguing, insensible to natural affection, but easily accessible to flattery, and ready to yield to every impulse of lawless passion. The latter was equally remarkable for personal accomplishments, and had married Valentina, daughter of the Duke of Milan; but his engagements with that princess did not prevent him from engaging in a number of licentious amours, and amongst the rest, as was supposed, with his sister-in-law Isabelle. During the king's illness he openly aspired to the regency; but his pretensions were overruled by the states, and the administration of affairs for the present conferred on the Duke of Burgundy. In a few months indeed the health and understanding of the king seemed to be sufficiently restored; but in the year 1393 it was again disturbed by a sudden alarm, which occasioned a relapse, and he continued delirious at intervals as long as he lived. During his lucid intervals Charles frequently assumed the government into his own hands; and as the war with England still continued, though in a languid manner, the French monarch in one of those intervals of reason had an interview with Richard of England, in order to put an end to hostilities. But their respective claims were so difficult of adjustment, that, as an intermediate arrangement, they concluded a truce for twenty-five years; during which time it was hoped that a lasting peace might be established. Richard gave up Cherbourg to Charles, and Brest to the Duke of Bretagne; and a marriage was also concluded between the king of England and Isabelle the daughter of Charles, but, by reason of the tender age of the princess, this marriage was never consummated. During this reign France was still further weakened by the succours sent to the Hungarians against the Turks. On this expedition upwards of one thousand of the bravest and most experienced knights were sent under the conduct of John count of Nevers, eldest son of the Duke of Burgundy; the Count of Eu, constable of France; John de Vienne, admiral of France; and the Count of Marche, a prince of the blood royal; together with De Courcy, one of the most experienced captains in Christendom. But the prudent counsels of this veteran were not obeyed by the youthful warriors by whom he was accompanied, and who, having attacked the enemy rashly, whilst heated with wine, were all either killed or taken prisoners. Notwithstanding this disaster, however, assistance was in the year 1400 sent to Wenceslaus, emperor of Germany; and the Duke of Orleans, who commanded the army on this occasion, acquitted himself so well that he acquired the duchy of Luxembourg for himself, and left his ally satisfied.

But whilst the friendship of France was thus courted by foreign powers, the kingdom itself was in the most miserable situation. The king's distemper daily gained ground; and the discordant interests of the contending parties kept the whole nation in a ferment. The most violent animosity broke out between the Dukes of Orleans and Burgundy. The former, by means of his interest with the queen, and the ascendency which his duchess possessed over the king, had for some time got the advantage of his rival, and was made lieutenant-general and governor of the kingdom; but presuming on his power to levy new imposts on the people, and oppress the churchmen, whom in that age he ought to have conciliated, he was deprived of his authority, and obliged to yield to the Duke of Burgundy. For some time, however, these powerful rivals were kept within some bounds by the mediation of the Duke of Bourbon, the only grandee who appears to have maintained a pure and unspotted character; but by his death in 1404, the unhappy nation was left totally exposed to their relentless fury. In 1405 the queen and the Duke of Orleans again seized on the administration, which, however, they were soon deprived of by the unanimous voice of the people. During this period Charles and his children were neglected and abandoned to distress; but they were relieved by the Duke of Burgundy on his obtaining the regency, whilst Isabelle and the Duke of Orleans were obliged to retire from Milan. But a sudden return of the king's reason now deprived both parties of power, and the administration was vested in the queen and a council composed of princes of the blood. The rival dukes being thus prevented from interfering in public affairs, exercised themselves in committing hostilities against the English, with whom the truce had lately been concluded. They were encouraged to commit this infraction of the treaty by the unsettled situation of affairs under Henry IV.; but their attempts having proved unsuccessful, the truce was renewed after obtaining the restoration of the princess, who, as has already been mentioned, had been betrothed to Richard II. The failure of their enterprises produced a new scene of discord between the dukes, and led to mutual recriminations. By the interposition of the Duke of Berry they were apparently reconciled; but the Duke of Burgundy pretended friendship only in order to take a more signal vengeance, to which he was now inflamed by jealousy as well as by political animosity. The Duke of Orleans was accordingly attacked one evening by eighteen ruffians hired for the purpose, who set upon him whilst attended by only two pages. A Norman gentleman who had been deprived of an employment headed the assassins, and in person attacked the duke; at the first blow he cut off his grace's hand, at the second he struck him from his mule, and at the third put an end to his life. The Duke of Burgundy escaped to Flanders; and the whole nation was rent into two factions, called the Burgundians and Armagnacs, the latter being the title of the party of the Duke of Orleans, from Armagnac, the father-in-law of that prince. A state of dreadful confusion and anarchy ensued. The Duke of Burgundy soon returned into France, and extorted a pardon from the unhappy king, who was now no longer able to resist him; and some notion may be formed of the state of the kingdom from the circumstance that two thousand people perished in one tumult in the capital. The king himself was alternately the prisoner of both parties, and transferred the power from the one to the other as he happened to fall into their hands.

Henry V. of England judged this a favourable opportunity to recover from France those possessions that had been formerly surrendered by treaty. But, in order to give his intended expedition the appearance of justice, he sent ambassadors to Paris, offering perpetual peace and alliance, on condition of being put in possession of all those provinces which had been ravished from the English during former reigns, and of espousing Catharine, daughter of the French king, with a suitable dowry. Though the French court was at this time extremely averse to war, yet these demands were too extravagant to be complied with; and Henry probably made them in hopes of meeting a refusal. He therefore assembled a fleet and army at Southampton, and having drawn all the military men of the kingdom to his standard, he put to sea, and landed at Harfleur at the head of an army of six thousand men-at-arms, and twenty-four thousand foot, mostly archers. His first operations were directed against Harfleur, which being hard pressed, promised to surrender by a certain day, unless relieved before that time. When the day arrived, and the garrison, unmindful of their engagement, resolved to defend the place, Henry ordered an assault, took the town by storm, and put the garrison to the sword. The victor then advanced further into the country, which had been already rendered desolate by factions, and which he now laid totally waste. But although the enemy made a feeble resistance, the climate seemed to fight against the English; and a contagious dysentery carried off three fourths of Henry's army. In this situation he had recourse to an expedient common enough in that age, in order to inspire his troops with confidence in their general. He challenged to single combat the dauphin, who commanded the French army, offering to stake his pretensions on the event. But this challenge, as might have been expected, was refused; and the French, notwithstanding their internal dissensions, at last seemed to unite at the appearance of a common danger. A numerous army of fourteen thousand men-at-arms and forty thousand foot had by this time assembled under the command of Count Albert, and been placed so as to intercept Henry's weakened forces on their return. The English monarch, when it was too late, began to repent of his rash inroad into a country where disease and a powerful army everywhere threatened destruction, and he therefore determined to retire on Calais. In this retreat, which was at once painful and dangerous, Henry took every precaution to inspire his troops with patience and perseverance, and showed them in his own person the brightest example of fortitude and resignation. He was continually harassed on his march by flying parties of the enemy; and when he attempted to cross the river Somme, he observed troops on the other side ready to oppose his passage. He was, however, fortunate enough to seize by surprise, near St Quintin, a passage which had not been sufficiently guarded, and thus carried over his army in safety. But the enemy being still resolved to intercept his retreat, after he had passed the river Tertrois, at Blangi, he was surprised to observe from the heights the whole French army drawn up in the plains of Agincourt, and so posted that it was impossible for him to proceed on his march without coming to an engagement. A battle accordingly took place, in which the English gained a victory, the most remarkable perhaps of any recorded in history (see AGINCOURT), and which deserves to be classed with the triumphs achieved at Crescy and Poitiers. This victory, gained on the 25th of October 1415, was however attended with no immediate effects. Henry still continued to retreat after the battle of Agincourt, and carried his prisoners first to Calais and thence to England.

In 1417, the king of England once more landed an army of twenty-five thousand men in Normandy, and prepared to strike a decisive blow for the crown of France, to which the English monarchs had long made pretensions. That wretched country was now reduced to a most deplorable condition. The whole kingdom appeared one vast theatre of murder, injustice, and devastation. The Duke of Orleans had been assassinated by the Duke of Burgundy; and the Duke of Burgundy, in his turn, fell by the treachery of the dauphin. At the same time the son of the duke, desirous of revenging his father's death, entered into secret negotiations with the English; and a league was immediately concluded at Arras, between Henry and the young Duke of Burgundy, in which the king promised to revenge the murder of the late duke, and the son appeared to insist on no further stipulations. Henry therefore proceeded in his conquests without much opposition from any quarter. Several towns and provinces submitted on his approach; the city of Rouen was besieged and taken; and he soon became master of Pontoise and Gisors. He even threatened Paris, and obliged the court to remove to Troyes, where the Duke of Burgundy, who had taken upon him the protection of the French king, met Henry in order to ratify the treaty by which the crown of France was to be transferred to a stranger. The imbecility into which Charles had fallen made him passive in regard to this treaty, and Henry dictated the terms throughout the whole negotiation. The principal articles of the treaty were, that Henry should espouse the Princess Catharine; that King Charles should enjoy the title and dignity of king for life, but that Henry should be declared heir to the crown, and intrusted with the present administration of the government; that France and England should be for ever united under one king, but should still retain their respective laws and privileges; and that Henry should unite his arms with those of King Charles and the Duke of Burgundy, to depress and subdue the dauphin and his partisans. Not long after this treaty had been concluded, Henry married the Princess Catharine; upon which he carried his father-in-law to Paris, and took formal possession of the capital. He next obtained from the estates of the kingdom a ratification of the late compact, and then turned his arms with success against the adherents of the dauphin, who now wandered about a stranger in his own country, and to the success obtained by his enemies opposed only fruitless expostulations.

But Henry's supplies were not provided in such abundance as to enable him to carry on the war without returning in person to prevail with his parliament to grant fresh aid; and on his arrival in England, although he found his subjects highly pleased with the splendour of his conquests, they seemed somewhat doubtful as to the advantage to be derived from them. A treaty, which in its consequences was likely to transfer the seat of empire from England, was not much relished by the parliament, which, therefore, on various pretences, refused his majesty a supply equal to his exigencies. But he was bent on pursuing his schemes of ambition; and, having joined the supplies granted at home to the contributions levied on the conquered provinces, he was able once more to assemble an army of twenty-eight thousand men, with which he landed safely at Calais.

In the mean while, the dauphin omitted no opportunity of repairing his ruined fortunes. Taking advantage of Henry's absence from France, he prevailed upon the regent of Scotland to send him a body of eight thousand men; and with these, and some few forces of his own, he attacked the Duke of Clarence, who commanded the English troops in the king's absence, and gained a complete victory. This was the first action which turned the tide of success against the English. But it was of short duration; for Henry having soon afterwards appeared with a considerable army, the dauphin fled at his approach; and many of the places which held out for the latter in the neighbourhood of Paris surrendered to the conqueror. Henry, everywhere victorious, now fixed his residence at Paris; and whilst Charles had only a small court, he was attended with one of great magnificence. In the mean while the dauphin, driven beyond the Loire, and almost totally dispossessed of the northern provinces, was pursued into the south by the united arms of the English and Burgundians, and threatened with total destruction. In this exigency, he found it necessary to protract the war, and to evade all hazardous actions with a rival who had long been accustomed to victory. His prudence was everywhere remarkable; and, after a train of persecutions from fortune, he found her at length willing to declare in his favour by the death of the king of England. Charles VI. died a short time afterwards; and Charles VII. succeeded his father on a nominal throne.

Charles VII.

Nothing could be more deplorable than the situation of France when this monarch assumed his title to the crown. The English were masters of almost all France; and Henry VI. though yet an infant, was solemnly invested with regal power by legates from Paris. The Duke of Bedford was at the head of a numerous army in the heart of the kingdom, ready to oppose every insurrection; whilst the Duke of Burgundy, who had entered into a firm confederacy with the English commander, still remained stedfast, and seconded his claims. Yet notwithstanding these unfavourable appearances, Charles found means to break the leagues formed against him, and to bring back his subjects to their natural interest and duty. His first attempts, however, were totally destitute of success. Wherever he endeavoured to face the enemy he was overthrown, and he could scarcely rely even on the friends next his person. His authority was insulted by his own servants; advantage after advantage was gained over him; and a battle fought near Verneuil, in which he was totally defeated by the Duke of Bedford, seemed to render his affairs altogether desperate. But, from the impossibility of the English keeping the field without new supplies, Bedford was obliged to retire into England; and in the absence of this commander his vigilant enemy began to recover from his late consternation. Dunois, one of his generals, at the head of a thousand men, compelled the Earl of Warwick to raise the siege of Montargis; and this advantage, slight as it was, served to convince the French that the English were not invincible.

Joan d'Arc.

But they had soon still greater reason to triumph in their change of fortune, and a new revolution was produced, by means apparently the most unlikely to bring about such a result. In the village of Domremi, near Vaucouleurs, on the borders of Lorraine, there lived a country girl, about twenty-seven years of age, called Joan d'Arc. This girl had been a servant in a cabaret or small inn, and in that humble station had submitted to those hardy employments which fit the body for the fatigues of war. She was of an irreproachable life, and had hitherto exhibited none of those enterprising qualities which she soon afterwards displayed. She contentedly fulfilled the duties of her station, and was remarkable only for her modesty and love of religion. But the miseries of her country seemed to have occupied the thoughts of this lowly maiden; and her mind, inflamed by the subject, and brooding with melancholy stedfastness thereon, began to feel impulses, which she was willing to mistake for inspirations of heaven. Convinced of the reality of her own visions, she had recourse to one Baudricourt, governor of Vaucouleurs, whom she informed of her destination by heaven to free her native country from its fierce invaders. Baudricourt treated her at first with neglect; but her importunities at length prevailed, and, willing to make trial of her pretensions, he gave her some attendants, who conducted her to the court, which at that time resided at Chinon. The French courtiers were probably sensible of the weakness of her pretensions, but they were willing to make use of every artifice to support their declining fortunes. It was therefore given out that Joan was actually inspired; that she had been able to discover the king amongst the number of his courtiers, although he had laid aside all the distinctions of his authority; that she had told him some secrets, which were only known to himself; and that she had demanded, and minutely described, a sword in the church of St Catharine de Fierbois, which she had never seen. The minds of the vulgar being thus prepared, she appeared armed *cap-à-pied*, and was shown in that martial dress to the people. She was then brought before the doctors of the university, who, tinctured with the credulity of the times, or willing to second the imposture, declared that she had actually received her commission from above. When the preparations for her mission had been completely blazoned, the next object was to send her against the enemy. The English were at this time besieging the city of Orleans, the last resource of Charles, and every thing promised them a speedy conquest. Joan undertook to raise the siege; and, in order to render herself still more remarkable, girded herself with the miraculous sword, of which she had before had such extraordinary notices. Thus equipped, she ordered all the soldiers to confess themselves before they set out, displayed in her hand a consecrated banner, and assured the troops of certain success. Such confidence on her side soon raised the spirits of the French army; and even the English, who pretended to despise her efforts, felt themselves secretly influenced with the terrors of her mission. A supply of provisions was to be conveyed into the town; Joan, at the head of some French troops, covered the embarkation, and entered Orleans at the head of the convoy which she had safely protected. Whilst she was leading her troops along, silence and astonishment reigned amongst the English; and they regarded with religious awe that temerity, which they thought nothing but supernatural assistance could inspire. But they were soon roused from their state of amazement by a sally from the town; Joan led on the besieged, bearing the sacred standard in her hand, encouraging them with her words and actions, bringing them to the trenches, and overpowering the besiegers in their own redoubts. In the attack of one of the forts, she was wounded in the neck with an arrow; but instantly pulling out the weapon with her own hands, and getting the wound promptly dressed, she hastened back to head the troops, and to plant her victorious banner on the hostile ramparts. As these successes continued, the English found it impossible to resist troops who were animated by such superior energy; and Suffolk, who conducted the attack, thinking that it might prove extremely dangerous to remain any longer in the presence of such an enemy, raised the siege, and retreated with all imaginable precaution. From being attacked, the French now became in turn the aggressors. Charles formed a body of six thousand men, and sent them to besiege Jergeau, whither the English, commanded by the Earl of Suffolk, had retired. The city was taken; Suffolk yielded himself a prisoner; and Joan marched into the place in triumph at the head of the army. A battle was soon after fought near Patay, where the English were again worsted, and Generals Scales and Talbot were taken prisoners.

The raising of the siege of Orleans formed one part of the promise which the maid had made to the king of France, the crowning him at Rheims was the other; and as she now declared that it was time to complete that ceremony, Charles, in pursuance of her advice, set out for Rheims at the head of twelve thousand men. The towns through which he passed opened their gates to receive him; and Rheims sent him a deputation, with its keys, upon his approach. The ceremony of his coronation was there performed with the utmost solemnity; and the Maid of Orleans, as she was now called, seeing the completion of her mission, desired leave to retire, alleging that she had now accomplished the end of her calling. But her services had been so great that the king could not think of parting with her; he pressed her earnestly to remain, and she at length complied with his request. A train of success followed the performance of this solemnity; Laon, Soissons, Château-Thierri, Provins, and many other fortresses in that neighbourhood, submitted to him on the first summons.

On the other hand, the English, discomfited and dispirited, fled in every direction, not knowing whether to ascribe their misfortunes to the power of sorcery or to a celestial influence, but equally terrified at both. They now found themselves deprived of the conquests they had gained, in the same manner as the French had formerly submitted to their power. Their own divisions, both abroad and at home, unfitted them entirely for carrying on the war; and the Duke of Bedford, notwithstanding all his prudence, saw himself divested of his strongholds in the country, without being able to arrest the enemy's progress. In order, therefore, to revive the declining state of his affairs, he resolved to have Henry crowned king at Paris, knowing that the natives would be allured to obedience by the splendour of the ceremony. In 1430 Henry was accordingly crowned, all the vassals who still continued under the English power swearing fealty and homage. But it was now too late to give a turn to the affairs of the English by the ceremonies of a coronation; the generality of the kingdom had declared against them, and the remainder only waited a convenient opportunity to follow the example. An accident which soon afterwards occurred, though it promised to advance the English cause in France, served in the end to render it odious, and conduced to the total evacuation of that country. The Duke of Burgundy, at the head of a powerful army, had laid siege to Compeigne; and the Maid of Orleans had thrown herself into the place, contrary to the wishes of the governor, who desired not the company of one whose authority would be greater than his own. The garrison, however, were rejoiced at her appearance, and believed themselves invincible under her protection. But their joy was of short duration; for Joan having the day after her arrival headed a sally, and twice driven the enemy from their intrenchments, was at last obliged to retire, placing herself in the rear, to cover the retreat of her forces. But in the end, attempting to follow the troops into the city, she found the gates shut, and the bridge raised, by order of the governor, who is said to have long wished for an opportunity of delivering her up to the enemy. Nothing could exceed the joy of the besiegers, in having taken a person who had been so long a terror to their arms. The service of *Te Deum* was publicly celebrated on the occasion; and it was hoped that the capture of this extraordinary person would restore to the English their former victories and successes. The Duke of Bedford was no sooner informed of her being taken, than he purchased the heroine of the Count Vendôme, who had made her his prisoner, and ordered her to be committed to close confinement.

The credulity of both nations was at this time so great, that any thing which coincided with their passions was not too absurd to gain belief. As Joan had a little before, when successful, been regarded as a saint, she was now, on her captivity, considered as a sorceress, forsaken by the demon who had given her a temporary and fallacious assistance. It was accordingly resolved in council to send her to Rouen to be tried for witchcraft; and the Bishop of Beauvais, a man wholly devoted to the English interest, having presented a petition against her, the university of Paris was mean enough to join in the request. Several prelates, amongst whom the Cardinal of Winchester was the only Englishman, were appointed her judges, and held their court at Rouen, where Henry then resided; whilst the maid, clothed in her military apparel, but loaded with irons, was produced before the tribunal. Her behaviour on this occasion in no way disgraced her former gallantry; she betrayed neither weakness nor womanish submission, but appealed to God and the pope for the truth of her former revelations. Nevertheless she was found guilty of heresy and witchcraft, and sentenced to be burned alive, the common punishment for such offences. But previously to the execution of this sentence, they resolved to make her abjure her former errors; and at length, by terror and rigorous treatment, so far prevailed, that her spirits were entirely broken by the hardships she was forced to endure. Her former visionary dreams began to vanish, and a gloomy distrust took place of her late inspirations; she publicly declared herself willing to recant, and promised never more to give way to the vain delusions which had hitherto misled her, and imposed upon the people. This was what her oppressors desired; and, willing to show some appearance of mercy, they changed her sentence into that of perpetual imprisonment, and to be fed for life on bread and water. But the rage of her enemies was not yet satiated. Suspecting that the female dress, which she had consented to wear, was disagreeable to her, they purposely placed in her apartment a suit of men's apparel, and watched the effect of this temptation. The despicable artifice succeeded. Joan, struck with the sight of a dress in which she had gained so much glory, immediately threw off her penitent robes, and put on the forbidden garment. Her enemies caught her equipped in this fashion; and her imprudence was considered as a relapse into her former transgressions. No recantation would now suffice, no pardon could now be granted. She was condemned to be burned alive in the market-place of Rouen; and this disgraceful sentence was executed with most rigorous severity.

One of the first misfortunes which befel the English after this sacrifice was the defection of the Duke of Burgundy, who had for some time seen the error of his conduct, and wished to break an unnatural connection, which only served to involve his country in ruin. A treaty was therefore concluded between him and Charles, in which the former agreed to assist him in driving the English out of France. This proved a mortal blow to the cause of the latter; and such were its effects upon the populace of London when informed of it, that they killed several of the Duke of Burgundy's subjects who happened at the time to be living amongst them. It might perhaps also have hastened the Duke of Bedford's death, who died at Rouen a few days after the treaty had been concluded; and the Earl of Cambridge was appointed his successor to the regency of France. From this period the English affairs were irretrievably ruined. The city of Paris returned once more to a sense of its duty, and Lord Willoughby, who commanded it, was contented to stipulate for the safe retreat of his troops to Normandy. Thus ground was continually, though slowly, gained by the French; and notwithstanding that their fields were laid waste, and their towns depopulated, they yet found protection in the weakness and divisions of the English. At length both parties began to grow weary of a war, which, though carried on feebly, was still a burden greater than either could support. But the terms of peace insisted upon by both were so exorbitant that little hopes of an accommodation could reasonably be entertained. In 1443, therefore, a truce for twenty-two months was concluded, which left every thing between the parties on the footing upon which it actually stood. And no sooner had this been agreed upon, than Charles applied himself with great industry and judgment to repair the numberless evils to which, from the continuance of wars both foreign and domestic, his kingdom had so long been exposed. He established discipline amongst his troops, and justice amongst his governors; he revived agriculture, and repressed faction. Having prepared once more for taking the field, he seized the first favourable opportunity to break the truce. Normandy was at the same time invaded by four powerful armies; one commanded by Charles himself, a second by the Duke of Bretagne, a third by the Count of Alençon, and a fourth by the Count Dunois. Every place opened its gates almost as soon as the French appeared before them. Rouen was the only city which threatened to hold out; but the inhabitants clamoured so loudly for a surrender, that the Duke of Somerset, who commanded the garrison, was obliged to capitulate. The battle, or rather skirmish, of Fourmingi, was the last stand which the English made in defence of their French dominions; but here they were put to the rout, and above a thousand slain. Normandy and Guienne, which had so long acknowledged subjection to England, were lost in the space of a year; and the English saw themselves entirely dispossessed of a country which for above three centuries they had considered as annexed to their native dominions. Of all their conquests Calais alone remained to them; but this was a small compensation for the blood and treasure which had been lavished in France.

In the year 1450, accordingly, the power of the English in France was entirely destroyed; and Charles obtained the surname of Victorious, on account of the vigour which he had shown in expelling the invaders of his country. But his satisfaction was greatly diminished by domestic misfortunes. The dauphin, forgetting the allegiance and filial duty which he owed to his father, had already impeded his conquests by his seditious intrigues. He had used every effort to thwart the designs of the king's ministers, and it was even supposed that he had destroyed by poison Agnes Soreille, his father's favourite mistress. He had also married Charlotte, daughter of the Duke of Savoy, which Charles had resented by a declaration of war against the duke; but he had been persuaded to recall this denunciation, in order to prosecute the war against Guienne. At length, weary of the disobedience of his son, he commanded him to be arrested; but Louis, informed of his design, withdrew to Franche Comté, and afterwards to Brabant, where the Duke of Burgundy, then sovereign of the country, ordered him to be supplied with every necessary, and treated with all imaginable respect. The duke, however, refused to see him until he had obtained the approbation of his father; upon which Louis employed himself in sowing dissension between his benefactor and the Count of Charolois, his son, at the very time that he himself was receiving a pension of twelve thousand crowns annually from the father. He thus destroyed the domestic peace of his benefactor, whilst his unnatural conduct created continual suspicions in the mind of his father. Being repeatedly informed that his own domestics, along with his undutiful son, were in a conspiracy against his life, the miserable monarch lived in continual fear of being poisoned, and, having none in whom he could repose confidence, obstinately refused for some days to receive any sustenance; and when at last prevailed upon by the importunities of his attendants to take some food, his stomach had become incapable of receiving it, and he died of inanition, in the year 1461. His body, neglected by his unnatural son, was interred at the expense of Tannegui de Chastel, who had ever been his faithful companion.

Louis XI.

On the death of Charles, his son Louis succeeded to the throne to which he had so long aspired. He was reckoned one of the greatest politicians that ever existed, though his character was not upon that account the more amiable; on the contrary, there are few princes whose character appears in a more detestable light. So destitute was he of natural affection, that he did not even attempt to conceal his joy at his father's death. He pretended much friendship for the Count of Charolois, son to the Duke of Burgundy, on account of the protection which he had received at his father's court, and even conferred upon him a pension of twelve thousand crowns annually. But all this show of affection soon degenerated into a mortal aversion upon both sides. Some differences which took place between the courts of France and Castille produced an interview between the two monarchs, Louis, and Henry surnamed the Impotent. They met at Mauleon, on the confines of Navarre; but their negotiations came to nothing, and they parted with a feeling of mutual contempt; Henry despising the mean and sordid appearance of Louis, and the latter in his turn deriding the gaudy magnificence of Henry. In his negotiations with the Duke of Burgundy, Louis proved more successful, having persuaded him to restore some towns situated on the river Somme which had been ceded by Charles VII., and by the possession of which the duke was in effect master of Picardy. This cession was opposed by the Count of Charolois; but Louis, by corrupting John de Croy, the duke's minister, succeeded in his object, and for the sum of four hundred thousand crowns the cities were delivered to him. In this transaction, by which he effectually ensured the hatred of Charolois, the duplicity of Louis was eminently displayed; for though he had agreed to retain in those towns the officers appointed by the duke, he had no sooner obtained possession than he displaced all of them, and appointed others in their stead.

The duchy of Bretagne was at this time governed by Francis, a weak but generous prince, whose defect of capacity was supplied by the abilities of his ministers. This prince Louis had insulted in the grossest manner; and as Francis found himself unable alone to oppose such a powerful adversary, he formed a close alliance with the Duke of Burgundy and the Count of Charolois, who had also been grievously offended by Louis. The confederacy was joined by several of the principal French nobility, who had been oppressed by the king; and though the secret was confided to upwards of five hundred persons, not one of them ever divulged it. Finding matters becoming very critical, Louis marched with an army towards the capital, which the Count of Charolois had already threatened; and a battle ensued, in which both princes exerted themselves to the utmost, though their valour was but ill seconded by the bravery of their troops. About fifteen hundred men perished on each side, but the Count of Charolois remained master of the field. Louis, however, after this engagement entered the capital, where he endeavoured, by every kind concession, to conciliate the affection of his subjects; and in this he succeeded so well, that though the army of the insurgents was soon augmented to a hundred thousand men, they were unable to make themselves masters of the city. At last a treaty was concluded between Louis and the Count of Charolois, by which the latter obtained the towns which had been formerly ceded, with the districts of Boulogne, Guisne, Peronne, Mondidior, and Roye, as a perpetual inheritance for himself; and by granting favours to the other confederates, the league was completely broken. But as soon as Louis found himself freed from danger, he protested against the whole treaty, as contrary to the interest of his crown; and therefore waited the first favourable opportunity to crush one by one those who by their united efforts had been ready to destroy him. The Duke of Bourbon, one of the most able of the confederates, was gained over, by bestowing upon him in marriage, Jane, a natural daughter of the king, with the dowry of Usson in Auvergne, together with Moras, Beaurepaire, and Cormillon in Dauphiné; and, by the discontents between the Dukes of Bretagne and Normandy, he was enabled to secure the neutrality of the former, and to recover from the latter some territories which had been unwillingly ceded to him.

In 1467, Philip duke of Burgundy, surnamed from his amiable qualities the Good, died, and left his dominions to his son Charles, count of Charolois. That fiery and impetuous prince, jealous of the growing power of France, and an implacable enemy of Louis, had entered into a secret treaty with Francis; but Louis had driven the Bretons from the posts which they had occupied in Normandy before the Duke of Burgundy could pass the Somme. The king, however, alarmed at the power of the confederates, concluded a peace with Bretagne; and, confiding in his talents for negotiation, determined to risk a personal conference with the Duke of Burgundy. This memorable interview took place in the year 1468; and Peronne, a fortified town of Picardy, belonging to the Duke of Burgundy, was appointed as the place of rendezvous. Thither the politic Louis repaired with a slender train, being attended only by Cardinal Balue, the Duke of Bourbon, and the Count de St Pol, constable of France; apparently without reflecting that he was entering a hostile city, where he might be confined for any length of time, or treated at the pleasure of the duke, who was his mortal enemy. Nor had he been long in the place when he began to perceive the extent of his error; and, by the daily concourse of Burgundian lords and other persons of rank, his avowed enemies, he became alarmed for his personal safety. His fears even suggested to him more serious apprehensions; and he requested apartments in the castle, where it was in the power of his rival in a moment to make him a close prisoner. This event accordingly took place, through the machinations of Louis himself. From the first his policy had been to keep the Duke of Burgundy constantly employed in domestic wars; and with this view he had, immediately before his interview with Charles, excited the inhabitants of Liège, who were subject to the Duke of Burgundy, to revolt against their sovereign. It is probable, indeed, that he did not anticipate that the effects of this treachery would so soon begin to manifest themselves. But at the very time when Louis was in the castle of Peronne, the people of Liège revolted, seized the bishop and governor, and having massacred many of the adherents of Charles, retired with their prisoners to the capital. Charles was soon informed of this massacre, with the additional circumstance that the emissaries of Louis were seen animating the insurgents to their work of destruction. Transported with rage, he commanded the gates of the castle to be shut and strictly guarded, and denounced the severest vengeance on the perfidious monarch who had so often deceived him. Louis, however, though justly alarmed for the consequences of this premature explosion, did not neglect to take the proper methods for securing himself. He distributed large sums of money amongst those officers to whom he imagined the duke was most inclined to pay any regard, and by splendid promises and presents endeavoured to allay the resentment of his other enemies. The resentment of Charles, as short-lived as it was violent, quickly subsided, and he entered into a treaty with the king, upon much the same terms as those which had been agreed to before. He insisted, however, that Louis should be present at the punishment he inflicted upon the inhabitants of Liège for the massacre they had committed; and this being acceded to, these princes in conjunction formed the siege of the city, which, notwithstanding the obstinate defence of the people, was at length taken by storm, and delivered over to a general massacre.

But, as might have been foreseen, the new alliance was soon dissolved. A confederacy against Louis, whom neither promises nor treaties could bind, was formed between his own brother the Duke of Normandy and the Duke of Burgundy; but before their measures were ripe for execution, Louis had already commenced hostilities. The Duke of Burgundy, as a peer of France, was summoned to parliament, and on his refusal the Constable St Pol made himself master of St Quintin. Several other cities were also reduced; and Baldwin, the natural brother of Charles, having, at the instigation of Louis, deserted his cause, the duke, notwithstanding his haughty spirit, was at last obliged to solicit a peace. This, however, was not of long duration. Charles, encouraged by the success of Edward IV. of England, his brother-in-law, began once more to league against Louis, with the Dukes of Bretagne and Guienne, the king's brother, and formerly Duke of Normandy, but who had exchanged that duchy for the territory of Guienne. But whilst the affairs of the confederates seemed likely to prosper, their prospects were suddenly overcast by the death of the Duke of Guienne, who was universally supposed to have been poisoned by order of Louis. The abbot of St Jean d'Angeli was fixed upon as the immediate perpetrator of the deed; but upon the day appointed for his trial he was found strangled in his cell; and as the dead tell no tales, Louis escaped the ignominy which the trial would probably have fixed on him, and was enabled to seize upon the territory of Guienne, which he annexed to the dominions of France.

By this unexampled villany Charles was so much exasperated that he vowed the most dreadful vengeance against the people of France, and threatened to sacrifice to the memory of the Duke of Guienne every one who fell into his hands. The citizens of Nesle were massacred without distinction of sex or age; but Beauvis resisted his attacks, after which Charles wreaked his fury on other places. Having entered the country of Caux, he reduced the cities of Eu and St Valery, burned Longueville, and wasted the whole country as far as Rouen. Louis, on the other hand, steady and constant in his designs, determined to dissolve the league between the Duke of Bretagne and Edward IV. of England, encamped with his army on the frontiers of Bretagne; whilst the duke, not meeting with the assistance promised by Edward, was obliged to consent to a truce for a year. In a little time, however, he began again to conspire with the king of England against Louis, and a powerful invasion was determined upon. Edward was to cross the sea with an army of ten thousand men, whilst Charles assembled all his forces to join in the attack. The former was also to set up a claim to the crown of France, and at all events to obtain the provinces of Normandy and Guienne; whilst the duke was to have Champagne, with some adjacent districts, and to free his dominions from homage; and neither party was to make peace without the consent of the other. It was supposed that the Duke of Bretagne would naturally accede to the confederacy; and the Count de St Pol, constable of France, had engaged to deliver up the town of St Quintin and others which he occupied on the river Somme. Louis, however, had still the good fortune to avoid the storm. Charles, instead of advancing to the assistance of Edward, who had entered France at the head

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of fifteen thousand archers and fifteen hundred men-at-arms, laid siege to the city of Nuiz on the Rhine; whilst the Constable St Pol, instead of delivering up the towns as he had promised, deceived his allies, and enabled Louis to dissolve a confederacy, which, had it been vigorously maintained, might have involved him in the greatest difficulties. To procure the departure of Edward, however, he was obliged to consent to a tribute of seventy-five thousand crowns, as well as to settle on the king himself fifty thousand crowns for life, and also to betrothe the dauphin to the eldest daughter of the king of England. The Duke of Burgundy exclaimed loudly against this treaty; but Edward presisting in his resolution, it was executed, at a place called Pecquigny, near Amiens, though in such a manner as showed the little confidence which the two sovereigns reposed in each other. A power was reserved by Edward for the Duke of Burgundy to accede to the treaty; but the latter haughtily replied, that he was able to support himself without the assistance of England, and that he would make no peace with Louis until three months after the return of Edward to his own country. To this resolution he adhered; but no sooner had the term expired than he concluded a truce with Louis for nine years. The Constable St Pol having rendered himself obnoxious to all parties by his complicated treachery, fled to Mons in Hainault; but the Duke of Burgundy had already consented to deliver him up, upon condition of receiving his estates and moveables as the price of his treachery.

Thus had Louis, without any other remarkable qualification than the mere arts of dissimulation and falsehood, got rid of all his enemies excepting the Duke of Burgundy, whose growing power rendered him a constant object of jealousy and terror. The imprudence and temerity of the latter, however, soon proved his ruin. Having rashly engaged in a war with the Swiss, he was defeated in the first encounter, with the loss of his military chest and baggage, and of his plate and jewels, supposed to be the richest in Europe. His disappointment on this occasion was so great that he was seized with a severe sickness; but he had hardly recovered when he resumed his insane scheme of conquering the Swiss. Another battle ensued, in which, after an obstinate struggle, Charles was defeated with the loss of eighteen thousand men; a disaster which was followed by the defection of most of his allies. The Duke of Lorraine recovered the city of Nancy, and the greater part of his dominions, which Charles had seized; whilst the latter, overwhelmed with shame and disappointment, spent his time in solitude and inactivity. But from this state he was at length roused by the misfortunes which fell upon him in rapid succession. He now invested the city of Nancy, acting in this, as in every other instance, against the advice of his best officers. The Duke of Lorraine advanced with a strong body of Germans to the relief of the city, whilst Charles had scarcely four thousand men to oppose him. His troops were therefore defeated, and he himself, notwithstanding the most heroic efforts of valour, was hurried away in the crowd. The Count de Campobasso, an Italian nobleman, in whom he put great confidence, but who was in reality a traitor, had deserted with about eighty men at the commencement of the action; but he left twelve or fifteen fellows about the duke's person, with strict orders to assassinate him in the tumult; and this order they punctually obeyed. The body of Charles was found two days after the battle, pierced with three wounds. This occurred in the year 1477.

The news of Charles's death was received with the most unfeigned joy by Louis, whose sole object it now was to unite the territories of the Duke of Burgundy to those of his own. This might be done in two ways; either by a match between the dauphin and Mary, the heiress of Burgundy, or by marrying this lady to the Duke of Angoulême, a prince of the blood royal of France. The king, however, to whom duplicity and falsehood seem to have been absolutely necessary, chose a third method, which was more agreeable to his character. The match with the dauphin, for various reasons, might be considered as impracticable. The disparity of age was great, the dauphin being only eight years old, and the princess twenty; the Flemings were besides averse to submit to a prince whose powerful resources would enable him to oppress their liberties. But, notwithstanding these difficulties, Louis chose to insist upon the match, at the same time that he endeavoured to make himself master of her dominions by force of arms. He addressed circular letters to the principal cities of Burgundy, representing that the duchy had been given by King John to the heirs male of his son Philip, and that now, when these were extinct by the death of Charles, the territory reverted of course to the crown; and, to render this argument more effectual, he corrupted the governors of some towns, and seduced the inhabitants of others, whilst he himself at the head of an army prepared to enforce obedience from those who could not be worked upon by other methods. And by these means the province of Burgundy was entirely reduced. But Flanders could not be brought under subjection either by fraud or force. In this, as on almost all other occasions, Louis displayed the most detestable falsehood, and the meanest treachery. In order to render Mary odious to her subjects, he negotiated with her ministers, and having prevailed on them to disclose the most important state secrets, he communicated their letters to the states of Flanders. This double treachery, however, did not answer his purpose. The two ministers he had betrayed were indeed put to death in the presence of their sovereign; but Mary was induced to bestow her hand upon the emperor Maximilian, and Louis had the mortification to find that all his arts had contributed only to aggrandise a rival power, whom he had already sufficient cause to dread. To repair this oversight, he entered into an alliance with Edward IV. of England, whom he had inspired with a jealousy of his brother Clarence; and thus a peace was concluded between the two monarchs, intended to continue during the life of each, and a year thereafter. Meanwhile the marriage of Mary with Maximilian secured the independence of Flanders; whilst the return of the prince of Orange to the party of that princess once more extended the war to the cities of Burgundy, and the French were on the point of being expelled from that country. But Maximilian unexpectedly made proposals of peace, and a truce was concluded, but without any term fixed for its duration, or without stipulations in favour of the Burgundians; so that the whole country was soon afterwards reduced by Louis.

The king being now freed from the apprehensions of foreign enemies, turned his vindictive disposition against his own subjects, and, under pretence of former rebellions, exercised the most insupportable tyranny. The principal victim of his sanguinary disposition was James d'Armagnac, duke of Nemours, one of the first noblemen in the kingdom, who had formerly been a zealous confederate in the league with Edward and Charles. This unfortunate nobleman, knowing that vengeance was determined on, fled to the fortress of Carlat, in the mountains of Auvergne, where he was besieged by the Seigneur de Beaujeu, who had married Anne the daughter of Louis. The place, however, being almost impregnable, his enemies were obliged to make the most solemn promises of safety in order to induce him to surrender, and he was at last persuaded to trust himself in the hands of the faithless tyrant. But no sooner had the latter got the unfortunate nobleman in his power than he shut him up in an iron cage

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in the Bastille, and reprimanded the judges for having released him from this close confinement during his examination. He was condemned to be beheaded; but the king's cruelty extended beyond the sentence, for he ordered the two sons of the duke, though yet in childhood, to be placed directly under the scaffold, that they might be covered with the blood of their father. Four thousand persons are supposed to have perished upon this occasion without any form or trial; and were it not for the concurring testimony of the historians of that age, the inhuman barbarities of this monster would scarcely be credited. By these means he broke the spirit of the French nobility, and gradually extended the power of the crown, until at last it was limited only by the pleasure of the sovereign.

In 1479, the emperor Maximilian, who had lightly abandoned the duchy of Burgundy when he might have reduced it, now renewed his claims when it was no longer in his power to enforce them. After a variety of actions of little note, and the destruction of cities on both sides, a battle was fought at Guinegate, where the Flemings were routed; but as the French pursued with too great ardour, the infantry of the enemy rallied, and the battle was renewed with great slaughter on both sides. A more decisive advantage was afterwards gained by the capture of eighty Flemish vessels, which induced that commercial people to think of peace.

In the mean time, Louis, after a life spent in continual deceit, hypocrisy, and cruelty, received warning of his approaching end by a fit of apoplexy, with which he was seized in the year 1480. He lay speechless and motionless for two days; after which he in some degree recovered, but never completely regained his health and strength. His illness, however, neither prevented him pursuing the schemes of his ambition, nor using the same methods as formerly to attain them. He seized, without any pretence, the estates of the Duke of Bourbon, the only nobleman in the kingdom whose power gave him any cause of suspicion; and, notwithstanding his assiduity for the interest of the dauphin, kept him a kind of prisoner in the castle of Amboise. He banished his own consort, the mother of the dauphin, to Savoy, and endeavoured to inspire the prince with aversion for her. By the death of Charles, titular king of Naples, and the last of the second house of Anjou, he became master of the county of Provence; but his satisfaction on this occasion was marred by a second stroke of apoplexy. Still, however, he revived, and again began to pursue his ambitious intrigues. The death of Mary of Burgundy, who perished by a fall from her horse, inspired him with new views; and he betrothed his son to the infant daughter of the emperor, by which means he deeply offended Edward IV. whose eldest daughter had previously been contracted to the dauphin, and a war would in consequence have ensued, had it not been for the death of the king of England. This event was ere long followed by that of Louis himself, who had in vain exhausted the skill of his physician, and wearied the clergy with prayers and processions to avert the impending stroke. He expired in the year 1483, after a reign of twenty-three years, during which he was detested by his subjects, whom he had continually oppressed, and equally dreaded and hated by his neighbours, whom he had constantly deceived. But, in spite of all this, he obtained from his holiness the title of Most Christian King, which his successors retained until the year 1830, when a sudden revolution placed a new and more popular dynasty on the throne. Notwithstanding the dark character of this prince, it must be allowed that he laid the foundations of the future greatness of the French monarchy. By his arts he deprived the common people of their liberty, depressed the power of the nobility, established a standing army, and even induced the states to render many taxes perpetual which formerly were only temporary. From this time the people became accustomed to submit entirely to the voice of their sovereign as their only legislator; and being always obedient in matters of the greatest consequence, they cheerfully contributed whatever sums were required to fulfil the king's pleasure.

Charles VIII.

Charles VIII. who succeeded his father Louis XI. in 1483, was only fourteen years of age at the time of his father's death. But though he might, even at that age, have ascended the throne without any material violation of the laws of France, yet it was judged necessary to appoint a regent, on account of the king's delicacy of constitution and want of education. Three competitors appeared as candidates for this important trust: John duke of Bourbon, a prince of the blood, and who had, till the age of sixty, maintained the most unblemished character; Louis duke of Orleans, presumptive heir to the crown, but who from his youth seemed incapable of undertaking so important an office; and Anne, the eldest daughter of Louis, to whom he had in the last moments of his life committed the charge of the kingdom. The claim of this lady was supported by the assembly of the states-general at Tours; and though she had only entered the twenty-second year of her age, the office, it appears, could not have been more properly bestowed. Being married to Peter of Bourbon, seigneur of Beaujeu, she was styled the Lady of Beaujeu; but she seems to have acted independently of her husband, who was a man but of moderate capacity.

Her first step was to ingratiate herself with the people by some popular acts, and particularly by punishing the instruments of her father's cruelties. One of these, Oliver le Dian, who, from the humble station of barber, had raised himself to the confidence and favour of the king, and had distinguished himself by the invention of new modes of torture, was publicly hanged. Another, named Jean Doyac, who by continual acts of violence and rapacity had oppressed the people, after being whipped in all the public places and squares of Paris, was condemned to have one of his ears cut off, and his tongue pierced through with a hot iron; upon which he was conveyed to his native city of Montferrand, where he was again whipped, and had his other ear cut off. Jacques Coitier, the physician of Louis, who had availed himself of the terror of death, with which the king was strongly influenced, to extort large sums of money from him, was ordered to account for the immense wealth he had acquired; but he prudently averted the danger by paying a fine of fifty thousand crowns. Thus the Lady of Beaujeu secured the affection of the people at large, and was equally successful in gaining those who had at first been averse to her government. The Duke of Bourbon was made constable, an office which he had long desired; the Duke of Orleans having behaved in such a manner as to exclude all hopes of favour. Incensed at the determination against him of a trifling dispute at tennis by the Lady of Beaujeu, he furiously had exclaimed, that whoever had decided in that manner was a liar if a man, or a strumpet if a woman. After this insolent declaration he fled to the castle of Beaujency, where, however, he was soon forced to surrender. He then applied to Henry VII. who had newly ascended the throne of England; but that prince, naturally cautious and deliberate, paid little attention to his application. On this he next made application to the court of Bretagne, where he was received with great marks of esteem, and began to entertain hopes of marrying the daughter of the duke; but he was looked upon with a jealous eye by the nobility, who entered into secret negotiations with Anne, and even solicited her to invade the country, stipulating that only a certain number of troops should enter the province, and that no fortified place should remain in the hands of the French; conditions which were indeed agreed to by the regent, though she determined to keep them no longer than it suited her purpose so to do. Bretagne was therefore invaded by four armies, each superior to the stipulated number, who quickly made themselves masters of the most important places in the country; whilst the troops of the duke retired in disgust, leaving the invaders to pursue their conquests as they pleased. Finding, however, that the entire subjection of their country was determined upon, the nobility at last began to exert themselves in its defence, and, inflamed by the enthusiasm of liberty, they raised an army of sixty thousand men, by which the French were compelled to abandon the siege of Nantes. But this proved only a transient gleam of success. Anne persevered in her design of completing the conquest of the country, and the state of Europe was at that time favourable to the design. Of all the European nations, England alone was then capable of affording effectual assistance; but the slow caution of Henry prevented him from giving the aid which in this case he ought to have afforded. The Bretons were thus left to defend themselves as they best could; and having ventured a battle, they were entirely defeated, most of their leaders being taken prisoners, whilst a small body of English who assisted them were entirely cut to pieces. The duke soon afterwards died by a fall from his horse, leaving his dominions to his daughter Anne, at that time only thirteen years of age. A marriage was now negotiated between this princess and Maximilian king of the Romans, who had previously been married to Mary of Burgundy; but, by reason of the poverty of that prince, it was never completed. The Lady of Beaujeu then determined to conclude a marriage between the young king of France and the duchess, though the former had already been married to Margaret of Austria, the daughter of Maximilian. But this marriage was not consummated, by reason of the tender age of the princess, who had been sent to Paris for her education, and for several years treated as queen of France; and in 1491 Margaret was returned, like rejected goods, to her father. Anne of Bretagne, however, long refused to violate the engagement into which she had entered; but at last, finding herself pressed on all sides, and incapable of resisting the numerous forces of France, she reluctantly consented to the match. Maximilian, whose proverty had prevented him from giving any assistance to his bride, or even from coming to see her, enraged at the double disgrace which he had suffered, began, when too late, to bethink himself of revenge. France was now threatened with an invasion by the united forces of Austria, Spain, and England. But this formidable confederacy was soon dissipated. Henry, whose natural avarice had induced him to withhold the necessary assistance, was bought off with the immediate payment of 745,000 crowns, and the promise of 25,000 annually ever afterwards; Ferdinand king of Spain had the counties of Roussillon and Cerdagne restored to him; whilst Maximilian was gratified by the cession of that part of Artois which had been acquired by Louis XI.

The young king of France agreed to these terms the more readily, that he was impatient to undertake an expedition into Italy, in order to conquer the kingdom of Naples, to which he laid claim. Most of his counsellors were opposed to this expedition; but the king was inflexible, even though Ferdinand king of Naples offered to do homage for his kingdom, and to pay him a tribute of fifty thousand crowns a year. He appointed the Duke of Bourbon regent in his absence, and then set out for Italy, with few troops, and but little money. On the march he fell ill of the small-pox, but in a short time recovered, and having entered Italy with a force of twelve thousand foot and six thousand horse, the greater part of which consisted of regular troops, he obtained the most surprising success, traversing the whole country in six weeks, and rendering himself master of the kingdom of Naples in less than a fortnight. To vulgar observers, his extraordinary good fortune seemed miraculous; and he was reckoned an instrument raised up by God to destroy the execrable tyrants by which Italy was at that time afflicted; and had Charles availed himself of this prepossession in his favour, and acted up to the character generally ascribed to him, he might have raised his name as high as that of any hero of antiquity. But his conduct was of a very different description. Instead of following up his successes, he amused himself with feasts and shows, leaving his power in the hands of favourites, who abandoned it to such as chose to purchase titles, places, or authority, at the rates imposed; and the whole force he proposed to leave in his newly conquered dominions amounted to no more than four thousand men. But whilst Charles was thus idly losing precious time, a league was forming against him at Venice, to which the pope, the emperor Maximilian, the archduke Philip, Ludovico Sforza, and the Venetians, were all parties. The confederates assembled an army of forty thousand men, commanded by Francis marquis of Mantua, and waited for the king in the valley of Fornova, in the duchy of Parma, into which he had descended with nine thousand men. On the 6th of July 1495 he attacked the allies, and, notwithstanding their great superiority of numbers, defeated them, with but little loss on his part. By this victory he got safe to France; but his Italian dominions were lost almost as soon as he departed. Some schemes were proposed for recovering these conquests, but they were never put in execution; and the king died of an apoplexy in 1498.

Louis XII.

By the death of Charles VIII. the crown of France passed from the direct line of the house of Valois, and Louis duke of Orleans succeeded to the throne. At the time of his accession he was in his thirty-sixth year, and had long been taught prudence in the school of adversity. During the administration of the Lady of Beaujeu he had been constantly in disgrace, and, after his connections with the Duke of Bretagne, had spent a considerable time in prison; and though afterwards set at liberty by Charles, he had never possessed any share of that monarch's confidence or favour. Towards the close of the preceding reign he fell under the displeasure of the queen; and afterwards continued at his castle of Blois till he was called thence to take possession of the throne. He had been married in early life, against his will, to Jane, the youngest daughter of Louis XI. a princess of an amiable disposition, but deformed in person, and supposed to be incapable of bearing children. He afterwards entertained thoughts of having his marriage dissolved, and was supposed to possess the affections of the Duchess of Bretagne before she became queen of France. After the death of her husband, that princess retired to Bretagne, where she pretended to assume independent sovereignty; but Louis having got his marriage with Jane dissolved by Pope Alexander VI. made proposals to the queen dowager, which were accepted without hesitation, though it was stipulated that, if she had two sons, the younger should inherit the duchy of Bretagne.

As Louis, while Duke of Orleans, had some pretensions to the crown of Naples, he now set about realizing them by conquest, and found circumstances favourable to his design. The pope, Alexander VI. was devoted to his interests, in the hope of getting his son Cæsar Borgia provided for. Louis had conciliated the friendship of the Venetians by promising them a part of the Milanese; he had also concluded a truce with the archduke Philip, and renewed his alliances with the crowns of England, Scotland, and Denmark. He then entered Italy with an army of twenty thousand men; and, being assisted by the Venetians, conquered one part of the duchy, whilst they conquered the other, the archduke himself being obliged to fly with his family to Inspruck. He then attacked Ferdinand of Spain with three armies simultaneously; but as none of these performed any thing remarkable, he was obliged to evacuate the kingdom of Naples in 1504. But in 1506 the people of Genoa revolted, drove out the nobility, chose eight tribunes, and declared Paul Nuova, a silk dyer, their duke; after which they expelled the French governor, and reduced a great part of the Riviera. This induced Louis to return into Italy, where, in 1507, he obliged the Genoese to surrender at discretion, and in 1508 entered into a league with the other princes who at that time desired to reduce the overgrown power of the Venetians. But Pope Julius II. who had been the first contriver of this league, soon repented of his contrivance, and declared that if the Venetians would restore the cities of Faenza and Rimini, which had been unjustly taken from him, he would be contented. This was refused, and in 1509 the forces of the republic received an entire defeat from Louis, in consequence of which they agreed to restore not only the two cities demanded by Pope Julius, but whatever else the allies required. The pope, instead of executing his treaties with his allies, made war on the king of France. Upon this Louis convoked an assembly of his clergy, at which it was determined that in some cases it was lawful to make war upon the pope. The king therefore declared war against his holiness, and committed the command of his army to the Marshal de Trivulce, who soon obliged the pope to retire to Ravenna. In 1511, Gaston de Foix, duke of Nemours, gained a great victory at Ravenna, but was himself killed in the engagement. After his death the army was disbanded for want of pay; and the French affairs in Italy, and indeed everywhere else, fell into great confusion. The duchy of Milan was recovered and lost again in a few weeks. Henry VIII. of England invaded France, and took Terruenne and Tournay; whilst the Swiss invaded Burgundy with an army of twenty-five thousand men. In this desperate situation of affairs the queen died, and Louis put an end to the opposition of his most dangerous enemies by negotiating marriages. To Ferdinand of Spain he offered his second daughter for either of his grandsons, Charles or Ferdinand, and promised to renounce, in favour of that marriage, his claims on Milan and Genoa. This proposal was accepted; and Louis himself married the princess Mary, sister of Henry VIII. of England. But he did not long survive this marriage; and having died on the 2d of January 1514, he was succeeded by Francis I. count of Angoulême and duke of Bretagne and Valois.

Francis I.

The new king had no sooner been seated on the throne than he resolved to undertake an expedition into Italy. In this he was at first successful, having defeated the Swiss at Marignon, and reduced the duchy of Milan. In 1518 the emperor Maximilian having died, Francis showed himself ambitious of becoming his successor, and thereby restoring to France a splendid title which had been so long lost. But Maximilian, before his death, had exerted himself so much in favour of Charles V. of Spain, that Francis found it impossible to succeed; and from that time an irreconcilable hatred took place between these two monarchs. In 1521 this bad feeling produced a war, which, however, might perhaps have been terminated, if Francis could have been prevailed upon to restore the town of Fontarabia, which had been taken by his admiral Bonivet. But this being refused, hostilities were renewed with greater vigour than ever; nor were they concluded till France had been brought to the very brink of destruction. The war was continued with various success until the year 1524, when Francis having invaded Italy, and laid siege to Pavia, was utterly defeated before that city, and taken prisoner, on the 24th of February. This disaster threw the whole kingdom into the utmost confusion. The Flemish troops made continual inroads; many thousand boors assembled in Alsace, in order to invade the country from that quarter; Henry VIII. had assembled an army, and also threatened France on the side of the Channel; and a party was formed in the kingdom to dispossess the duchess of the regency, and confer it upon the Duke de Vendôme. This prince, however, who after the constable was the head of the house of Bourbon, proceeded to Lyons, where he assured the regent that he had no view but for her service and that of his country; and he then formed a council of the ablest men of the kingdom, of which the queen appointed him president. Henry VIII. acting under the influence of Cardinal Wolsey, resolved not to oppress the oppressed, and therefore assured the regent that she had nothing to fear from him; at the same time that he advised her not to consent to any treaty by which France was to be dismembered. To the emperor, however, he is said to have held different language, telling him that the time had now arrived when this puissant monarchy lay at their mercy, and that therefore an opportunity so favourable should not be lost; that, for his part, he would be content with Normandy, Guienne, and Gascony; that he trusted the empire would make no scruple of owning him as king of France; and that he expected the emperor would make a right use of his victory, by entering Guienne in person, in which case he was ready to bear half the expenses of the war. Alarmed at these proposed conditions, and not caring to have Henry as a neighbour, the emperor agreed to a truce with the regent for six months. In Picardy the Flemings were repulsed; whilst the Count de Guise and the Duke of Lorraine, with a handful of troops, defeated and cut to pieces the German peasants.

In the mean time Francis was detained a captive in Italy; but being wearied of his confinement in that country, and the princes of Italy having begun to cabal for his deliverance, he was carried to Madrid, where, on the 14th of January 1525, he signed a treaty, the principal articles of which were, that he should resign to the emperor the duchy of Burgundy in full sovereignty; desist from the homage which the emperor owed him for Artois and Flanders; renounce all claim to Naples, Milan, Asti, Tournay, Lisle, and Hesdin, and certain other places; persuade Henry d'Albert to resign the kingdom of Navarre to the emperor, or at least to give him no assistance; restore within forty days the Duke of Bourbon and all his party to their estates; pay the king of England five hundred thousand crowns which the emperor owed him; and, when the emperor went to Italy to receive the imperial crown, to lend him twelve galleys, four large ships, and a land force, or instead of it two hundred thousand crowns. All these articles the king of France promised on the faith and honour of a prince to execute, or, in case of non-performance, to return as a prisoner into Spain. But, notwithstanding these professions, Francis had already protested, before certain notaries and witnesses in whom he could confide, that the treaty he was about to sign was compulsory, and therefore null and void. On the 21st of February the emperor released him from his prison, in which he had been closely confined ever since his arrival in Spain; and, after receiving from his own lips the strongest assurances that he would literally fulfil the terms of the treaty, sent him under a strong guard to the frontiers, where he was exchanged for his two eldest sons, who were to remain as hostages for his fidelity.

But when the king returned to his dominions, his first care was to get himself absolved by the pope from the oaths which he had taken; and when this had been accomplished, he entered into a league with the pontiff, the Venetians, the Duke of Milan, and the king of England, for preserving the peace of Italy. In the month of June he received publicly remonstrances from the states of Burgundy, in which they told him without ceremony, that by the treaty of Madrid he had done what he had no right to do, in breach of the laws and his coronation oath; and that if he persisted in his resolution of placing them under a foreign yoke, they must appeal to the general states of the kingdom. The viceroy of Naples and the Spanish ministers were present at these remonstrances, and, perceiving the end at which the king aimed, expostulated with him in pretty warm terms. The viceroy, in fact, told him that he had now nothing left but to keep his royal word in returning to the castle of Madrid, as his predecessor John had done in a similar case. To this Francis replied, that John acted rightly, because he returned to a king who had treated him like a king; but that at Madrid he had received such usage as would have been unbecoming to a gentleman, and he had often declared to the emperor's ministers that the terms they extorted from him were unjust and impracticable. However, he was still willing to do all that was fit and reasonable, and to ransom his sons at the rate of two millions of gold in lieu of the duchy of Burgundy.

Hitherto the treaty for tranquillizing Italy had been kept secret, in hopes that some mitigation of the treaty of Madrid would have been obtained; but now it was judged expedient to publish it, though the viceroy of Naples and the Spanish lords still remained at the French court. The emperor was to be admitted as a party to this treaty, provided he accepted the king's offer of two millions for the release of his children, and left the Duke of Milan and other Italian princes in quiet possession of their dominions. But it is the common misfortune of all leagues, that the powers which enter into them keep only their own particular interests in view, and thus defeat the general intention of the confederacy. In the present instance, the king's great aim was to obtain his children upon the terms he had proposed; and he was desirous of knowing what hopes there were of accomplishing that object, before he acted against the monarch who had them in his power. Thus the Duke of Milan and the pope were both sacrificed. The former was obliged to surrender to the Duke of Bourbon, and the latter was surprised by the Colonnas; disasters which would have been prevented if the French succours had entered Italy in time. See ITALY.

According to an agreement which had been entered into between Francis and Henry, their ambassadors entered Spain, attended each of them by a herald, to summon the emperor to accept the terms which had been offered him, or in case of refusal to declare war. But as the emperor's answer was foreseen in the court of France, the king had previously called together an assembly of the Notables, to whom he proposed the question, whether he was bound to perform the treaty of Madrid? or whether, if he did not perform it, he was obliged in honour to return to Spain? To both these questions the assembly answered in the negative, declaring that Burgundy was united to the crown of France, and could not be separated by the king's own authority; that his person also was the property of the public, of which therefore he could not dispose; but as to the two millions, which they looked upon as a just equivalent, they undertook to raise it for his service. When the ambassadors delivered their propositions, Charles treated the English herald with respect, and the French herald with contempt; a circumstance which induced Francis to challenge the emperor. But all differences were at length adjusted, and a treaty concluded at Cambray on the 5th of August 1528. By this treaty, instead of actual possession, the emperor contented himself with reserving his right to the duchy of Burgundy, and the payment of the two millions of crowns already mentioned. Of these, he was to receive one million two hundred thousand in ready money; the lands in Flanders belonging to the house of Bourbon, valued at four hundred thousand, were to be delivered up; and the remaining four hundred thousand were to be paid by France in discharge of the emperor's debt to England. Francis was likewise to pay the penalty of five hundred thousand crowns which the emperor had incurred by not marrying his niece the Princess Mary of England, and further to release a rich jewel which many years before had been pawned by the house of Burgundy for fifty thousand crowns. The town and castle of Hesdin were also surrendered, together with the sovereignty of Flanders and Artois, and all the king's pretensions in Italy. As for the allies of France, they were, as usually happens, abandoned to the emperor's mercy, without the least stipulation in their favour; but Francis consoled himself for this disgraceful dereliction by protesting against the validity of the treaty before he ratified it, as did also his attorney-general before he registered it in parliament, though in both instances with the greatest secrecy imaginable. The remainder of this reign was not distinguished by any events of consequence. The war was renewed by Charles, who invaded France, though without success; nor was peace fully established until the death of the French king, which happened on the 3d of March 1547.

Henry II.

Francis was succeeded by his son Henry II. who ascended the throne at the age of twenty-nine. In the beginning of his reign an insurrection broke out in Guienne, owing to the oppressive conduct of the officers who levied the salt-tax, and was not put down without considerable difficulty. In 1548 the king began to enforce the edicts issued against the Protestants with the utmost severity; and, thinking even the clergy too mild in the prosecution of heresy, he for that purpose erected a chamber composed of members of the parliament of Paris. At the queen's coronation, which happened this year, he caused a number of Protestants to be burned, and was himself present at the horrid spectacle, which, however, shocked him so much that he never forgot it. In 1549 a peace was concluded with England, and Henry purchased from the latter Boulogne, for the sum of four hundred thousand crowns, one half to be paid on the day of restitution, and the other half a few months afterwards. Scotland was included in the treaty, and the English restored some places which they had taken in that country. This was the most advantageous peace which France had hitherto concluded with England; the vast arrears due to that crown being in effect remitted, and the pension, which looked so like tribute, being tacitly extinguished. The Earl of Warwick himself, who had concluded the peace, was in fact so sensible of the disgrace suffered by this nation on this occasion, that he pretended to be sick, in order to avoid setting his hand to so scandalous a compact. This year, also, an edict was made to restrain the extravagant remittances which the clergy had been in use to make to Rome, and for correcting other abuses committed by the papal notaries. With this edict Pope Julius III. was highly displeased; and the following year, 1550, war was declared by the king of France against the pope and the emperor, on the ground that Henry protected Octavio Farnese, duke of Parma, whom the pope was desirous of depriving of his dominions. In this war the king was threatened with the censures of the church; but as the emperor soon found himself in such danger from these new enemies, that he could not support the pope as he intended, the latter was obliged to sue for peace. Henry continued the war against the emperor with success; and having reduced the cities of Toul, Verdun, and Metz, entered the country of Alsace, and reduced all the fortresses between Hagenau and Wissenburg. He failed, however, in his attempt on Strasburg; and was soon afterwards obliged by the German princes and the Swiss to desist from all further conquests on that side. This war continued with little interruption, and but small success upon the part of the French, till the year 1557, when a peace was concluded; and soon afterwards the king was killed at a tournament by the Count de Montgomery, one of the strongest knights in France, who had done all he could to avoid this encounter.

The reign of his successor Francis II. was remarkable only for the persecution of the Protestants, which became so grievous that they were obliged to take up arms in their own defence. This occasioned several civil wars, the first of which commenced in the reign of Charles IX. who succeeded to the throne in 1560. This contest continued until the year 1562, when a peace was concluded, by which the Protestants were to have a complete amnesty, and enjoy entire liberty of conscience. But in 1565 the war broke out afresh, and was continued with little interruption until 1569, when peace was again concluded, upon terms advantageous to the Protestants.

Charles IX.

After this, Charles, who had now taken the government into his hands, caressed and flattered the Protestants in an extraordinary manner. Their destruction had been resolved on, but as they were too powerful to be openly attacked, it was judged necessary to lull them into security by means of systematic dissimulation, and to fall upon them when off their guard. With this view the king invited to court Admiral de Coligni, the head of the Huguenot party, and so effectually cajoled him, that the gallant veteran was lulled into a fatal security, notwithstanding the warnings given by his friends that the king's fair speeches were by no means to be trusted. And he had soon reason to repent his confidence. On the 22d of August 1571, as he was returning from court to his lodgings, he received a shot from a window, which carried away the second finger of his right hand, and wounded him grievously in the left arm. This he himself ascribed to the malice of the Duke of Guise, the head of the Catholic party. After dinner, the king went to pay him a visit, and amongst other things observed, "you have received the wound, but it is I who suffer;" at the same time desiring that he would order his friends to establish themselves around his residence, and promising to prohibit the Catholics from entering that quarter after dark. This satisfied the admiral of the king's sincerity, and prevented him from complying with the wishes of his friends, who desired to carry him away, and were strong enough to have forced a passage out of Paris if they had attempted it.

In the evening of the same day, the queen-mother, Catharine de' Medicis, held a cabinet council to fix the execution of the massacre of the Protestants, which had long been meditated. The persons of whom this council was composed, were Henry duke of Anjou, the king's brother; Gonzagua duke of Nevers; Henry of Angoulême, grand prior of France, the bastard brother of the king; Marshal de Tavannes; and Albert de Gondi, count de Retz: and the direction of the whole was intrusted to the Duke of Guise, to whom the administration had during the former reign been entirely confided. The guards were appointed to be in arms, and the city officers were ordered to predispose the militia to execute the king's orders, of which the signal was to be the ringing of a bell near the Louvre. It is said, indeed, that when the fatal hour, which was that of midnight, approached, the king grew undetermined, and expressed great horror at the idea of shedding so much blood, especially considering that the people about to be destroyed were his subjects, who had come to the capital at his command, and in dependence on his word, and particularly the admiral, whom he had so lately detained by his caresses. The queen-mother, however, reproached him with cowardice, and representing to him the danger which he incurred from the Protestants, at last induced him to consent. According to others, the king himself urged on the massacre, and, when it was proposed to him only to take off a few of the leaders, exclaimed, "If any are to die, let there not be one left to reproach me with breach of faith."

As soon as the signal had been given, a body of Swiss troops, headed by the Duke of Guise and the Chevalier d'Angoulême, accompanied by many persons of quality, attacked the admiral's house; and having forced open the doors, the foremost of the assassins rushed into the apartment. One of them asked if he was Coligni; to which he answered that he was, adding, "Young man, respect these gray hairs." The assassin replied by running him through the body with a sword. The Duke of Guise and the chevalier growing impatient below stairs, loudly demanded if the business was done; and being answered in the affirmative, commanded the body to be thrown out at the window. As soon as it fell on the ground, the chevalier, or, as some say, the Duke of Guise, wiped the blood from the face, and kicked it with his foot. The body was then abandoned to the fury of the populace, who, after a series of indignities, dragged it to the common gallows, to which they chained it by the foot, whilst the head, being cut off, was carried to the queen-mother, who, it is said, caused it to be embalmed and transmitted to Rome. The king himself went to see the body hanging upon the gibbet, where a fire being kindled under it, part was burned, and the rest scorched. In the Louvre, the gentlemen belonging to the king of Navarre and the prince of Condé were murdered under the king's own eye. Two of them, wounded and pursued by the assassins, fled into the bedchamber of the queen of Navarre, and jumped upon her bed, beseeching her to save their lives; and as she proceeded to solicit this favour of the queen-mother, two more, under the same circumstances, rushed into the room, and threw themselves at her feet. The queen-mother repaired to the window to enjoy these dreadful scenes; and the king, seeing the Protestants who lodged on the other side of the river flying for their lives, called for his long gun, and fired upon them. In the space of three or four days many thousands were destroyed in the city of Paris alone. Peter Ramus, professor of philosophy and mathematics, after being robbed of all he had, was cruelly mutilated in the abdomen, and thrown from a window. During the first two days, the king denied that the massacre was done by his orders, and threw the whole blame upon the house of Guise; but on the 28th of August he went to the parliament, avowed the incomparable atrocity, was complimented on it, and directed a process against the admiral, by which he was stigmatized as a traitor. Two innocent gentlemen suffered as his accomplices in a pretended plot against the life of the king, in order, as was alleged, to place the crown on the head of the prince of Condé. They were executed by torch light; and the king and the queen-mother, together with the king of Navarre and the prince of Condé, who were forced to be present, were spectators of the horrid deed. Nor was the massacre confined to the city of Paris alone. On the eve of St Bartholomew, orders had been sent to the governors of provinces, either to fall upon the Protestants themselves, or to let loose the people on them; and though an edict was published before the end of the week, assuring them of the king's protection, and protesting that he by no means designed to exterminate them on account of their religion, yet private orders were issued of a directly contrary nature, in consequence of which the Matins of Paris were repeated in Meaux, Orleans, Troyes, Angers, Toulouse, Rouen, and Lyons; so that in the space of about two months thirty thousand Protestants were butchered in cold blood[1] The next year Rochelle, the only fortress which the Protestants occupied in France, was besieged and taken, but not until twenty-four thousand of the besiegers had fallen before its walls. After this a pacification ensued, on terms nominally favourable to the Protestants; but as a body they had been destroyed; St Bartholomew had completely broken their power; and those who survived the massacre had no alternative but to accept whatever terms were offered them.

This year the Duke of Anjou was elected king of Poland, and soon afterwards set out to take possession of his new kingdom. Charles accompanied him to the frontiers; but during the journey he was seized with a slow fever, which from the commencement portended death. He lingered for some time under the most terrible agonies both of mind and body; and at last expired on the 30th of May 1572. It is said that ever after the massacre of St Bartholomew, this prince had a fierceness in his looks, and a deadly paleness in his cheeks; he slept little, but never soundly, and waked frequently in agonies, which the soft music employed to lull him into repose often failed to allay. The sting of remorse was deeply infixed in his soul, and in a little time its poison drank up his spirit.

Henry III.

During the first years of the reign of Henry III. who succeeded his brother Charles IX. the war with the Protestants was carried on with indifferent success upon the part of the Catholics. In 1575 a peace was concluded, which by way of eminence was called the Edict of Pacification. The treaty consisted of no fewer than sixty-three articles, the substance of which was, that liberty of conscience, and the public exercise of religion, were granted to the reformed, without any restriction except that they were not to preach within two leagues of Paris, nor in any other part where the court might be. The judgments against the admiral, and others who had either fallen in the war or been executed, were also reversed; and eight cautionary towns were given up to the Protestants.

This edict induced the Guises to form an association in defence (as was pretended) of the Catholic religion, which afterwards became known by the name of the Catholic League. This confederacy, though the king was mentioned with respect, struck at the very root of his authority; for, as the Protestants had their leaders, so the Catholics were in future to be entirely dependent on the chief of the league, and to execute whatever he commanded, for the good of the cause, without exception of persons. In order to neutralize the bad effects of this association, the king, by the advice of his council, declared himself the head of the league; and in this character he recommenced the war against the Protestants, which was not extinguished as long as he lived. In the mean time the faction of the Duke of Guise resolved to support Charles cardinal of Bourbon, a weak old man, as presumptive heir of the crown; and having entered into a league with Spain, they in 1584 took up arms against the king; and though peace was concluded the same year, yet in 1587 they again proceeded to such extremities that the king was forced to fly from Paris. Another reconciliation was soon afterwards effected; but it is generally believed that the king from this time resolved on the destruction of the Duke of Guise. Accordingly, finding that this nobleman still behaved with his usual haughtiness, the king caused him to be stabbed by his guards on the 23d of December 1587. But Henry himself did not long survive this deed, being stabbed by one Jacques Clement, a Jacobin monk, on the first of August 1588. His wound was not at first thought mortal; but his frequent swooning quickly discovered his danger, and he died the following morning, in the thirty-ninth year of his age and sixteenth of his reign.

Henry IV.

Before the king's death he had nominated Henry Bourbon, king of Navarre, as his successor on the throne of France; but as the latter was a Protestant, or at least one who greatly favoured their cause, he was at first owned by very few except those of the Protestant party. He met with the most violent opposition from the members of the Catholic League, and was often reduced to such extremities that he went to people's houses under colour of visits, when in reality he had not a dinner in his own. By his activity and perseverance, however, he was at last acknowledged by the whole kingdom, a consummation to which his abjuration of the Protestant religion not a little contributed. As the king of Spain had laid claim to the crown of France, Henry no sooner found himself in a fair way of being firmly seated on the throne, than he formally declared war against that kingdom; and having proved successful, he, in 1597, entered upon the quiet possession of his kingdom.

The king's first care was to put an end to the religious disputes which had so long distracted the kingdom. For this purpose he passed the famous edict, dated at Nantes, 13th April 1598, which re-established in a solid and effectual manner all the favours which had been granted to the reformed, and added some which had not been thought of before, particularly that of allowing them a free admission to all employments of trust, profit, and honour, establishing chambers in which the members of the two religions were equal, and the permitting their children to be educated without restraint in any of the universities. Soon afterwards he concluded peace with Spain upon advantageous terms; an event which afforded him an opportunity of restoring order and justice throughout his dominions, repairing the ravages occasioned by the civil war, and abolishing all those innovations which had been made, either to the prejudice of the prerogatives of the crown or the welfare of the people. His schemes of reformation, indeed, he intended to have carried much beyond the boundaries of France. If we may believe the Duke of Sully, he had in view no less a design than the new-modelling of all Europe. He imagined that the European powers might be formed into a kind of Christian republic, by rendering them as nearly as possible of equal strength; and that this republic might be maintained in perpetual peace, by bringing all their differences to be decided before a senate of wise, disinterested, and able judges. The number of these powers was to be fifteen, the Papacy, the empire of Germany, France, Spain, Hungary, Great Britain, Bohemia, Lombardy, Poland, Sweden, Denmark, the republic of Venice, the States General, the Swiss Cantons, and the Italian commonwealth, comprehending the states of Florence, Genoa, Lucca, Modena, Parma, Mantua, and Monaco. In order to render the states equal, the empire was to be given to the Duke of Bavaria; the kingdom of Naples to the pope; that of Sicily to the Venetians; Milan to the Duke of Savoy, who, by this acquisition, was to become king of Lombardy; the Austrian Low Countries were to be added to the Dutch republic; and Franche Comté, Alsace, and the country of Trent, were to be given to the Swiss. With the view, it is now thought, of executing this grand project, but under pretence of reducing the exorbitant power of the house of Austria, Henry made immense preparations both by sea and land; but if he really entertained such a design, he was prevented by death from attempting its execution. He was stabbed in his coach by Ravaillac, on the 12th of May 1608.

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[1] Dr Lingard has in vain attempted to extenuate the guilt and dispute the leading facts of this atrocious massacre. All his learning and ingenuity have been foiled in the attempt; and the result of his controversy with Mr Allen has only been to confirm and settle general belief on the subject. The "Vindication" of the able writer last mentioned is a masterpiece of historical research and strong reasoning.

Louis XIII.

On the death of Henry IV. the queen-mother assumed the regency. Ravaillac was executed, after suffering the most exquisite tortures. It is said that he made a confession, which was so written by the person who took it, that not a word of it could be read, and thus his instigators and accomplices were never discovered. The regency, during the minority of Louis XIII. was only remarkable for the cabals and intrigues of the courtiers. In 1617 the king assumed the government, banished the queen-mother to Blois, caused Marshal d'Ancre, her favourite, to be put to death, and chose as his minister the celebrated Cardinal Richelieu. In 1620 a new war broke out between the Catholics and Protestants, which was carried on with the greatest fury on both sides. Of this we have an instance in what took place at Negreplisse, a town in Quercy. This place was besieged by the king's troops, and it was resolved to make an example of the inhabitants, who had absolutely refused to surrender upon any terms. They defended themselves with desperate valour; and when at last the city was taken by storm, they were all massacred, without distinction of rank, sex, or age. But both parties soon became weary of so destructive a war; and a peace was concluded in 1621, by which the edict of Nantes was confirmed. This treaty, however, was not of long duration. A new war broke out, which lasted till the year 1628, when the edict of Nantes was again confirmed; but the Protestants were deprived of their cautionary towns, and consequently of the power of defending themselves in time to come. This put an end to the civil wars on account of religion, in which a million of men lost their lives, 150,000,000 livres were expended, and nine cities, four hundred villages, two thousand churches, two thousand monasteries, and ten thousand houses, were burned or otherwise destroyed. The next year the king was attacked with a slow fever, extreme depression of spirits, and swelling in the stomach and abdomen. But the year following he recovered, to the great disappointment of his mother, who had hopes of regaining her power. Meanwhile Richelieu, by a masterly system of policy, supported the Protestants of Germany and Gustavus Adolphus against the house of Austria; and, after suppressing all the rebellions and conspiracies which had been formed against him in France, died some months before Louis XIII. in 1643.

Louis XIV.

Louis XIV. surnamed the Great, succeeded to the throne of France when he was only five years of age. During his minority, the kingdom, under the administration of his mother, Anne of Austria, was thrown into confusion by the factions of the great, and the divisions between the court and parliament. The prince of Condé blazed like an erratic star; sometimes a patriot, sometimes a courtier, sometimes a rebel. He was opposed by Turenne, who from being a Protestant had become Catholic. The kingdom of France was involved both in civil and domestic wars; but the queen-mother having made choice of Cardinal Mazarin as her first minister, the latter found means to turn the arms even of Cromwell against the Spaniards, and so effectually divided the domestic enemies of the court, that when Louis assumed the reins of government he found himself the most absolute monarch who had ever sat upon the throne of France. On the death of Mazarin he had the good fortune to put the administration of affairs into the hands of Colbert, a minister who formed new systems for improving the commerce and manufactures of France, which he carried to a surprising height of prosperity. The king himself, vain and selfish, was blind to every patriotic duty, promoting the interests of his subjects only that they might the better answer the purposes of his greatness; and, actuated by an overweening ambition, embroiled himself with all his neighbours, and wantonly rendered Germany a scene of devastation. By his impolitic and unjust revocation of the edict of Nantes in the year 1685, with the dragonade which followed it, he obliged the Protestants to take shelter in England, Holland, and different parts of Germany, where they established the silk manufacture, to the great prejudice of their own country. He was so blinded by flattery, that he arrogated to himself the heathen honours paid to the emperors of Rome; he made and violated treaties for his convenience; and in the end raised up against himself a confederacy of almost all the princes of Europe, at the head of which was King William III. of England. He was so well served, however, that for some years he made head against this alliance; and France seemed to have attained the highest pitch of military glory. But having provoked the English by his repeated perfidy, their arms under the Duke of Marlborough, and those of the Austrians under Prince Eugene, rendered the latter part of his life as miserable as the beginning of it had been splendid. From 1702 to 1711 his reign was one continued series of defeats and disasters; and he had the mortification of seeing those places reduced, which in the former part of his reign were acquired at an enormous expense of blood and treasure. But when Marlborough and Eugene were preparing to invade France at the head of their victorious troops, and to march directly to the capital, Louis, now tottering on the verge of destruction, was saved from ruin by the English Tory ministry deserting the cause, withdrawing from their allies, and concluding the inglorious peace of Utrecht in 1713. (See article Britain.) The last years of Louis were also embittered by domestic misfortunes, which, added to those of a public nature which had befallen him, impressed him with a deep melancholy. He had been for some time afflicted with a fistula, which, though successfully cut, ever afterwards affected his health. The year before the peace was concluded, his only son, the Duke of Burgundy, died; a blow which was the more severely felt because it admitted of no alleviation. The king himself survived till the month of September 1715, when he expired, leaving the kingdom to his grandson Louis, then a minor. The reign of Louis XIV. is considered as the Augustan age of French literature.

Louis XV.

By the last will of Louis XIV. the regency during the minority of the young king devolved upon a council, at the head of which was the Duke of Orleans. That nobleman, however, disgusted with an arrangement which gave him only a casting vote, appealed to the parliament of Paris, who set aside the will of the late king, and declared him sole regent. His first acts were extremely popular, and gave a favourable impression of his government and character. He restored to the parliament the right which had been taken from them of remonstrating against the edicts of the crown, and compelled those who had enriched themselves during the former reign to restore their ill-gotten wealth. He also took every method to efface the calamities occasioned by the unsuccessful wars in which his predecessor had engaged; promoted commerce and agriculture; and, by a close alliance with Great Britain and the United Provinces, seemed anxious to lay the foundation of lasting tranquillity. But this happy prospect was soon overcast by the intrigues of Alberoni the Spanish minister, who had formed a design of recovering Sardinia from the emperor, and Sicily from the Duke of Savoy, and also of establishing the Pretender on the throne of Britain. To accomplish these objects he negotiated with the Ottoman Porte, Peter the Great of Russia, and Charles XII. of Sweden; the Turks were to resume the war against the emperor, and the two latter powers to invade Great Britain. But, as long as the Duke of Orleans retained the administration of France, he found it impossible to bring his schemes into play. To remove this obstacle, therefore, he fomented divisions in the kingdom. An insurrection having taken place in Bretagne, Alberoni sent small parties into the country in disguise to support the insurgents, and even laid plots to seize the regent himself. But the intrigues of the Spanish minister misgave in every direction. His partisans in France were put to death; the king of Sweden was killed at Frederickshall in Norway; the Czar, intent on improving his own institutions, could not be persuaded to make war upon Britain; and the Turks refused to engage in a war with a power from which they had recently suffered so deeply. The cardinal, however, persevered in his intrigues, which soon produced a war between Spain on the one hand, and France and Britain on the other. But the Spaniards, unable to resist the union of two such formidable powers, were soon reduced to the necessity of suing for peace; and the terms were dictated by the regent of France, one of which was the dismission of Alberoni.

The spirit of conquest having now in a great measure subsided, that of commerce came in its stead, and France became the scene of as remarkable a project as ever was known in any country. John Law, a Scotchman, who had found it convenient to leave his own country, formed the plan of a company which by its notes was to pay off the debt of the nation, and reimburse itself by the profits. Law had wandered throughout various parts of Europe, and had successively endeavoured to engage the attention of various courts. The same proposal had been made to Victor Amadeus, king of Sicily; but the latter dismissed Law with the reply, that he was not rich enough to ruin himself. In France, however, it was looked upon in a more favourable light; and as the nation was at this time involved in a debt of two hundred millions, the regent and the people in general were ready to embark in almost any new scheme which might be proposed. The bank thus established proceeded at first with some degree of caution; but having gradually extended its credit to more than eighty times its real stock, it soon became unable to answer the demands made upon it, and the company was dissolved the very same year in which it had been instituted. The confusion into which the kingdom was thrown by this fatal scheme required the utmost exertions of the regent to put a stop to it; and scarcely had this been accomplished when the king, in the year 1723, took the government into his own hands. The duke then became minister, but did not long enjoy this office. His irregularities had broken his constitution, and brought on a number of maladies, under which he in a short time sunk, and was succeeded in the administration by the Duke of Bourbon. The king, as we have already remarked, had been married when young to the infanta of Spain, though by reason of his tender years the marriage had never been completed. This princess, however, had been brought to Paris, and for some time treated as queen of France; but as Louis grew up, it was easy to perceive that he had contracted an inveterate hatred against the intended partner of his bed. The minister, therefore, at last consented that the princess should be sent back; an affront so much resented by the queen her mother, that it had almost produced a war between the two nations. The dissolution of the marriage of Louis was the last act of Condé's administration, and the negotiating a new match was the first act of his successor Cardinal Fleury. The princess pitched upon was the daughter of Stanislaus Leczinski, king of Poland, who had been deposed by Charles XII. of Sweden. This princess was destitute of personal charms, but of an amiable disposition; and though it is probable that she never possessed the affections of her husband, her excellent qualities could not but extort his esteem; whilst the birth of a prince soon after their marriage removed all the fears of the people, if they had any, concerning the succession.

Cardinal Fleury continued the pacific policy pursued by his predecessors, though it was somewhat interrupted by the war which took place in the year 1733. But notwithstanding the connection between the sovereign of Poland and the French nation, Fleury was so parsimonious of his assistance, that only fifteen hundred soldiers were sent to relieve Dantzick, where Stanislaus was at that time besieged by the Russians. This pitiful reinforcement was soon overpowered by the Russians; and Stanislaus was at last obliged to renounce all thoughts of the crown of Poland, though he was permitted to retain the title of king. Fleury so steadily pursued his pacific plans, that the disputes between Spain and England in 1737 but little affected the peace of France; and it should be remembered to his praise, that instead of fomenting quarrels between the neighbouring potentates, he laboured incessantly to maintain peace and concord. He reconciled the Genoese and Corsicans, who were at war; and his mediation was accepted by the Ottoman Porte, which, through his intercession, concluded a treaty with the emperor. But all his endeavours to preserve the general peace proved at last ineffectual. The death of the emperor Charles VI. in 1740, the last prince of the house of Austria, set all Europe in a flame. His eldest daughter, Maria Theresa, claimed the Austrian succession, comprehending the kingdoms of Hungary and Bohemia, the duchy of Silesia, Austrian Suabia, Upper and Lower Austria, Styria, Carinthia, Carniola, the four forest towns, Burgau, Brisgau, the Low Countries, Friuli, Tyrol, the duchy of Milan, and the duchies of Parma and Placentia. Amongst the many competitors who pretended a right to share, or wholly to inherit, these extensive dominions, the king of France was one. But as he cared not to awaken the jealousy of the European princes by preferring directly his own pretensions, he chose rather to support those of Frederick III., who laid claim to the duchy of Silesia. This brought on the war of 1740 (see articles BRITAIN and PRUSSIA), which was terminated in 1748 by the treaty of Aix-la-Chapelle. But Louis, who had secretly meditated a severe vengeance against Britain, only consented to give his aid, that he might have time to repair his fleet, and put himself somewhat more upon an equality with so formidable a power. Meanwhile the internal tranquillity of the kingdom was disturbed by violent disputes between the clergy and parliaments of France. In the reign of Louis XIV. there had been vehement contests between the Jansenists and Jesuits, concerning free will, and other obscure points of theology; and the opinions of the Jansenists had been declared heretical by the celebrated bull *Unigenitus*, the reception of which was enforced by the king, in opposition to the parliaments, the Archbishop of Paris, and the great body of the people. The archbishop, with fifteen other prelates, protested against it as an infringement of the rights of the Gallican church and the laws of the realm, and also as an infringement of the rights of the people themselves. The Duke of Orleans favoured the bull by inducing the bishops to submit to it, but at the same time he stopped a persecution which had been commenced against its opponents. Matters continued in this state until the conclusion of the peace. But a short time afterwards the jealousy of the clergy was awakened by an attempt of the minister to inquire into the wealth of individuals of their order. To prevent this they revived the contest about the bull *Unigenitus*, and it was resolved that confessional notes should be obtained of dying persons; that these notes should be signed by priests who maintained the au-

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thority of the bull; and that, without such notes, no person could obtain the viaticum, or extreme unction. On this occasion the new Archbishop of Paris and the parliament of that city having taken opposite sides, the latter imprisoned such of the clergy as refused to administer the sacraments. Other parliaments followed the example of that of Paris; and a contest was instantly kindled up between the civil and ecclesiastical departments of the state. But the king having interfered in the dispute, forbade the parliaments to take cognizance of ecclesiastical proceedings, and commanded them to suspend all prosecutions relative to the refusal of the sacraments. Instead of acquiescing, however, the parliaments presented new remonstrances, refused to attend to any other business, and resolved that they could not obey this injunction without violating their duty as well as their oath. They cited the Bishop of Orleans before their tribunal, and ordered all writings in which its jurisdiction was disputed to be burned by the executioner. With the assistance of the military they enforced the administration of the sacraments to the sick, and ceased to distribute that justice to the subject for which they had been originally instituted. Enraged at their obstinacy, the king arrested and imprisoned four of the members who had been most obstinate, and banished the remainder to Bourges, Poitiers, and Auvergne; whilst, to prevent any impediment to the administration of justice in their absence, he issued letters patent, by which a royal chamber for the prosecution of civil and criminal suits was instituted. But the counsellors refused to plead before these new courts; and the king, finding that the whole nation was about to fall into a state of anarchy, thought proper to recall the parliament. The banished members entered Paris amidst the acclamations of the inhabitants; and the archbishop, who still continued to encourage the priests in refusing the sacraments, was banished to his seat at Conflans, as were also the Bishops of Orleans and Troyes; and for the present tranquillity was restored to the kingdom.

But the tranquillity thus established was not of long duration. In the year 1756, the parliaments again fell under the displeasure of the king, by their imprudent persecution of those who adhered to the bull *Unigenitus*, and even proceeded so far in this opposition as to refuse to register certain taxes absolutely necessary for carrying on the war. Louis was so provoked at this, that he suppressed the fourth and fifth chambers of inquests, the members of which had distinguished themselves by their opposition to his will. He commanded the bull *Unigenitus* to be respected, and prohibited the secular judges from ordering the administration of the sacraments. On this, fifteen counsellors of the great chamber resigned their offices, and a hundred and twenty-four members of the different parliaments followed their example; and the most grievous discontent pervaded the kingdom. Meanwhile an attempt was made by a fanatic, named Damien, to assassinate the king; and he was actually wounded, though slightly, in the midst of his guards. The assassin was put to the most exquisite tortures, under which he persisted in declaring that he had no intention to kill the king, but that his design was only to wound him, that God might touch his heart, and incline him to restore peace to his dominions. But these expressions, which undoubtedly indicated insanity, had no effect on his judges, who consigned him to one of the most horrid deaths which the ingenuity of man ever invented. This attempt, however, seems to have produced some effect upon the king; for he soon afterwards banished the Archbishop of Paris, who had been recalled, and once more accommodated matters with his parliament.

The unfortunate issue of the war of 1755 had brought the nation to the brink of ruin, when Louis implored the assistance of Spain; and upon this occasion was signed the celebrated Family Compact, by which, with the single exception of the American trade, the subjects of France and Spain were naturalized in both kingdoms, and the enemy of the one sovereign was to be invariably looked upon as the enemy of the other. At this time, however, the assistance of Spain availed but little, for both powers were reduced to the lowest ebb, and the arms of Britain were triumphant in every quarter of the globe. See the article BRITAIN.

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1756–1763.

The peace which was concluded at Paris in the year 1763, though it freed the nation from a most destructive and bloody war, did not restore internal tranquillity. The parliament, eager to pursue the victory which they had formerly gained over their religious enemies, now directed their efforts against the Jesuits, who had obtained and enforced the bull *Unigenitus*. But that once powerful order was now on the brink of destruction. A detestation of its principles, and even of its members, had for some time prevailed; and a conspiracy, formed, or said to have been formed, by this order against the king of Portugal, and from which he narrowly escaped, roused the indignation of Europe, which was still further inflamed by some fraudulent practices of which they had been guilty in France. La Valette, the chief of their missionaries in Martinico, had, ever since the peace at Aix-la-Chapelle, carried on an extensive commerce, insomuch that when the war with Great Britain commenced in 1755, he even aspired to monopolize the whole West India trade. Leonay and Gouffre, merchants at Marseilles, in expectation of receiving from him merchandise to the value of two millions, had accepted bills drawn by the Jesuits to the amount of a million and a half. But unhappily, owing to the vast number of captures made by the British, the returns were not made; in consequence of which the missionaries were obliged to apply to the society of Jesuits at large. But the latter, either ignorant of their true interest, or too tardy in giving assistance, suffered the merchants to stop payment, and thus not only to bring ruin upon themselves, but to involve a great many others in the same calamity. Their creditors demanded indemnification from the society at large, and, upon the refusal of the latter to satisfy them, brought the cause before the parliament of Paris. And that body, again, being eager to avenge itself on such powerful adversaries, carried on the most violent persecutions against them, in the course of which the volume containing the constitution and government of the order itself was appealed to, and produced in court. It then appeared that the order of Jesuits formed a distinct body in the state, submitting implicitly to their chief, who alone was absolute over their lives and fortunes; and it was likewise discovered that, after a former expulsion, they had been admitted into the kingdom upon conditions which they had never fulfilled, and to which their chief had obstinately refused to subscribe; and consequently, that their actual existence in the nation was merely the effect of sufferance. The result was, that the writings of the Jesuits were found to contain doctrines subversive of all civil government, and injurious to the security of the sacred persons of sovereigns; the attempt of Damien against the king was attributed to this body; and every thing seemed to prognosticate their speedy dissolution. At this critical moment, however, the king interfered, and by his royal mandate suspended all proceedings against them for a year. A plan of accommodation was then drawn up, and submitted to the pope and the general of the order; but the latter, by his ill-timed haughtiness, entirely destroyed all hope of reconciliation. The king withdrew his protection, and the parliament redoubled its efforts against them. The bulls, briefs, constitutions, and other regulations of the society, were declared to be encroachments on the public authority, and abuses of government; the society itself was finally dissolved, and its members were declared incapable of holding any clerical or municipal offices; their colleges were seized, their effects confiscated, and the order itself in fact annihilated.

The parliament, having gained this victory, next made an attempt to set bounds to the power of the king himself. They now refused to enregister an edict which Louis had issued for the continuation of some taxes which should have ended with the war, and likewise to conform to another by which the king was enabled to redeem his debts at an inadequate rate. The court attempted to get the edicts enregistered by force, but the parliaments everywhere showed a disposition to resist to the uttermost. In 1766, the parliament of Bretagne having refused the crown a gift of seven hundred thousand livres, were in consequence singled out for royal vengeance; but whilst matters were on the point of coming to extremities, the king thought proper to drop the process altogether, and to publish a general amnesty. The parliaments, however, now affected to despise the royal clemency; a circumstance which exasperated the king so much that he ordered the counsellors of the parliament of Bretagne who had refused to resume the functions of which he deprived them, to be included in the list of those who were to be drafted for militia, which was accordingly done. The parliament of Paris remonstrated so freely against this proceeding that they also fell under the royal censure; but Louis in the most explicit manner declared that he would suffer no earthly power to interfere with his will.

The interval of domestic tranquillity which now ensued was employed by the king in humbling the pride of the pope. The French monarch reclaimed the territories of Avignon and Venaissin; and whilst the pontiff denounced his unavailing censures, the Marquis de Rochecouart, with a single regiment of soldiers, drove out the troops of his holiness, and took possession of these territories. But a much more formidable opposition was made by the natives of the small island of Corsica, the sovereignty of which had been transferred to France by the Genoese, its former masters, on condition of Louis reinstating them in possession of the island of Caprala, which the Corsicans had lately reduced. These islanders defended themselves with desperate intrepidity; and it was only after two campaigns, in which several thousands of the bravest troops of France were killed, that they could be brought under subjection.

The satisfaction which this unimportant conquest afforded to Louis was clouded by the distress of the nation. The East India Company had totally failed, and most of the principal commercial houses in the kingdom were involved in the same calamity. The minister, the Duc de Choiseul, by one desperate stroke, reduced the interest of the funds one half, and at the same time took away the benefit of survivorship in the tontines, by which means the national credit was greatly affected; the altercation between the king and his parliaments also revived, and the dissensions became worse than ever. The Duc de Choiseul attempted in vain to conciliate these differences; but his efforts tended only to bring misfortunes upon himself, and in 1771 he was banished by the king, who suspected him of favouring the popular party. This was soon afterwards followed by the banishment of the parliament of Paris, and by that of a number of others; new parliaments being chosen in the room of those which had been expelled. But the people were by no means disposed to pay the same regard to these new parliaments as they had done to the old ones, though every appearance of opposition was at last silenced by the absolute authority of the king. In the midst of this plenitude of power, however, his majesty's health daily declined, and the end of his days was evidently at no great distance. As he had all along indulged himself to excess in sensual pleasures, so now these proved the immediate means of his destruction. His favourite mistress, Madame de Pompadour, who for a considerable time governed him with an absolute sway, had been long dead, and the king had become equally enslaved by the charms of Madame du Barry. But even her beauty at length proved insufficient to excite desire; and a succession of mistresses became necessary to rouse the languid appetites of the king. One of these, who happened to be infected with the small-pox, communicated the disease to the king, who in a short time died of it, notwithstanding all the assistance which could be afforded him by the physicians.

Louis XVI.

The new king, Louis XVI., grandson to the former, ascended the throne in the year 1774, in the twentieth year of his age; and, to secure himself against the disease which had proved fatal to his predecessor, submitted to inoculation, together with several other members of the royal family. Their quick and easy recovery contributed much to extend the practice throughout the kingdom, and to remove the prejudices which had been entertained against it.

The king had no sooner regained his health than he applied himself diligently to extinguish the differences which had arisen between his predecessor and the people. He removed from their employments those persons who had given just cause of complaint by their arbitrary and oppressive conduct; and he conciliated the affection of his subjects by discharging the new and recalling the old parliaments. But though the prudence of Louis had suggested to him these compliances, he still endeavoured to preserve entire the royal authority. He explained his intentions in a speech delivered in the great chamber of parliament. The step which he had taken to ensure the tranquillity and happiness of his subjects ought not, he observed, to invalidate his own authority; and he hoped, from the zeal and attachment of the assembly, an example of submission to the rest of his subjects. Their repeated resistance to the commands of his grandfather had compelled that monarch to maintain his prerogative by their banishment; but they were now recalled in the expectation that they would quietly exercise their functions, and display their gratitude by their obedience. He declared that it was his desire to bury in oblivion all past grievances; that he should ever behold with extreme disapprobation whatever might tend to create divisions and disturb the general tranquillity; and that the chancellor would read an ordonnance to the assembly, from which they might be assured he would not suffer the smallest deviation to be made. This ordonnance was conceived in the most explicit terms, and immediately registered. It limited within narrow bounds the pretensions of the parliament of Paris. The members were forbidden to look upon themselves as one body with the other parliaments of the kingdom, or to take any step or assume any title which might tend towards or imply such an union. They were enjoined never to relinquish the administration of public justice, excepting in cases of absolute necessity, for which the first president was to be responsible to the king; and it was provided, that in the event of disobedience, the grand council might replace the parliament without any new edict for the purpose. They were still, however, permitted to exercise the right of remonstrating before the registering of edicts or letters-patent which they might conceive injurious to the welfare of the people, provided they preserved in their representations the respect due to the throne. But these remonstrances were not to be repeated, and if they proved ineffectual, the parliament were to enregister the edict objected to within a month at furthest from the day of its publication. They were forbidden to issue any arrêts which might tend to excite trouble, or in any manner retard the execution of the king's ordonnances;

and they were assured that, as long as they adhered to the bounds prescribed, they might depend upon the countenance and protection of the sovereign. In short, the terms on which Louis consented to re-establish the parliaments were such that they were reduced to mere ciphers, and the will of the king still continued to be the only law in the kingdom. The Archbishop of Paris, who had likewise presumed to raise some commotions regarding the bull *Unigenitus*, was obliged to submit, and severely threatened if he should afterwards interfere in such a matter.

The final conquest of the Corsicans, who had once more attempted to regain their former liberty, was the first event of importance which took place after the restoration of tranquillity. But, from various causes, the kingdom was still filled with disorder. A scarcity of corn having taken place at the time when some regulations had been made by M. Turgot, the new minister of finance, the populace rose in great numbers, and committed such outrages that a military force became necessary to quell them; and it was not until upwards of five hundred of these starving creatures were destroyed that they could be reduced. The king, however, by his prudent and vigorous conduct on this occasion, put a stop to all riots, and displayed his clemency as well as prudence in the methods which he adopted for the restoration of the public tranquillity. He also seized the first moments of peace to fulfil those promises of economy which on his accession he had given to the people. Particular attention was likewise paid to the state of the marine. The appointment of M. de Sartine in 1776 to the naval department did honour to the penetration of the sovereign. That minister, fruitful in resources, and unwearied in application, was incessantly engaged in augmenting the naval strength of his country; and the various preparations which filled the ports and docks created no small uneasiness on the other side of the Channel. The next appointment made by the king was equally fortunate, and in one respect singular and unprecedented. M. Turgot, though possessed of integrity and industry, had not been able to command the public confidence. On his retreat, M. Clugny, intendant-general of Bordeaux, had been elevated to the vacant office; but the latter having soon afterwards died, M. Taboureau des Reaux was appointed his successor; and the king associated with him in the management of the finances M. Neckar, who was a Swiss and a Protestant. In the preceding reign that gentleman had been chosen to adjust some differences between the East India Company and the crown, and had discharged his trust in a manner which gained him the approbation of both parties. Possessed of distinguished abilities, his appointment would have excited no surprise, had it not been contrary to the constant policy of France, which had carefully excluded the aliens from exercising any control in matters of revenue.

Conduct of France in regard to America.

Although the French monarch was of a pacific disposition, and not destitute of generosity of sentiment, yet his own and the public exultation had been openly and constantly proportioned to the success of the Americans in their contest with Britain. The princes of the blood and the chief nobility were eager to embark in support of the cause of freedom; and the prudence of the king and his most confidential ministers alone restrained their ardour. The fatal events of the former war were still impressed on the mind of Louis; and he could not readily consent to expose his rising marine in a contest with a nation which had so frequently asserted the dominion of the seas, and had so lately broken the united strength of the house of Bourbon. At the same time he was sensible that the opportunity of humbling England should not be entirely neglected, and that some advantage should be taken of the present commotions in America. Two agents from the United States, Silas Deane and Dr Benjamin Franklin, had successively arrived at Paris; and though all audience was denied them in a public capacity, still they were privately encouraged to hope that France only waited for a favourable opportunity to assist in conquering the independence of America. In the mean while, the American cruisers were hospitably received in the French ports; artillery and all kinds of warlike stores were freely sold or liberally granted to the colonists; and, with the connivance of government, French officers and engineers entered their service.

Some changes were about this time introduced into the different departments of state. The conduct of M. Neckar in the finances had given general satisfaction; and M. Taboureau des Reaux, his colleague, had resigned his situation, but still retained the dignity of counsellor of state. To afford full scope to the genius of M. Neckar, Louis determined that he should no longer be clogged with an associate, and, with the title of director-general of the finances, submitted to him the entire management of the revenue of France. In the ensuing year the Count de St Germains, secretary at war, died; and the Prince de Montbarey, who had already filled an inferior situation in that department, was now appointed to succeed him. In the mean time negotiations with foreign courts were not neglected. Louis concluded a new treaty of alliance with Switzerland; and, on the death of the elector of Bavaria, vigilantly observed the motions of the different princes of Germany. When closely questioned by the English ambassador, Lord Stormont, respecting the warlike preparations which were diligently continued throughout the kingdom, he replied, that at a time when the seas were covered with English fleets and American cruisers, and when such armies were sent to the New World as had never before appeared there, it became prudent for him also to arm for the security of his colonies and the protection of the commerce of France. The king was not ignorant that the remonstrances of Great Britain, and the importunities of the agents of the United States, would soon compel him to adopt some decisive line of conduct; and this was accelerated by an event most disastrous to Britain, namely, the failure of General Burgoyne's expedition, and the capture of his army. The news of that calamity was received at Paris with unbounded exultation. M. Sartine, the minister of marine, was eager to measure the naval strength of France with that of Great Britain; the queen, who had long seconded the applications of the American agents, now espoused their cause with fresh ardour; and the pacific inclinations of Louis being overborne by the suggestions of his ministers and the influence of his queen, it was at length determined openly to acknowledge the independence of the United States. Accordingly Dr Franklin and Silas Deane, who had hitherto acted as private agents, were now acknowledged as public ambassadors from those states to the court of Versailles; and a treaty of amity and commerce was signed between the insurgent colonists and France in the month of February 1778. The Duke of Noailles, ambassador to the court of London, was in the month of March instructed to acquaint that court with the above treaty, and at the same time to declare that the contracting parties had not stipulated any exclusive advantages in favour of France, and that the United States had reserved the liberty of treating with every nation whatsoever upon the footing of equality and reciprocity. But this declaration was treated with contempt by the British; and the recall of Lord Stormont became the signal for the commencement of hostilities.

Removal of M. de Sartine.

In the year 1780 new changes took place in the French ministry. M. Bertin had resigned the office of secretary of state; and the Prince de Montbarey had retired from the office of secretary at war, in which he was succeeded by the Marquis de Segur. But the most important removal was that of M. Sartine, who had for several years presided over the marine department, and whose ability and unwearied application had raised the naval power of France to a height which astonished Europe. His colleagues in the cabinet, however, had loudly arraigned a profusion which would have diverted into one channel the whole resources of the kingdom; and his retreat opened a road to the ambition of the Marquis de Castries, who was appointed in his stead. This year the king abolished the inhuman custom of putting the question by torture; a custom which had been so established by long practice that it seemed an inseparable part of the constitution of courts of justice in France. At the same time, in order to defray the charges of war, he diminished his own expenditure; and sacrificing splendour to popularity, dismissed at once above four hundred officers belonging to his court.

Dismission of Neckar.

But unhappily the popular discontents were next year excited by the dismission of M. Neckar. He had conceived the arduous but popular project of supporting a war by means of loans without taxes; and the rigid economy which he had introduced into all the departments of the royal household, together with the various resources which were thus rendered available, had supported him amidst the difficulties that attended this system. But his austerity of temper had not rendered him equally acceptable to the sovereign and his subjects; and the repeated reforms which he had recommended were represented as inconsistent with the dignity of the crown. He was therefore, in 1781, dismissed from his office of comptroller-general; and M. Joli de Fleury, counsellor of state, was appointed to that important department. But the defeat of the Count de Grasse, which happened the following year, produced general grief and consternation. The victory of Rodney was indeed the most severe blow which the navy of France had ever yet sustained, and its effects were felt in every part of the kingdom. Immense preparations were, however, made for the operations of 1783; and, in conjunction with the courts of Madrid and the Hague, Louis determined this year to make the most powerful efforts to bring the war to a conclusion. But in the midst of these preparations the voice of peace was again heard; and Louis was induced to listen to the proffered mediation of the emperor of Germany and of the empress of Russia. The Count de Vergennes, who still held the portfolio of foreign affairs, was appointed to treat with Mr Fitzherbert, the British minister at Brussels, who had lately proceeded to Paris to conduct this important negotiation. The way was already smoothed by provisional articles, which had been signed at the close of the preceding year between Great Britain and the states of America, and which were now to constitute the basis of a treaty of peace betwcen Great Britain and France. Preliminaries were accordingly agreed upon and signed at Versailles; and these were soon afterwards succeeded by a definitive treaty, so that France, throughout her extensive dominions, beheld peace once more established. Though the war had been attended by the most brilliant success, and the independence of America seemed to strike deep at the sources of British power, yet France herself had not by any means been free from difficulties. The retreat of Neckar had diminished the public confidence, and the failure of the celebrated *caisse d'escompte* completed the consternation of the people.

Caisse d'escompte.

The bank of this name had been established in the year 1776. The plan of it was formed by a company of private adventurers, and its capital was fixed at L.500,000 sterling. The professed design of the company was to discount bills at short dates, at the rate of four per cent. per annum; but as this interest was not an equivalent for the capital sunk by the proprietors, they were intrusted with the additional power of issuing notes to the amount of their capital, which, as these were made convertible into specie, might often be voluntarily taken instead of cash. The reputation acquired by the bank soon caused its stock to rise above par; and its credit still continued unimpaired, when, to the astonishment of the nation, it suddenly stopped payment on the 2d of October 1783. The cause assigned was an uncommon scarcity of specie. But the public suspected that the failure arose from a loan secretly made to government; and what confirmed the suspicion was, that government about the same time stopped payment of the bills drawn upon them by their army in America. But, whatever was the cause of this catastrophe, the king was prevailed on to extend his protection to the company. By four successive edicts the banks in Paris were ordered to receive the notes of the *caisse d'escompte* as currency; and a lottery with a capital of one million sterling, redeemable in eight years, was established, the tickets of which were made purchasable in notes of the *caisse d'escompte.* By these expedients the public confidence in the bank was in some measure revived, while its business increased, and its stock rose to above double the original subscription; the bills from America were at the same time put in a train of payment, and public credit was in a great degree restored throughout the kingdom. Some compensation also for the expenses which had been incurred during the war was derived from a treaty concluded with the United States of America. The latter engaged to reimburse France in the sum of eighteen millions of livres, which had been advanced in the hour of their need; and Louis, for the convenience of the States, consented to receive the money, in the space of twelve years, by twelve equal annual payments.

Treaty between France and Holland.

The general peace was soon afterwards followed by a particular treaty between France and Holland, which was effected by the Count de Vergennes. It included all the principles which can serve to cement nations in the closest union, and by which, in peace or in war, they may mutually participate in good or evil, and in all cases administer to each other the most perfect aid, counsel, and succour. If their united good offices for the preservation of peace should prove ineffectual, it also fixed the assistance which they were to afford each other by sea and land. France was to furnish Holland with ten thousand effective infantry and two thousand cavalry, and with twelve ships of the line and six frigates. Their high mightinesses, on the other hand, in case of a naval war, or of France being attacked by sea, were to contribute to her defence six ships of the line and three frigates; and in the event of an attack on the territory of France, the States General were to have the option of furnishing their land contingent either in money or troops, at the rate of five thousand infantry and one thousand cavalry. And further, if the stipulated succours should prove insufficient for the defence of the party attacked, or for procuring a proper peace, they engaged to assist each other with all their forces if necessary; but it was nevertheless provided, that the contingent of troops to be furnished by the States General should not exceed twenty thousand infantry and four thousand cavalry. Finally, it was agreed that neither of the contracting parties should disarm, or make or receive proposals of peace or even truce, without the consent of the other, nor directly or indirectly contract any future alliance or engagement whatsoever, contrary to the present treaty; and if any treaties or negotiations which might prove detrimental to their joint interest were proposed, they pledged their faith to give notice to each other of such proposals as soon as made. Thus Holland was converted into the firm ally of that power against the encroaching spirit of which she had formerly armed the most powerful kingdoms of Europe; whilst France having asserted the independence of America against Great Britain, and converted an ancient and formidable foe into an useful friend, seemed to have attained an influence over the nations of Europe which she had never before been possessed of.

But, however exalted her present situation might appear, the seeds of future commotion had already been extensively sown. The applause which had attended the parliament of Paris in their protracted struggles with the late king might be considered as the first dawn of freedom; the language of that assembly had boldly indicated to their countrymen their natural rights, and taught them to look with a less enraptured eye upon the splendour which encompassed the throne. The war in America had contributed to enlarge the political ideas of the French; they had on that occasion stood forth as the champions of liberty, in opposition to regal power; and the officers who had served in the struggle for independence, accustomed to think and speak without restraint, and familiarized with republican institutions, on their return imparted to the provinces of France a portion of the spirit which had been kindled in the wilds of America. From that moment the French, instead of silently acquiescing in the edicts of their sovereign, canvassed each action with bold inquisition; whilst the attachment of the army, which has ever been considered as the sole foundation of despotism, gave way to the noble enthusiasm of liberty.

We have already noticed the public dissatisfaction which had attended the dismission of Neckar. His successor, M. de Fleury, had retired from the management of the finances in 1783, and the still more short-lived administration of M. d'Ormesson had expired in the same year which gave it birth. Upon the retreat of the latter, M. de Calonne, who had successively filled with acknowledged reputation the office of intendant of Mentz, and afterwards of the provinces of Flanders and Artois, was nominated to the office of comptroller-general. This person, who was flexible and insinuating, eloquent in conversation and polished in his manners, fertile in resources and liberal in the disposal of the public money, soon rendered himself acceptable to the sovereign. But he did not enter upon his new and arduous station favoured by the breath of popularity; he was, in fact, reported to be more able than consistent, and not to have tempered the ardour of his spirit by the severity of deep research; and the people, amidst repeated loans, regretted that severe simplicity which had characterized the administration of Neckar. It was, however, by the bold and judicious measures of Calonne that credit was restored to the *caisse d'escompte*, which had stopped payment a few weeks before his accession. His next measure, in 1784, the establishment of the *caisse d'amortissement*, or sinking fund, was entitled to a still higher degree of applause. The plan of that fund was simple and moderate. It was, that government should pay annually into the hands of a board set apart for that purpose, the entire interest of the national debt, whether in stock or annuities, together with an additional sum of L.120,000. The annuities which would thus be extinguished every year were estimated at L.50,000, and in that proportion the sum set apart for the redemption of the national debt would annually increase. The operation of this new fund was limited to the term of twenty-five years; and during that period the annual receipt of the *caisse d'amortissement* was declared unalterable, and incapable of being diverted to any other object.

The principal measure of the following year was the establishment of a new East India Company, a measure which did not fail to excite violent complaints. The time, however, was now approaching, when the necessities of the state compelled the king to adopt measures still more unpopular, and destined to undergo a severer scrutiny. Although peace had for three years been re-established throughout Europe, yet the finances of France seemed scarcely affected by this interval of tranquillity, and it was found requisite to close every year with a loan. The public expenditure of 1785, indeed, seemed to sanction this measure; for it had been thought proper to fortify Cherbourg upon a grand scale; the claim of the emperor to the navigation of the Scheldt had obliged the French to increase their land forces; and the Marquis de Castries, fond of war, and profuse in his designs, had not suffered the navy which M. Sartine had surrendered into his hands to decline during the interval of peace. The treaty of commerce concluded with Great Britain in the year 1786 was also a new source of discontent. Though regarded by the English manufacturers as far from advantageous, it excited in France still louder murmurs, and was represented as likely to extinguish those infant establishments, which were yet unable to compete with the manufactures of England, that had attained to maturity. The market which it held out for the wines and oils of France was passed over in silence, whilst the distress of the artisan was painted in the most striking colours. But when the edict for registering the loan of the preceding year, amounting to three millions three hundred and thirty thousand pounds, was presented to the parliament of Paris, the murmurs of the people, through the remonstrances of that assembly, assumed a more legal and formidable aspect. The king, however, signified to the select deputation commissioned to convey to him their remonstrances, that he expected to be obeyed without further delay. The ceremony of the registration accordingly took place on the following day; but it was accompanied with a resolution, importing, that public economy was the only genuine source of abundant revenue, the only means of providing for the necessities of the state, and of restoring that credit which borrowing had reduced to the brink of ruin. The king was no sooner informed of this step than he commanded the attendance of the grand deputation of parliament, when he erazed from their records the resolution which had been adopted; and observed, that though it was his pleasure that the parliament should communicate, by its respectful representations, whatever might concern the good of the public, yet he never would permit them so far to abuse his clemency as to erect themselves into the censors of his government. At the same time, in order the more strongly to mark his displeasure at their expostulations, he superseded one of their officers, who had appeared most active in forwarding the obnoxious resolution.

M. de Calonne, however, though gratified by the approbation of his sovereign, could not but feel himself deeply mortified by the opposition of the parliament. His attempts to conciliate that assembly had proved ineffectual; and he experienced their inflexible aversion at the critical juncture when their acquiescence might have proved of the most essential service. An anxious inquiry into the state of the public finances had convinced him that the expenditure far exceeded the revenue. In this situation, to impose new taxes was impracticable, to continue the method of borrowing was ruinous, to have recourse to economical reforms would be found wholly inadequate; and he hesitated not to declare, that it would be impossible to place the finances upon a solid basis, except by the reformation of whatever was vicious in the constitution of the state. But, to give weight to this reform, M. de Calonne was sensible that something more was necessary than even the royal authority; he perceived that the parliament was neither a fit instrument for introducing a new order into public affairs, nor would submit to be a passive machine for sanctioning the plans of a minister, even if those plans were the emanations of perfect wisdom. Though originally a body of lawyers, indebted for their appointment to the king, there was not an attribute of a legislative assembly which they did not seem desirous to engross to themselves; and they had been supported in their pretensions by the approbation of the people, who were sensible that there was no other body in the nation which could plead their cause against either royal or ministerial oppression. To suppress, therefore, the only power of control that remained, and to render the government more arbitrary, was deemed too perilous a measure; yet to leave the parliament in the full possession of an influence which the minister was convinced would be exerted against him, was at once to render his whole system abortive. In this dilemma, the only expedient which suggested itself was to have recourse to some other assembly, more dignified and solemn in its character, and which should in a greater degree consist of members selected from the various orders of the state and the different provinces of the kingdom. This promised to be a popular measure; it implied a deference to the people at large, and might be expected to prove highly acceptable.

ssembly f the Notbles.

But the true and legitimate assembly of the nation, the States General, had not met since the year 1614, nor could the minister flatter himself with the hope of obtaining the royal assent to a meeting which a despotic sovereign could not but regard with secret jealousy. Another assembly had occasionally been substituted in the room of the States General. This was distinguished by the title of the Notables, and consisted of a number of persons from all parts of the kingdom, chiefly selected from the higher orders of the state, and nominated by the king himself. This assembly, which had been convened by Henry IV. and also by Louis XIII. was now once more summoned by the authority of Louis XVI. The writs for calling them together were dated the 29th of December 1786, and addressed to seven princes of the blood, nine dukes and peers of France, eight field-marshals, twenty-two nobles, eight counsellors of state, four masters of requests, eleven archbishops and bishops, thirty-seven of the heads of the law, twelve deputies of the *pays d'états*, the civil lieutenant, and twenty-five magistrates of the different towns of the kingdom. The number of members was thus a hundred and forty-four; and the 29th of January 1787 was the period appointed for their meeting.

Upon the arrival of the Notables at Paris, however, the minister found himself as yet unprepared to submit his system for their consideration, and therefore postponed the opening of the assembly until the 7th of February. A second delay until the 14th of the same month was occasioned by the indisposition of M. de Calonne, and that of the Count de Vergennes, president of the council of finance and first secretary of state; and a third procrastination necessarily resulted from the death of the count on the day previous to that which had been fixed for the opening of the assembly. M. de Vergennes was succeeded in the department of foreign affairs by the Count de Montmorin, a nobleman of unblemished character; but his loss at this critical juncture was severely felt by M. de Calonne, as he alone, of all the ministers, had entered with warmth and sincerity into the plans of the comptroller-general. The Chevalier de Miromesnil, keeper of the seals, was avowedly the rival and enemy of Calonne; the Marshal de Castries, secretary for the department of marine, was personally attached to M. Neckar; and the Baron de Breteuil, secretary for the household, was the creature of the queen, and deeply engaged in what was called the Austrian system.

It was under these difficulties that M. de Calonne, on the 22d of February, first met the Assembly of the Notables, and unfolded his long-expected plan. He began by stating, that the public expenditure had for centuries past exceeded the revenue, and that a very considerable deficiency had of course existed; that the Mississippi scheme of 1720 had not, as might have been expected, restored the balance; that under the economical administration of Cardinal Fleury the deficit still existed; that the progress of this derangement under the last reign had been extreme, the deficiency amounting to three millions sterling at the appointment of the Abbé Terray, who, however, reduced it to one million six hundred and seventy-five thousand pounds; that it decreased a little under the short administrations which followed, but rose again, in consequence of the war, under the administration of M. Neckar; and that upon his own accession to office it amounted to three millions three hundred and thirty thousand pounds. In order to remedy this growing evil, M. Calonne recommended a territorial impost, of the nature of the English land-tax, from which no rank or order of men was to be exempted; and an inquiry into the possessions of the clergy, who hitherto had been exempted from bearing their proportion of the public burdens. It was also proposed that the various branches of internal taxation should undergo a strict examination; and a considerable resource was anticipated in mortgaging the demesne lands of the crown.

The necessity for these reforms, however, was combated with a degree of boldness and force of reasoning which could not fail to make a deep impression on the assembly; and, instead of meeting with a ready acquiescence, the comptroller-general found that he had launched into the boundless ocean of political controversy. M. Neckar, previously to his retirement, had published his *compte rendu au roi*, in which France was represented as possessing a clear surplus of above four hundred thousand pounds sterling. This performance had been read with avidity, and probably contributed to deprive the author of the royal favour; but the credit of the work was ably vindicated by M. de Brienne, archbishop of Toulouse. M. de Calonne met with a still more formidable adversary in the Count de Mirabeau. This extraordinary man, restless in disposition, licentious in morals, but bold, penetrating, and enterprising, had occasionally visited every court in Europe. He had been admitted at one time to the confidence of the minister, and had been directed, though not in an ostensible character, to observe at Berlin the disposition of the successor of the great Frederick; but whilst employed in this capacity he was frequently exposed to neglect and disappointment, and his letters were often left unanswered. Disgust succeeded to admiration; and he who had entered the Prussian court the intimate friend, returned to Paris the declared enemy, of M. de Calonne. Accordingly, whilst the archbishop arraigned the understanding, Mirabeau impeached the integrity, of the comptroller-general.

The eloquence of M. de Calonne, however, might have successfully vindicated his system and reputation against the calculations of Brienne and the invectives of Mirabeau; but he could not support himself against the influence of the three great bodies of the nation. The ancient nobility and the clergy had ever been free from all public assessments; and had the evil gone no further, it might still perhaps have been borne with patience; but, through the shameful custom of selling patents of nobility, such crowds of new noblesse started up, that every province in the kingdom was filled with them. The first object with those who had rapidly acquired fortunes, was to purchase a patent, which, besides gratifying their vanity, afforded an exemption to them and their posterity from contributing to the exigencies of the state. The magistracies likewise throughout the kingdom enjoyed their share of these exemptions; so that the whole weight of taxation fell upon those classes who were least able to bear it. Hence the minister's design of equalizing the public burdens, and diminishing the load borne by the lower and most useful classes of the people, by rendering the taxes general, though undoubtedly great and patriotic, at once united against him the nobility, the clergy, and the magistracy. And the result was such as might have been expected. The intrigues of these three bodies raised against him so loud a clamour, that finding it impossible to stem the torrent, he not only resigned his office on the 12th of April, but soon afterwards withdrew to England from the storm of persecution which now impended over him.

Disturbances in Holland.

In the midst of these domestic transactions, the attention of Louis was called to the state of affairs in Holland. The prince of Orange having been stripped of all authority by the aristocratic party, had retired from the Hague, and now maintained the shadow of a court at Nimeguen. But his brother-in-law, the new king of Prussia, exerted himself to promote the interests of the stadtholder, and offered, in concert with France, to undertake the arduous task of composing the differences which distracted the republic. The proposal was received with much apparent cordiality by the court of Versailles. At the same time it was scarcely to be expected that France would become the instrument of restoring the prince of Orange to that share of power which he had previously enjoyed, and thus abandon a favourite object of policy, namely, establishing a supreme and permanent control in the councils of Holland. In fact, the conditions framed as the basis of reconciliation by the Louvestein faction, were such as plainly indicated their design of reducing within very narrow limits the influence and authority of the stadtholder. On his renouncing the right of filling up occasional vacancies in the town senates, he was to be restored to the nominal office of captain-general; but he was to be restrained from marching troops into any province, or out of it, without leave from the respective provinces concerned; and he was also to subscribe a resolution passed some time previously by the senate of Amsterdam, that the command should at all times be revocable at the pleasure of the states. Had the prince acquiesced in these preliminaries, France would have completely attained the object of her lengthened negotiations, and by means of the Louvestein faction acquired the ascendency which she had repeatedly sought to obtain in the councils of Holland. But, under the difficulties which surrounded him, the prince of Orange was admirably supported and assisted by the genius, spirit, and abilities of his consort, who firmly rejected every measure tending to abridge the rights attached to the office of stadtholder; and M. de Rayneval, the French negotiator, having in vain endeavoured to overcome her resolution, broke off the correspondence between the Hague and Nimeguen, and returned to Paris about the middle of January 1787.

But the republican party were totally disappointed in the hopes which they had formed of assistance from France. The court of Versailles had indeed long trusted to the natural strength of this party, and had been assiduous during the summer in endeavouring to second them by every species of succour which could be privately afforded. Crowds of French officers arrived daily in Holland, and either received commissions in the service of the states, or acted as volunteers in their troops; several hundreds of tried and experienced soldiers were selected from different regiments, furnished with money for their journey, and dispatched in small parties to join the troops, and assist in disciplining the burghers and volunteers; and a considerable corps of engineers were also directed to proceed in disguise towards Amsterdam, in order to assist in strengthening the works of that city. But these aids, which might have proved effectual had the contest been confined to the states of Holland and the stadtholder, were rendered unavailing by the rapid invasion of the Prussians; the court of Berlin had taken its measures with so much celerity, and the situation of the republicans had already become so desperate, that it was doubtful whether their affairs could be restored by any assistance which France was capable of immediately affording. Nevertheless, on Great Britain fitting out a strong squadron of men of war at Portsmouth, to give confidence to the operations of the king of Prussia, the court of Versailles sent orders to equip sixteen sail of the line at Brest, and recalled a small squadron which had been commissioned to cruise on the coast of Portugal. But in these preparations Louis seemed rather to regard his own dignity, than to be actuated by any purpose of effectually relieving his allies. All opposition in Holland might already be considered as extinguished. The states assembled at the Hague had officially notified to the court of Versailles, that the disputes between them and the stadtholder were now happily terminated; and as the circumstances which gave occasion to their application to that court no longer existed, they intimated that the succours which they had formerly requested would not now be necessary. Under these circumstances, as the chief concern of France was to extricate herself with honour from her present difficulty, she readily listened to a memorial from the British minister at Paris, in which it was proposed that, in order to preserve a good understanding between the two crowns, all warlike preparations should be discontinued, and that the navies of both kingdoms should again be reduced to the footing of a peace establishment; a proposition which was gladly acceded to by the court of Versailles, and the harmony which had been transiently interrupted was thus restored.

Assembly of the Notables dissolved.

But though the French king could not but sensibly feel the mortification of thus relinquishing the ascendency which he had obtained in the councils of Holland, the internal situation of his kingdom furnished matter for more serious reflection. The dismission of M. de Calonne had left France without a minister, and almost without a system of government; and though the king bore the opposition of the Notables with temper, yet the disappointment he had experienced sunk deep in his mind. Without obtaining any relief for his most urgent necessities, he perceived when too late that he had opened a way for the restoration of the ancient constitution of France, which had been undermined by the craft of Louis XI. and nearly extinguished by the daring councils of Richelieu under Louis XIII. The Notables had indeed conducted themselves with respect and moderation, but at the same time they had not been deficient in firmness. The appointment of the Archbishop of Toulouse, the avowed adversary of M. de Calonne, to the office of comptroller-general, probably contributed to preserve the appearance of good humour in that assembly; but notwithstanding this, the proposed territorial impost or general land-tax, an object so ardently desired by the court, was rejected. Deprived of all hope of rendering the convention subservient to the relief of his embarrassments, and also dreading the spirit which it had on several occasions evinced, Louis determined to dissolve the assembly, which he did accordingly, in a moderate and conciliatory speech addressed to the members on their dismission.

Being thus disappointed of the advantage which he had hoped to derive from the acquiescence of the Notables, the king was now obliged to revert to the usual mode of raising money by royal edicts; and amongst the measures proposed for this purpose were the doubling of the poll-tax, the re-establishment of the third-twentieth, and a stamp duty. But, as might have been expected, this summary method was strongly disapproved by the parliament of Paris; and that assembly refused, in the most positive terms, to register the edict. In the last resort, therefore, Louis was obliged to have recourse to his absolute authority; and, by holding what is called a bed of justice, he compelled the parliament to register the impost. But the latter, though defeated, were not subdued; and on the day after the king had held his bed of justice they entered a formal protest against the edict, declaring that it had been registered against their approbation and consent, by the express command of the king; that it neither should nor ought to have any force; and that the first person who presumed to carry it into execution would be adjudged a traitor, and condemned to the galleys. This spirited declaration left the king no alternative, but either to proceed to extremities in support of his authority, or to relinquish for ever afterwards the power of raising money upon any occasion without the consent of the parliament. But though naturally of a mild disposition, and averse to violent measures, Louis determined not to surrender, without a struggle, that authority which had so long been exercised by his predecessors. Ever since the commencement of the discontents, considerable bodies of troops had been gradually marched into the capital; and, about a week after the parliament entered their protest, an officer of the guards, with a party of soldiers, proceeded at daybreak to the house of each member, to signify to him the king's command, that he should immediately get into his carriage, and withdraw to Troyes, a city of Champagne, about seventy miles from Paris, without writing or speaking to any person out of his own house previously to his departure. These orders were all served at the same instant; and before the citizens of Paris became acquainted with the transaction, their magistrates were already on the road to their place of banishment. Previously to their relegation, however, they had presented a remonstrance on the recent measures of government, and the alarming state of public affairs. In stating their opinions on taxes, they declared that neither the parliaments nor any other authority, excepting that of the three estates of the kingdom collectively, could warrant the imposition of any permanent tax on the people; and they strongly urged the renewal of those national assemblies which had rendered the reign of Charlemagne at once so illustrious and beneficent.

This demand for the convocation of the national council or States General was the more honourable to the parliament, as the latter assemblies had uniformly sunk under the influence of the former, and returned to their original condition of mere courts of registration and law. The confidence and attachment of the people therefore rose in proportion to this disinterestedness; their murmurs were openly expressed in the streets of the capital, and the general dissatisfaction was augmented in consequence of the stop put to public business by the exile of the parliament. Meanwhile the cabinet appeared weak, disunited, and fluctuating; and continual changes took place in every department of the state. Averse to rigorous counsels, Louis wished to allay the growing discontent by every concession consistent with his dignity; but the queen, it was believed, strongly dissuaded him from taking any step which might tend to diminish the royal authority. The influence of this princess in the cabinet was undoubtedly great; but the popularity which she had once enjoyed was no more, and some imputations of private levity, which had been scattered through the capital, were far from rendering her acceptable to the majority of the people. The Count d'Artois, the king's brother, who had expressed himself in the most unguarded terms against the conduct of the parliament, also stood exposed to all the consequences of popular hatred. Nor was it in the capital alone that the flame of liberty burst forth; it blazed with equal strength in the provincial parliaments. Amongst various instances of this, the parliament of Grenoble passed a decree against *lettres de cachet*, declaring the execution of these odious instruments of arbitrary power, within their jurisdiction, by any person, and under any authority whatsoever, to be a capital crime.

The king had endeavoured to soothe the Parisians by new regulations of economy, and by continual retrenchments in his household; but these proofs of a desire to lessen the public burdens, though they would at one time have been received with the loudest acclamations, were now disregarded, and the absence of the parliament was considered as an evil for which nothing could atone. In order therefore to regain the affections of his subjects, his majesty consented to restore that assembly, and at the same time to abandon the stamp duty and the territorial impost, which had been the chief subjects of dispute. But these measures were insufficient to establish harmony between the court and the parliament. The necessities of the state still remained unprovided for; nor could the deficiency of the revenue be supplied, except by extraordinary resources or a long course of rigid frugality. About the middle of November 1787, in a full meeting of the parliament, attended by all the princes of the blood and the peers of France, the king entered the assembly, and proposed for their approbation two edicts; one for a new loan of four hundred and fifty millions of francs, or about nineteen millions sterling, and the other for the re-establishment of the Protestants in all their ancient civil rights, a measure which had long been warmly recommended by the parliament, and which was now brought forward to procure a better reception for the loan. On this occasion the king delivered a speech of unusual length, filled with professions of regard for the people, but at the same time dwelling strongly upon the obedience he expected to his edicts. An animated debate ensued, and was continued for nine hours, when the king, wearied by opposition, and chagrined at some freedoms used in the course of the discussion, suddenly rose and commanded the edict to be registered without further delay. But this order was most unexpectedly opposed by the Duke of Orleans, first prince of the blood, who protested against the whole proceedings of the day, as an infringement on the rights of parliament, and therefore null and void. The king, though he could not conceal his astonishment and displeasure at this decisive step, contented himself with repeating his commands, and immediately afterwards left the assembly. On his departure, the parliament confirmed the protest of the Duke of Orleans, and declared, that as their deliberations had been interrupted, they considered the whole business of that day as of no effect.

But as it could not be supposed that Louis would suffer so bold an attack on his power to pass with impunity, a letter was next day delivered to the Duke of Orleans, commanding him to retire to Villars-Cotterel, one of his seats, about fifteen leagues from Paris, and to receive no company there except his own family; and at the same time the Abbé Sabbatière and M. Fréteau, both members of the parliament, who had distinguished themselves in the debate, were seized under the authority of *lettres de cachet*, and conveyed, the former to the castle of Mont St Michel in Normandy, and the latter to a prison in Picardy. This act of despotism immediately roused the indignation of the parliament, which on the following day waited on the king, and expressed their astonishment and concern that a prince of the blood-royal should have been exiled, and two of their members imprisoned, for having declared in his presence what their duty and consciences dictated, and at a time when his majesty had announced that he came to take the sense of the assembly by a plurality of voices. The answer of the king was reserved, forbidding, and unsatisfactory. But this did not prevent the parliament from attending to the exigencies of the state; and, convinced of the emergency, they consented to register the loan for four hundred and fifty millions of livres, which had been the principal cause of this unfortunate difference. This concession contributed to soften the mind of the king; and the sentence of the two magistrates was in consequence changed from imprisonment to exile; M. Fréteau being sent to one of his country seats, and the Abbé Sabbatière to a convent of Benedictines.

The parliament, however, was not so far propitiated by this measure as to give up the points against which they had originally remonstrated. In a petition, conceived with great freedom, and couched in the most animated language, they boldly reprobated the late acts of arbitrary violence, and demanded the entire liberation of the persons against whom these had been exercised. At the court of Versailles there was nothing but uncertainty and fluctuation; now vigour and now weakness; violence one day and attempts at conciliation the next; a king without energy or decision of character, and counsellors destitute alike of wisdom, prudence, and moderation. In the beginning of the year 1788, Louis recalled the Duke of Orleans, who soon afterwards obtained permission to retire to England; whilst the Abbé Sabbatière and M. Fréteau were about the same time allowed to return to the capital.

But the parliament had not confined their demands to the liberation of these gentlemen; they had also echoed the remonstrances of the parliament of Grenoble, and had loudly inveighed against the execution of *lettres de cachet*. These repeated remonstrances, mingled as they were with personal reflections, seconded the suggestions of the queen; and Louis was once more instigated to adopt measures of severity. MM. d'Espremenil and Monsambert, whose bold and pointed harangues had given the greatest offence, were doomed to experience the immediate resentment of the court. A body of armed troops having surrounded the hôtel in which the parliament were convened, Colonel Degout entered the assembly and secured the persons of the obnoxious members, who were instantly conducted to different prisons. This new instance of arbitrary violence drew forth a remonstrance from parliament, which in boldness far exceeded all the former representations made by that body. They declared they were now more firmly convinced than ever, that the entire subversion of the constitution was aimed at; but they added, that the French nation would never sanction the despotic measures which the king had been advised to adopt; that the fundamental laws of the kingdom must not be trampled on; and that the royal authority could only be esteemed as long as it was tempered with justice.

Assembly of the Notables again convened.

Language so pointed and decisive, asserting the controlling power of the laws above the regal authority, could not fail to alarm the king; and, with a view to diminish the influence of the parliament, it was determined again to convene the Notables. Accordingly, about the beginning of May, Louis appeared in that assembly, and after complaining of the excesses in which the parliament of Paris had indulged, and which had drawn down his reluctant indignation on a few of the members, he declared his resolution, instead of annihilating them as a body, to recall them to their duty and obedience by a salutary reform. M. de la Moignon, as keeper of the seals, then explained his majesty's intention to establish a plenary court, or supreme assembly, composed of princes of the blood, peers of the realm, great officers of the crown, the clergy, marshals of France, governors of provinces, knights of different orders, a deputation of one member from every parliament, and two members from the chambers of council, which should be summoned as often as any public emergency should, in the royal opinion, render it necessary to do so.

But if the Assembly of the Notables listened in silent deference to the project of their sovereign, the parliament of Paris received it with undisguised aversion. That body protested in the strongest manner against the establishment of any other tribunal, and declared their unalterable resolution not to assist at any deliberations in the supreme assembly which his majesty proposed to institute. A more unexpected mortification occurred to the king in the opposition of several peers of the realm, who expressed their regret at beholding the fundamental principles of the constitution violated; and, though lavish in professions of attachment to the person of the sovereign, concluded with apologizing for not entering on the functions assigned them in the plenary court, which, in their opinion, was inconsistent with the true interests of his majesty, no less than with those of the nation at large. Nor was this opposition confined to the parliament. The flame quickly spread throughout the more distant provinces. At Rennes in Bretagne, and at Grenoble in Dauphiné, the populace broke out into acts of the most daring outrage. In the latter city several hundred of the inhabitants perished in a conflict with the military; but they nevertheless maintained their ground against the regulars, and the commanding officer, on the entreaty of the first president, withdrew his troops from a contest into which he had entered with reluctance. The different parliaments of the kingdom at the same time expressed their feelings in the most animated language, strongly urging the necessity of calling together the States General, the lawful council of the kingdom, as the only means of restoring public tranquillity and promoting needful reforms.

It now became evident to the king, that a compliance with the public wishes for the convocation of the States General was absolutely necessary, to avoid the calamities of a civil war, which a refusal would render inevitable. In such event he must have expected to encounter the majority of the people, animated by the exhortations and example of their magistrates; the peers of the realm had also expressed the strongest disapprobation of his measures; nor could he even depend on the support of the princes of the blood. But what afforded the most serious ground of alarm, was the spirit recently displayed by the military, who, during the disturbances in the provinces, had with difficulty been brought to act against their countrymen; whilst many of their officers, who had been engaged in assisting to establish the independence of America, publicly declared their abhorrence of despotism. It was not, however, until after many a painful struggle that Louis could bring himself to restore an assembly, the influence of which would naturally overshadow that of the crown, whilst its jurisdiction would confine within narrow limits the uncontrolled power which he had inherited from his predecessors. In the two preceding reigns the States General had been wholly discontinued; and though the queen-regent, during the troubles attending the minority of Louis XIV. had frequently expressed her intention of calling them together, she was constantly dissuaded by the representations of Mazarin. It is probable, however, that Louis XVI. still flattered himself with the hope of alluring the members of that assembly to the side of the court, and, having employed them to establish some degree of regularity in the finances, and to curb the spirit of the parliament, of again dismissing them to obscurity.

Convocation of the States General.

But be this as it may, an arrêt was issued in August, fixing the meeting of the States General for the first day of May in the ensuing year; and, during the interval, every step was taken to secure the favourable opinion of the public. New arrangements took place in the administration; Neckar, who had long enjoyed the confidence of the people, was again called to the management of the finances; the torture, which by a former edict had been in part restricted, was now entirely abolished; every person accused was allowed the assistance of counsel, and permitted to avail himself of any point of law necessary to his defence; and it was decreed, that in future sentence of death should not be passed on any person, unless the accused had been pronounced guilty by a majority of at least three judges.

As the time appointed for the convention of the States General approached, the means of assembling them formed a matter of very grave deliberation in the cabinet. The last meeting, in 1614, had been convened by application to the bailiwicks. But this mode was liable to strong objections, as the bailiwicks had been increased in number and jurisdiction, several provinces having since that period been united to France; and as the numbers and quality of the members were no less an object of serious attention, it was not till the close of the year that the proposal of Neckar, which fixed the number of deputies at a thousand and upwards, and ordained that the representatives of the third estate or commons should equal in number those of the nobility and clergy united, was adopted. Meanwhile the eyes of all Europe were turned towards the States General; but the moment of their meeting was far from being auspicious. The minds of the French had long been agitated by various rumours; the unanimity which had been expected from the different orders of the states was destroyed by the jarring pretensions of each; and their mutual jealousies were attributed by the suspicions of the people to the intrigues of the court, which, it was supposed, already repented of the hasty assent which had been extorted from it. A scarcity which pervaded the kingdom increased the general discontent; and the people, pressed by hunger, and inflamed by resentment, were ripe for revolt. The sovereign also, impatient of the obstacles which he continually encountered, could not conceal his chagrin; whilst the influence of the queen in the cabinet manifested itself by the immediate removal of Neckar. The dismission of this minister, who had so long been the favourite of the public, was the signal of open insurrection. The Parisians assembled in great numbers; the guards refused to stain their arms with the blood of their fellow-citizens; the Count d'Artois and the most obnoxious of the nobility thought themselves happy in eluding by flight the fury of the insurgents; and in a moment a revolution was accomplished, which, in all its circumstances, is the most remarkable of any recorded in history.

Causes of the Revolution.

The moral history of man is always more important than the mere recital of such physical occurrences as diversify his existence. It is not the fall of a mighty monarch and the overthrow of his dynasty, it is not the convulsion of empires, and the rivers of human blood which have been shed, that render the French Revolution peculiarly interesting. Such events, however deplorable, are far from being without example in the history of mankind. In the populous regions of the East, where superstition and slavery have always prevailed, these are regarded as forming part of the ordinary course of human affairs, because an intrepid and skilful usurper always finds it easy to intimidate millions of ignorant and credulous men. But in Europe the case is very different indeed. No adventurer can advance far without encountering thousands as artful and as daring as himself. Events are not the result either of blind hazard or of individual skill. Conspiracies or plots produce but little effect. Like other arts, that of government has been much improved; and an established constitution can only be shaken by a strong convulsion produced by national passions and national efforts. The wonderful spectacle which we are now to contemplate, is that of an enlightened and polished people becoming in an instant fierce and sanguinary; a long established government, fortified by the recollections of ages, and forming as it were part of the national character, overturned almost without a struggle; a whole nation apparently uniting to destroy every institution which time had hallowed or education had taught them to revere; a superstitious people treating the religion of their forefathers with contempt; a long-enslaved race, whose very chains had become dear to them, occupied in the discussion of refined and even visionary schemes of freedom; in short, twenty-five millions of men suddenly treading under foot every sentiment and every prejudice which they themselves had once regarded as sacred and venerable.

Like the other nations of Europe, France was anciently governed by a rude and fierce aristocracy, the different members of which were feebly united by the authority of a succession of kings destitute of power or influence. The nobles, within their own territories, enjoyed privileges almost royal. They made peace and war; they coined money; they were judges in the last resort; their vassals were their slaves, whom they bought and sold along with the lands; and the inhabitants of cities, although freemen, were poor, depressed, and dependent on the protection of some baron in their neighbourhood. But, by the progress of the arts, the cities at length rose into importance, and their inhabitants, along with such freemen of low rank as resided in the country, were considered as entitled to a representation in the States General of the kingdom, under the appellation of *tiers état*, or third estate. When in process of time, however, the power of the crown had crushed that of the barons, and the sovereign became despotic, the meetings of the States General were discontinued. But absolute authority on the part of the crown was not acquired, as it was in England under the house of Tudor, by abolishing the pernicious privileges of the nobles, and elevating the commons: it was obtained by skilful encroachments, by daring exertions of prerogative, and by the employment of a regular military force. In France, therefore, the monarch was absolute, whilst the nobles retained their feudal privileges, and the ecclesiastical hierarchy also enjoyed its peculiar rights and immunities.

But the kingdom of France, previously to the Revolution, had never been reduced to one homogeneous mass. It consisted of a variety of separate provinces acquired by different means; some by marriage, others by legacy, and others again by conquest. Each province retained its ancient laws and privileges, whether political or civil, as expressed in the capitularies or conditions by which it was originally acquired. In one part of his dominions the French monarch was a count, in another he was a duke, in a third he was a king; whilst the only bond which united his vast empire was the strong military force by which it was overawed. Each province had its barriers; and the intercourse between one province and another was often more restricted by local usages than the intercourse of either with a foreign country. Some of the provinces, as Bretagne and Dauphiné, even retained the right of assembling periodically their provincial states; but these constituted no barrier against the power of the court.

The clergy formed the first estate of the kingdom in point of precedence. In number they amounted to about a hundred and thirty thousand. The higher orders enjoyed immense revenues; but the *curés* or great body of the working clergy seldom possessed more than about L.28 sterling a year, whilst their *vicaires* had only about half that sum. A few of the dignified clergy were men of great piety, who resided constantly in their dioceses, and attended to the duties of their office; but by far the greater number passed their lives at Paris and Versailles, immersed in all the intrigues and dissipation of a corrupt court and a profligate capital. They were almost exclusively selected from amongst the younger branches of the families of the high nobility; and it had even come to be accounted a species of dishonour for any persons of low rank to be admitted into the episcopal order. The lower clergy, on the contrary, were for the most part persons of mean birth, who had little chance of preferment, but who, by living constantly among the people, naturally participated in their feelings and opinions. As a body, the clergy possessed, independently of the tithes, a revenue arising from their property in land, which amounted to four or five millions sterling annually, and they were at the same time exempt from taxation. The crown had latterly attempted to break down this privilege; but, to avoid the danger, the clergy had presented to the court, as a free gift, a sum of money somewhat short of a million sterling every five years.

The nobility was nominally the second order of the state, but it was in reality the first. The nobles amounted to no less than two hundred thousand in number. The title and rank descended to all the children of the family, but the property went to the eldest alone; and hence vast multitudes of penniless nobles were entirely dependent upon the bounty of the court. They regarded the useful and commercial arts as dishonourable, and even the liberal professions of the law and physic they considered as in a great measure beneath their dignity, disdaining to intermarry with the families of their professors. The feudal system in its purity was favourable to the production of respectable qualities in the minds of those who belonged to the order of the nobles; but the introduction of commerce had rendered its decline equally unfavourable to that class of persons. Instead of the ancient patriarchal attachment between the feudal chieftain and his vassals, the nobility had become greedy landlords in the provinces, that they might appear in splendour at court and in the capital, where, plunged in intrigue and sensuality, their characters became frivolous and contemptible. Such of the French nobility, however, as remained in the provinces, regarded with indignation this degradation of their order, and still retained a proud sense of honour and of courage, which has always rendered them respectable. The order of the nobles was exempted from the payment of taxes, although the property of some of them was immense. The estates of the prince of Conde, for example, were worth L.200,000 a year, and those of the Duke of Orleans nearly twice as much. The crown had indeed imposed some trifling taxes upon the nobility, but these they contrived, in a great measure, to elude.

Next to the nobles, and as a privileged order possessing a secondary kind of nobility of their own, may be mentioned the parliaments. These consisted of large bodies of men, in different provinces, and served as courts of law for the administration of justice. In consequence of the corruption of the officers of state, the members purchased their places, which they held for life; but the son was usually preferred when he offered to purchase his father's place. Practising lawyers had but little chance of ever becoming judges. In courts thus constituted, consisting of a motley mixture of old and young, learned and ignorant, justice was of course indifferently administered. The judges allowed their votes in depending causes to be openly solicited by the parties or their friends. No wise man ever entered into a litigation against a member of one of these parliaments, and no lawyer would undertake to plead his cause; such a suit never came to a successful issue, and usually came to no issue at all. But after the States General had fallen into disuse, the parliaments acquired a certain degree of political consequence, and formed the only check upon the absolute power of the crown. The laws, or royal edicts, before being put in force, were always sent to be registered in the books of the parliaments. Taking advantage of this practice, in favourable times and circumstances, the latter often delayed or refused to enregister the royal edicts, and presented remonstrances against them. And this was done under cover of a legal fiction. For they pretended that the obnoxious edict, being injurious to the public welfare, could not be the will of the king, but must either be a forgery or an imposition by the ministers. Objections of this kind were, however, got rid of, either by a positive order from the king, or by his coming in person and ordering the edict to be registered. The parliaments, nevertheless, often carried their opposition a great length, indeed even to the ruin of themselves and their families as individuals. This rendered them extremely popular with the nation, and enabled them to embarrass a weak administration. But, after all, the opposition of the parliaments proved so feeble, that it was not thought worth while to abolish them entirely till towards the end of the reign of Louis XV.; and they were restored as a popular measure at the beginning of that of Louis XVI.

The *tiers état*, or commons, formed the lowest order of the state in France, and they were depressed and miserable in the extreme. To form a conception of their situation, it is necessary to observe that the whole pecuniary burdens of the state were laid on them. They alone were liable to taxation. An expensive and ambitious court; an army of two hundred thousand men in time of peace, and twice that number in war; a considerable marine establishment; public roads and works; all were supported exclusively by taxes levied from the lowest of the people. The revenues also were collected in a wasteful and oppressive manner. They were farmed out at a certain estimated sum, over and above which the farmers-general not only acquired immense fortunes for themselves, but were also enabled to advance enormous presents to those favourites or mistresses of the king or the minister by means of whom they procured their contracts. In raising all this money from the people, they were guilty of the most cruel oppression; as they had it in their power to obtain whatever revenue laws they pleased, and to execute these in the severest manner, their exactions were measured by their own cupidity alone. For this purpose they kept in pay an army of clerks, subalterns, scouts, and spies, amounting, it is said, to about eighty thousand. This class of persons were equally detested by the king, whom they deceived and kept in poverty; by the people, whom they oppressed; and by the ancient nobility, whom they eclipsed by the splendour of their establishments and the prodigality of their expenditure. But the court of France could never contrive to dispense with these financial middle-men. The peasants were also liable to be called out by the intendants of the provinces, in what were called *corvées*, to work upon the high roads for a certain number of days in the year. This was a source of severe oppression, as the intendant had the choice of the time and place of their employment, and was not bound to accept of any commutation in money. They were moreover subject to the nobles in a great variety of ways. The latter retained all their ancient manorial or patrimonial jurisdictions. The common people being anciently slaves, had obtained their freedom upon different conditions. In many places they and their posterity remained bound to pay a perpetual tribute to their feudal lords; and such tributes formed a considerable part of the revenue of many of the provincial nobles. By a recent regulation, no man could be appointed an officer of the army until he had produced proofs of nobility for four generations. The parliaments, although originally of the *tiers état*, attempted also to introduce a rule that none but the nobility should be admitted into their order. It will not be accounted surprising, therefore, that the common people of France were extremely ignorant and superstitious. They were, however, passionately devoted to their monarch, and all that concerned him. In 1754, when Louis XV. was taken ill at Metz, the whole nation was thrown into a kind of despair. The courier who brought the news of his recovery to Paris was almost suffocated by the embraces of the populace, who even extended their loyal endearments to the horse which had carried him.

The French monarch was, in every sense of the word, despotic. His power was supported by the army, and by a watchful police with an infinite host of spies and other servants in its pay. In France no man was safe. The secrets of private families were searched into. Nothing, in fact, escaped the jealous inquisition of the police. Men were seized by *lettres de cachet* when they least expected it, and their families had no means of discovering their fate. The sentence of a court of law against a nobleman was usually reversed by the minister. No book could be published without the license of a censor-general, appointed by the court, and the minister was accountable to none but the king. No account was given of the expenditure of the public money. Enormous gratifications and pensions were often bestowed as the reward of the most infamous services. The supreme power of the state was commonly lodged with a favourite mistress, who was sometimes a woman taken from the stews. This was not indeed the case under Louis XVI., but it was nevertheless one of the misfortunes of his life that he was far from being absolute in his own family. Still, however, with all its manifold faults, the French court was the most splendid and polished in Europe. It was more the resort of men of talents and literature of every kind, and there they met with more ample protection, than anywhere else. The court was often jealous of their productions; but they met with the most distinguished attention from men of fortune and rank; insomuch that for a century previous to this the French had given the law to Europe in all questions of taste, literature, and polite accomplishment. The gaiety and elegance which prevailed at court diffused itself throughout the nation, and, amidst much internal misery, gave it an external appearance of happiness, or at least of contented endurance.

But, such as it was, this government had stood for ages, and might have continued much longer, had not a concurrence of causes contributed to its overthrow. The inferior orders of the clergy, excluded from all chance of preferment, regarded their superiors with jealousy and envy, and were ready to join the laity of their own rank in any popular commotion. The inferior provincial nobility beheld with contempt and indignation the vices and the power of the courtiers, and the higher nobility desired to diminish the power of the crown. The practising lawyers, being almost entirely excluded from the chance of becoming judges, wished eagerly for a change of system, not doubting that their talents and professional skill would render them necessary amidst any alterations which might occur; and accordingly they were the first instruments in producing the Revolution, and amongst its most active supporters. The monied interest eagerly longed for the downfall of the ancient nobility. With respect to the great mass of the common people, they were too ignorant, too superstitiously attached to old establishments, and too much depressed, to have any distinct conception of the nature of political liberty, or any hope of obtaining it; but their minds were nevertheless in some measure prepared for change, by the contagious influence, as it were, of the passions which were fermenting around them.

For forty years the principles of liberty had been disseminated with eagerness in France by men of great talents, as Rousseau, Voltaire, Helvetius, and Raynal, to whom the celebrated Montesquieu had led the way. Besides these, there was in France a vast multitude of what were called men of letters, or persons who gave this account of the manner in which they spent their time; and all these were deeply engaged on the side of some kind of political reform. The men of letters in Paris alone are said to have amounted to twenty thousand. One of the last acts of the administration of the Archbishop of Toulouse was to publish a resolution of the king in council, dated 5th July 1780, inviting all his subjects to give him their advice with regard to the state of affairs. This was considered as the concession of an unlimited liberty of the press; and it is scarcely possible to form an idea of the infinite variety of political publications which from that period diffused amongst the people a dissatisfaction with the order of things under which they had hitherto lived. The established religion of France had for some time past been gradually undermined. It had been solemnly assaulted by philosophers in various elaborate performances; and the men of wit, amongst whom Voltaire took the lead, had attacked it with the dangerous weapon of ridicule, which in France is so much more effective than argument. The Roman Catholic religion is much exposed in this respect, in consequence of the multitude of false miracles and legendary tales with which its history abounds. But, without discriminating between the principles on which it rests, and the superstitious follies by which these had been defaced, the French nation learned to laugh at the whole, and rejected instead of reforming the religion of their fathers. Thus the first order in the state had already begun to be regarded as useless, and the minds of men were prepared for important changes.

Upon the whole, then, it appears that a great variety of causes contributed, some more and others less directly, to bring about that grand social and political movement which, in the early part of its career, dashed in pieces the oldest monarchy in Europe, and gave to the regenerative principle an impulse which has been felt even in distant nations, and the ultimate effects of which no one can as yet compute. In the first place, the destruction of the power of the great vassals of the crown, and the consolidation of the monarchy into one great kingdom, during the reigns of Louis XI., Francis I., and Henry IV., was essential to the Revolution; for, had the central power been weaker, and the privileges of the great feudatories remained unimpaired, France, like Germany, would most probably have been split into a number of independent principalities, all unity of feeling or national energy would have been lost in the division of interests, and a revolution would no more have happened in France than in Silesia or Saxony. Secondly, the military spirit of the French, and the native valour which a long series of national triumphs had sustained, inspired them with the moral courage to commence, and the fortitude to maintain, a conflict, under which a people differently circumstanced would have speedily sunk. Thirdly, the spirit of free investigation which distinguished the eighteenth century, and which, from expatiating in the regions of taste and philosophy, passed, by an easy transition, into those of politics and religion, no doubt contributed powerfully to produce that change of opinion which sooner or later brings about important alterations in the institutions of a country. This freedom of inquiry and discussion, which assumed its greatest latitude in the writings of Voltaire, Rousseau, Raynal, and the Encyclopædists, existed by sufferance, it is true, and was confined to abstract questions alone; yet the fact of its having been tolerated is a proof that the minds of men were prepared to re-consider all received opinions, and that the religious and political speculations which are commonly supposed to have created the revolutionary spirit, were in reality the symptoms of a change already operated, but which they contributed incalculably to extend and confirm. Fourthly, the church in France experienced the fate of all attempts in an advancing age to fetter the human mind by the shackles of an antiquated creed, or the tyranny of an overgrown and corrupt hierarchy; the resistance to its authority became general, the good and the bad parts of its doctrine were indiscriminately rejected, and blind belief gave place to the most uncompromising scepticism. Infidelity became a test of mental independence; and the progress of philosophical speculation, as evinced in the writings of Raynal, Voltaire, Diderot, and Rousseau, served more and more to confirm the tendency to which we have alluded. Fifthly, the exclusive immunities enjoyed by the nobility, the grievances which the French nation suffered in consequence, and the insolence of privileged tyranny, which is even more keenly resented than the tyranny itself, were mainly instrumental in bringing about the Revolution. "Numerous and serious as the grievances of the French nation were," says Rivarol, "it was not these that occasioned the Revolution. Neither the taxes, nor the *lettres de cachet*, nor the other abuses of authority, nor the vexations of the prefects, nor the ruinous delays of justice, irritated the nation: it was the *prestige* of nobility which excited all the ferment, a fact which proves that it was the shopkeepers, the men of letters, the monied interest, in a word, all those who were jealous of the nobility, who roused against them the lower classes in the towns, and the peasantry in the country. In truth, it was an extraordinary circumstance that the nation should say to a child possessed of parchment, 'You shall one day be either a prelate, or a marshal, or an ambassador, as you choose,' whilst it has nothing to offer to its other children." And to all these may be added, as concurring and co-operating causes, first, the unprecedented inequality of taxation; secondly, the state of the labouring poor, who had been reduced to the most abject misery; thirdly, the non-residence of the landed proprietors, drawing after it, as is almost invariably the case, a discontented tenantry and a neglected country; fourthly, the local burdens and feudal services due by the tenantry to their feudal superiors, which were to the last degree vexatious and oppressive; fifthly, the royal prerogative, which, by a series of successful usurpations, had reached a height inconsistent with any thing like real freedom; sixthly, the corruption which had long tainted the manners of the court, and poisoned all the sources of influence; seventhly, the American war, which, whilst the minds of the people were in a ferment, lighted a spark that speedily set fire to the train; eighthly, the state of the army, both in point of feeling and discipline; and, lastly, the spirit of innovation, which may justly be considered as "the joint effect and full result" of all the causes we have enumerated. But so many causes of disaffection did not come all at once into action; many of them had long been in operation. During the whole reign of Louis XV. the discontents of the people were gradually increasing, and it was already foreseen that the reign of his successor would be one of anxiety and trouble. "I have had great difficulty," said Louis XV. "in extricating myself from the quarrels with the parliaments during my whole reign; let my grandson take care of them, for it is more than probable they will endanger his crown." Subsequently to the peace of 1763, a growing discontent prevailed in the nation; headed, in the first instance, by a portion of the nobility, who were either impelled by the force of public opinion, or ambitious of popular applause, and augmented latterly by the numberless faults of the government, the corruption of the court, and the misery of the country.

The immense population of the city of Paris rendered it an important engine in the hands of the fomenters and conductors of the Revolution. An overgrown capital has always proved dangerous to a government which is or attempts to be despotic; as appears from the history of ancient Babylon and Rome, as well as that of modern Constantinople, London under Charles I., and Paris in the times of the League and the Fronde. The general scarcity of grain which occurred about this period also assisted not a little in producing many of the convulsions attending the Revolution. On Sunday the 13th of July 1788, about nine in the morning, without any eclipse, darkness suddenly overspread several parts of France; a phenomenon which formed the prelude to a tempest unexampled in the temperate region of Europe. Wind, rain, hail, and thunder, seemed to contend in impetuosity; but the hail proved the greatest instrument of destruction. Instead of the rich prospects of an early autumn, the face of nature in the space of an hour presented the dreary aspect of universal winter. The soil was converted into a morass, and the standing corn beaten into the quagmire; the vines were broken to pieces, and the fruit trees demolished; whilst unmelted hail lay in heaps like rocks of solid ice. Even the most robust forest trees were unable to withstand the fury of the tempest. The hail was composed of large, solid, angular pieces of ice, some of them weighing from eight to ten ounces. The country people, beaten down in the fields on their way to church, amidst this concussion of the elements, concluded that the last day had arrived; and, scarcely attempting to extricate themselves, lay despairing and half suffocated amidst the water and the mud, expecting the immediate dissolution of all things. But the storm was irregular in its devastations. Whilst several rich districts were laid entirely waste, some intermediate portions of country remained comparatively little injured. One district of sixty square leagues had not a single ear of corn or fruit of any kind left. Of the sixty-six parishes in the district of Pontoise, forty-three were entirely desolated; and of the remaining twenty-three some lost two thirds and others half their harvest. The Isle of France, being the district in which Paris is situated, and the Orleannois, appear to have suffered most severely. The damage done there, upon a moderate computation, amounted to eighty millions of livres, or between three and four millions sterling. Such a calamity must at any period have been severely felt; but occurring on the eve of a great political revolution, and amidst a general scarcity throughout Europe, it was peculiarly unfortunate, and occasioned more embarrassment to the government than perhaps any other event whatever. Numbers of families found it necessary to contract their mode of living for a time, and to dismiss their servants, who were thus left destitute of bread. Added to the public discontent and political dissensions, this calamity produced such an effect upon the people in general, that the nation seemed to have changed its character; and instead of that levity by which it had ever been distinguished, a deep gloom seemed now to settle down on every countenance.

Attempt to reduce the power of the crown.

The spring of the year 1789 was a period of much political anxiety in France. The superior orders wished to reduce the power of the crown, but were jealous of their own privileges, and determined to retain them; whilst the popular philosophers and others were endeavouring to render them odious, and to rouse the people to a love of freedom. Still, however, the great body of the common people remained careless spectators of the struggle, and unconscious of the approaching convulsion. Such was their indifference, indeed, that few of them took the trouble even to attend and vote at the elections of the deputies to the States General. In many places where a thousand voters were expected, scarcely fifty came forward; but such of them as did appear showed that a seed had been sown which might one day produce important fruits. In the instructions which they gave to their deputies, the British constitution formed in general the model upon which they wished their government to be reconstructed. They demanded equal taxation, the abolition of *lettres de cachet* or arbitrary imprisonment, the responsibility of ministers, and the extinction of the feudal privileges of the nobles; but they wished that the whole three orders of the state should sit and vote in one house, well knowing that their nobility were not prepared to act the moderate part of the British House of Lords. The nobles, on the other hand, though willing to renounce some of their pecuniary immunities, and to sacrifice the power of the crown, were most decidedly resolved neither to surrender their feudal prerogatives, nor to give up the right of sitting in three separate assemblies; by means of which each of the orders could easily resist the encroachments of the two others. M. Neckar has been severely censured for not deciding this last and important question previously to the meeting of the States General; but it must be observed, that the very purpose of calling that assembly together was to overturn, through its medium, and without any direct interposition on the part of the ministers, the unjust privileges of the higher orders. Had the king positively decided in favour of three chambers, the nobles and the clergy would have retained all those ancient privileges established in their favour, of which it was his wish to deprive them, and the crown and its prerogatives would have been the only objects of sacrifice. It was therefore thought safer to leave the *tiers état* to fight its own battle; nor was it yet imagined that the commons of France, depressed, and poor, and dispersed over a multitude of provinces, could ever unite in enterprises dangerous to the power of the sovereign.

eeting of e States.

The States had been summoned to meet at Versailles on the 27th of April, and most of the deputies arrived at that time; but as the elections for the city of Paris were not concluded, the king deferred the commencement of their sessions until the 4th of May. During this period the members, left in idleness, began to find out and form acquaintance with one another. In particular, a few from Bretagne formed themselves into a club, into which they gradually admitted such other deputies as were found to be zealous in the popular cause, and also many persons who were not deputies. This society, which took the name of the *Comité Bréton*, was originally established at Versailles, and was destined, under the appellation of the Jacobin Club, to give laws to France, and to diffuse terror and alarm throughout Europe. On the other hand, the aristocratic party established conferences at the house of Madame de Polignac, for the purpose, as was alleged, of uniting the nobles and the clergy. An event occurred at this time which all parties ascribed to some malicious motive. In the populous suburb of St Antoine, where a person named Reveillon carried on a great paper manufactory, a false report was spread that this individual intended to lower the wages of his workmen, and that he had declared that bread was too good for them, and that they might subsist well enough on patato-flour. A commotion was raised, Reveillon was burned in effigy, and his house thereafter burned and pillaged by the mob, who were not dispersed till the military had been called in, and many lives lost. The popular party asserted that this commotion had been artfully excited by the party of the queen and the Count d'Artois, to afford a pretence for bringing great bodies of the military to the neighbourhood, in order to overawe the States General, or induce the king to resolve on assembling that body at Versailles in preference to Paris, where they and the popular minister Neckar wished the assemblage to take place.

On the 4th of May the States General assembled at Versailles, and commenced business by going to church in solemn procession, preceded by the clergy, and followed by the king, according to ancient custom, to perform an act of devotion. The nobles were arrayed in splendid robes, and, like the higher clergy, glittered in gold and jewels. The commons appeared in black, the dress belonging to the law. The assembly was thereafter opened by a short speech from the throne, in which the king congratulated himself on thus meeting his people assembled; alluded to the national debt, and the taxes, which were severely felt because unequally levied; and noticed the general discontent and spirit of innovation which prevailed, but declared his confidence in the wisdom of the assembly for remedying every evil. M. Barretin, the keeper of the seals, next addressed the assembly in a congratulatory speech, and was followed by Neckar. The latter spoke for three hours; but though much applauded on account of the clear financial details which his speech contained, he encountered a certain degree of censure from all parties, on account of the cautious ambiguity which he observed regarding the future proceedings of the States General.

The following day the three orders assembled separately. The deputies of the *tiers état* amounted to six hundred in number, and those of the nobles and clergy to three hundred each. During the earlier sittings much time was spent in unimportant debates about trifling points of form; and the first important question which came under discussion was the verification of their powers, or production of the commissions of the members, and the investigation of their authenticity. The commons laid hold of this as a pretext for opening the grand controversy, whether the States General should sit in one or in three separate chambers; and they sent a deputation inviting the nobles and the clergy to meet along with them in the common-hall, for the purpose of verifying their powers in one common assembly. In the chamber of the clergy a hundred and fourteen members voted for the performance of this ceremony in the general assembly, and a hundred and thirty-three against it; but in the order of the nobles the resolution for the verification in their own assembly was carried by a majority of a hundred and eighty-eight to forty-seven. The commons, however, paid no regard to this. Conducted by bold and skilful leaders, who discerned the importance of the point in contest, they resolved not to abandon it. Hence the latter, though fully cognisant of the exigencies of the state, and aware that, owing to the deficiency in the revenue, a short delay might lead to the absolute dissolution of the government, suffered five weeks to pass away in total inactivity. During this period proposals were made on the part of the ministry for a pacification between the three orders, and conferences were opened by commissioners from each; but no art could induce the commons to abandon their original purpose, or prevail witn them to enter upon the business of the state.

Popularity of the *tiers état*.

The nation having expected much from the assembling of the States General, received the intelligence of their inaction with no small degree of concern. But as the *tiers état* was naturally popular, public censure could not readily fall upon that favourite order. Besides, from the period of their assembling, the commons had made every effort to augment their own popularity. They admitted all persons promiscuously into the galleries, and even into the body of their hall; no restraint was attempted to be laid upon the most vehement marks of popular applause or censure; lists of the names of the voters were publicly taken and sent to Paris upon every remarkable occasion; and thus the members suddenly found that, according to their political sentiments, they became objects of general execration or applause. The new and bold notions of liberty which were daily advanced by the leaders of the *tiers état* were received with acclamation by their hearers; the capital became interested in the issue of every debate; and the political fervour thus generated thrilled along every nerve and sinew of society. The commons accused the nobles of obstinately impeding the business of the state, by refusing to verify their powers in one common assembly; and the accusation was greedily swallowed by the multitude. The nobles accordingly became every day more unpopular. Their persons were insulted; and new publications daily appeared, in which their order was reviled, and represented as an useless or pernicious incumbrance, not to be tolerated in a free state. Whoever adhered to them was branded with the odious appellation of aristocrat. The clergy, from the influence of the parish curés or parsons, seemed ready to desert their cause; and they were even opposed by a minority of their own body, which derived lustre from having at its head the Duke of Orleans. Still, however, the majority of the nobles remained firm; well aware, that if they once consented to sit in the same assembly, and to vote promiscuously, with the more numerous body of the commons, their whole order, with all its exclusive privileges, must speedily be overthrown.

Meanwhile the leaders of the commons saw that a change was taking place in the minds of men; and regarding the period as at length arrived when they might emerge from their inactivity, and seize the whole legislative authority, they declared that the representatives of the nobles and the clergy were only the deputies of particular incorporations, who might sit and vote along with them, but who had no title in a collective capacity to act as the legislators of France. For conducting business with more facility, twenty committees were named. On the suggestion of the Abbé Sieyes, a final message was sent to the privileged orders, requiring their attendance as individuals, and intimating that the commons, as the deputies of ninety-six out of every hundred of their countrymen, were about to assume the exclusive power of legislation. None of the nobles obeyed the summons; but three curés, named Cesve, Ballard, and Jallot, presented their commissions, and were received with loud acclamations; and the following day these were followed by five more, amongst whom were Grégoire, Dillon, and Bodineau. After some debate concerning the appellation which they ought to assume, the commons, with such of the clergy as had joined them, solemnly voted themselves the sovereign legislators of their country, under the name of the National Assembly. When the result of the vote was declared, the hall resounded with shouts, from an immense concourse of spectators, of *Vive le Roi et vive l'Assemblée Nationale.* M. Bailly was chosen president for four days only, MM. Camus and Pison de Galand were appointed secretaries, and the assembly proceeded to business.

The first acts of the National Assembly were decisively expressive of its own sovereignty. All taxes imposed without the consent of the representatives of the people were declared to be null and void; but a temporary sanction was given to the existing taxes, though illegal, till the dissolution of the assembly, and no longer; and it was added, that as soon as the assembly should be able to fix, in concert with his majesty, the principles of national regeneration, it would take into consideration the national debt, and place the creditors of the state under the safeguard of the national honour.

Union of the clergy with the commons.

The popular cause now gained ground so fast, that on the 19th of June a majority of the clergy voted for the verification of their powers in common with the National Assembly, and resolved to unite with them on the following day. Affairs had thus come to a crisis, and the nobles perceived that they must instantly make a decisive stand, or yield up their cause as utterly lost. So great indeed was their alarm, that M. d'Espremenil proposed, at one of the sittings of their order, to address the king, entreating him to dissolve the States General. Hitherto that prince had gone along with Neckar in favouring the popular cause in opposition to the aristocracy. But every art was now used to alarm his mind regarding the late assumptions of power on the part of the commons; and these arts were at length successful. Repeated councils were held; and as Neckar was absent attending a dying sister, the king was prevailed upon to enter into the views of the aristocratical leaders. But the first measure which they adopted was so ill conducted as to afford little prospect of final success to their cause. On the 20th of June, when the president and members were about to enter as usual into their own hall, they found it unexpectedly surrounded by a detachment of the guards, who refused them admission, whilst the herald at the same time proclaimed a royal session. Alarmed at this unforeseen event, the meaning of which they knew not, but apprehending that an immediate dissolution of the assembly was intended, they instantly retired to a neighbouring tennis-court, where, in the heat of their enthusiasm, they took a solemn oath never to separate until the constitution they had promised the country should be completed. On the 22d a new proclamation intimated that the royal session was deferred till the following day. It was now alleged that the assembly had been excluded from their hall merely because the workmen were occupied in preparing it for the intended solemnity. But this information was not calculated to excite favourable expectations of the measures about to be adopted at a royal session, ushered in by such circumstances of disrespect to the representatives of the people. The assembly, after wandering about in quest of a place of meeting, at length entered the church of St Louis, and were immediately joined by the majority of the clergy, with their president the Archbishop of Vienne at their head. Two nobles of Dauphiné, the Marquis de Blaçon and the Count d'Agoult, at the same time presented their commissions. Encouraged by these events, and by the applause of the multitude, the assembly now waited with firmness the measures about to be adopted.

Discourse of the king.

The royal session was held in the most splendid form, but altogether in the style of the ancient despotism. Soldiers surrounded the hall. The two superior orders were seated, whilst the representatives of the people, who had been left standing a full hour in the rain, were in no humour, when at last admitted, to receive with much complacency the commands of their sovereign. The king read a discourse, in which he declared null and void the resolutions of the 17th, but at the same time presented the programme of a constitution for France. This scheme contained many good and patriotic principles, but preserved the distinction of orders, and the exercise of *lettres de cachet;* it said nothing about any active share in the legislative power to be possessed by the States General, and was silent respecting the responsibility of ministers and the liberty of the press. The king concluded by commanding the deputies immediately to retire, and to assemble again on the following day; after which he then withdrew, and was followed by all the nobles and a part of the clergy. The commons remained on their seats in gloomy silence; but this was at length interrupted by the grand master of the ceremonies, who reminded the president of the intentions of the king. The words were scarcely uttered when Mirabeau, starting from his seat, exclaimed, "The commons of France have determined to debate. We have heard the intentions which have been suggested to the king; and you, who cannot be his agent with the States General, you, who have here neither seat nor voice, nor a right to speak, are not the person to remind us of his speech. Go tell your master, that we are here by the power of the people, and that nothing shall expel us but the bayonet." The applause of the assembly seconded the enthusiasm of the orator, and the master of the ceremonies withdrew in silence. M. Camus then rose, and having in a vehement speech stigmatized the royal session by the obnoxious appellation of a bed of justice, he concluded by moving that the assembly should declare their unqualified adherence to their former decrees. This motion was followed by another, declaring the persons of the deputies inviolable; and both were unanimously decreed. The assembly accordingly continued their sittings in the usual form. On the following day the majority of the clergy attended as members; and on the 25th the Duke of Orleans, along with forty-nine of the deputies belonging to the order of nobility, also joined them. The remaining nobles, as well as the small minority of the clergy, now found themselves awkwardly situated; but whether on this account, or because their leaders had by this time formed a plan for carrying their point by the aid of a military force, the king, by a pressing letter, invited both orders to join the commons; and this request was immediately complied with, though many of the nobility highly disapproved of the measure.

tuation France.

The situation of France had now become truly alarming. When the king retired from the assembly after the royal session, he was followed by more than six thousand citizens, with loud clamours and every mark of disapprobation. At Versailles all was speedily in an uproar. Neckar had repeatedly solicited his dismission, the report of which increased the popular clamour. The court was in consternation. The king now discovered that his minister was more popular than himself. At six o'clock in the evening the queen sent for M. Neckar; and when he returned from the palace, he assured the crowd who waited for him that he would not abandon them, upon which they retired satisfied. At the same time the news of the royal session had thrown the city of Paris into violent agitation. The peace of that capital was at this time endangered by a variety of causes. A dreadful famine raged throughout the land, and, as is usual in such cases, was most severely felt in the capital. This prepared the minds of men for receiving unfavourable impressions as to the political state of the country; and, besides, every effort was made to disorganize the government, and produce a dislike of the ancient order of things. The press poured forth innumerable publications, filled with new and seducing, though generally impracticable, theories of liberty; and these were not only distributed gratis amongst the people of Paris, but dispersed in the same manner throughout the provinces. Philip duke of Orleans, presumptive heir to the crown after the children and brothers of the king, is with good reason believed to have supplied out of his more than princely revenues the expense of these publications. In the gardens of the Palais Royal, which belonged to him, an immense multitude was daily assembled, listening from morning till night to orators who descanted upon the most exciting topics of popular politics, and many of whom were suspected to be in his pay. It was even believed, we wish we could say without reason, that his money found its way into the pockets of some of the most distinguished leaders in the National Assembly.

duction the military.

But the government was, if possible, still more endangered by the methods which were now employed to seduce the military from their duty. Every officer of the French army belonged to the order of nobility; and hence it might have been imagined that but little danger was to be apprehended from a body so commanded. But this very circumstance became the means of disorganizing that great engine of despotism. As the soldiers could not avoid imbibing the new opinions, their officers became the first objects of their jealousy, especially in consequence of the impolitic edict of Louis XVI. which required every officer to produce proofs of four degrees of nobility, and thus insulted, by avowedly excluding, the plebeians from promotion. With a view to what might eventually occur, the instructions to the deputies of the *tiers état* had recommended an increase of the pay of the soldiers; and now every art was employed to gain them to the popular cause. They were conducted to the Palais Royal, and there caressed and flattered by the populace, whilst they listened to the popular harangues. Nor were the arts of corruption unsuccessful. On the 23d of June the military refused to fire on the mob in a tumult; and when some of their number were on the 30th reported to be in confinement for this offence, a crowd instantly collected and rescued them, the dragoons who were brought to suppress the tumult grounding their arms. A deputation of the citizens solicited the assembly to obtain the pardon of the prisoners; and the assembly applied to the king, who pardoned them accordingly.

All these events, together with the tumultuous state of the capital, which was daily increasing, rendered it necessary for the king to call out the military force, in order, if possible, to restore the public peace. That his intentions were to re-establish order, the actual state of affairs will not permit us to doubt; but the aristocracy, with the Count d'Artois at their head, were engaged in bringing forward other measures, which ultimately contributed to ruin the king and the monarchy. Crowds of soldiers were collected, from all parts of the kingdom, around Paris and Versailles; and it was observed, that these consisted principally of foreign troops. Camps were traced out, and Marshal Broglio, an officer of exaggerated reputation, was placed at the head of the army. The king was supposed to have entirely yielded to new counsels, and every thing betokened a desperate effort to restore the energy of the ancient government. This was indeed the most interesting and important period of the French revolution; it formed as it were the pivot on which the whole movement turned; yet the specific designs of the leading actors have never been clearly understood, though their general tendency has always been perfectly intelligible. It was rumoured at the time, that Paris was to be subdued by a bombardment, and that the assembly was to be dissolved, and its leaders put to death. But although such reports were entitled to small credit, the crisis of French liberty was at hand, and the existence of the National Assembly as an independent body, at least upon any other footing than that proposed by the king on the 23d of June, was also involved. An able and eloquent address to the king against the assemblage of foreign troops in their neighbourhood was in the mean time brought forward by Mirabeau, and voted by the assembly. The king replied that the state of the capital was the cause of assembling the troops, and offered to transfer the States General to Noyons or Soissons. "We will remove neither to Noyons nor to Soissons," exclaimed Mirabeau; "we will not place ourselves between two hostile armies, that which is besieging Paris, and that which may fall upon us through Flanders or Alsace: we have not asked permission to run away from the troops; we have desired that the troops should be removed from the capital."

Thirty-five thousand men were now stationed in the neighbourhood of Paris and of Versailles. The posts which commanded the city were occupied, and camps were marked out for a greater force. The Count d'Artois and his party regarded their plans as ripe for execution; and Neckar received an order from the king, ordaining him to quit the kingdom in twenty-four hours. That popular minister dined with his family after receiving the commands of his sovereign, and the same evening set out for Brussels. In his dismission the democratic party perceived that a resolution had been adopted to accomplish their ruin. The assembly therefore again addressed the throne, and requested anew the removal of the troops, offering to become responsible for the public peace, and to proceed in a body to Paris to encounter personally every danger which might occur. But they were coolly told that the king was the best judge of the mode of employing the troops, and that the presence of the assembly was necessary at Versailles. On receiving this reply, it was instantly decreed, on the motion of the Marquis de Lafayette, that the late ministry had carried with them the confidence of the assembly; that the troops ought to be removed; that the ministry should be held responsible to the people for their conduct; that the assembly persisted in all its former decrees; and that as it had taken the public debt under the protection of the nation, no power in France was entitled to pronounce the degrading word bankruptcy.

Consternation in Paris.

The city of Paris was thrown into great consternation by the news of Neckar's retreat. His bust and that of the Duke of Orleans were dressed in mourning, and carried through the streets. But the royal Allemand, a German regiment, having broken in pieces the busts, dispersed the populace; and the Prince de Lambesc, grand-ecuyer of France, was ordered to advance with his regiment of cavalry, and take post at the Tuilleries. Being a man of a violent temper, and enraged at the appearances of disapprobation which were visible around him, the latter furiously cut down with his sword an old man who was walking peaceably in the gardens. The consequences of this inhuman act were such as might have been expected. A shout of execration instantly arose; the cry to arms was heard; the military was assaulted on all sides; the French guards joined their countrymen, and compelled the Germans, overpowered by numbers, and unsupported by the rest of the army, to retire. All order was now at an end, and as night approached universal terror diffused itself throughout the city. Bands of robbers were collecting; and from them, or from the foreign soldiery, a general pillage was expected. The night passed away in consternation and tumult; and it was found in the morning that the hospital of St Lazare had already been plundered. The alarm bells were rung, and the citizens having assembled at the Hôtel de Ville, adopted a proposal which was there made for enrolling themselves as a militia, under the appellation of the National Guard. This day and the succeeding night were spent in tolerable quietness, without any attempt being made on the part of the army. But on the morning of the 14th of July it was discovered that the troops encamped in the Champs Elisées had moved off, and an immediate assault was therefore expected. The national guard now amounted to a hundred and fifty thousand men; but they were in general destitute of arms. They assumed a green cockade; but on recollecting that this was the livery of the Count d'Artois, they adopted one of red, blue, and white; and this was the origin of the tricolor cockade. M. de la Salle was named commander in chief; officers were chosen; and detachments were sent round in quest of arms. In the Hôtel des Invalides were found upwards of thirty thousand stand of arms, together with twenty pieces of cannon. Avariety of weapons were also procured from the *garde-meuble de la couronne*, and from the shops of armourers, cutlers, and others.

Capture of the Bastille.

The too famous fortress of the Bastille was an object of natural hatred to the Parisians. Within its walls, courage, genius, and innocence, had long wept unseen, and its doleful echoes had often responded to the stifled cries of despair. At eleven o'clock in the morning, M. de la Rosière, at the head of a numerous deputation, waited upon M. Delaunay, the governor, who promised, along with the officers of his garrison, that they would not fire upon the city unless they were attacked. But a report was soon spread throughout Paris that M. Delaunay had a short time thereafter admitted into the fortress a multitude of persons, and then treacherously massacred them. The origin of this rumour has never been discovered. The fact itself has been denied; but it was attested at the time by the Duke of Dorset, then British ambassador at the court of France. The effect of it was the adoption of a resolution to assault the Bastille; in consequence of which an immense and furious multitude rushed into its outer, and soon forced their way into its inner, courts, where they received and returned a severe fire for the space of an hour. The French guards, who were now embodied into the national guard, conducted the attack with equal skill and coolness. They dragged three waggons loaded with straw to the foot of the walls, and there set them on fire, by which means the garrison were prevented from taking aim, whilst the smoke proved no hindrance to the assailants. The besieging multitude pressed the attack with incredible obstinacy for the space of four hours; the garrison was thrown in confusion; the officers served the cannon in person, and fired muskets in the ranks; whilst the governor in despair thrice attempted to blow up the fortress. A capitulation was at length sought, but refused to the garrison, and an unconditional surrender demanded. This at length took place, and the governor, with M. de Losme Salbrai, his major, became victims of the popular fury, in spite of every effort which could be made for their protection; but the French guards succeeded in saving the lives of the garrison. Only seven prisoners were found in the Bastille. A guard was placed in it, and the keys were sent to the celebrated M. Brissot, who a few years before had inhabited one of its dungeons. The remaining part of this eventful day was spent at Paris in a mixture of wild triumph and excessive alarm. In the pocket of the governor of the Bastille there had been found a letter written by M. de Flesselles, the *prévot des marchands*, or chief city magistrate, who had pretended to be a most zealous patriot, encouraging him to resistance by the promise of speedy support. This piece of treachery was punished by instant death; and the bloody head of Flesselles was carried through the city on a pole, along with that of M. Delaunay. On the approach of night a body of troops advanced towards the city by the Barrière d'Enfer; but the national guard hurried thither, preceded by a train of artillery, and the troops withdrew upon the first fire. Barricades were everywhere formed, the alarm-bells were rung, and a general illumination continued throughout the night.

A new ministry appointed.

In the mean time it was obvious that the new ministry were entering upon a difficult scene of action, where one false step might lead to ruin, and where their own plans of conduct required to be maturely digested. Marshal Broglio was appointed minister of war; the Baron de Breteuil, president of finance; M. de la Galezière, comptroller-general; M. de Laporte, intendant of the war department; and M. Foulon, intendant of the navy: but they were only destined to act as official men under the Count d'Artois, and the other leaders of the aristocracy. To the latter there scarcely remained even a choice of difficulties; in fact no resource was left but that of overawing by military force the National Assembly and the capital, and risking the desperate measure of a national bankruptcy, to avoid which the court had convoked the States General. But no trace exists of any attempt to employ this last and desperate resource. The evening after the departure of M. Neckar was spent by the court of Versailles in festivity, as if a victory had been gained; and the courtiers of both sexes went round among the soldiery, striving to secure their fidelity by caresses, and every species of flattering attention. The ministry, however, not only failed to support the Prince de Lambesc in the post which he had been sent to occupy, but suffered the whole of the 13th to pass in indecision, whilst the capital was in a state of rebellion, an army formally mustering within its walls, and the names of the principal nobility publicly exposed in lists of proscription. They accordingly received with confusion and dismay the news of the capture of the Bastille; and these feelings were increased by information received from Marshal Broglio that the troops refused to act against the Parisians or the National Assembly. In this perplexity they adopted the miserable device of concealing from the king the real state of public affairs; and that unfortunate prince was thus perhaps the only person who remained ignorant of the convulsions in which his country was involved. At length, about midnight, the Duke of Liancourt forced his way into the king's apartment, and informed him of the revolt of the capital and the army, and of the surrender of the fortress of the Bastille. The Count d'Artois, who was present, still attempted to retain the monarch under the fatal delusion which it had been the object of this communication to destroy; but the Duke of Liancourt, turning round, exclaimed, "As for you, Sir, your life can only be saved by instant flight; I have seen with horror your name in the bloody list of the proscribed." The count, with the members of his short-lived administration and their adherents, accordingly fled to the frontiers; and thus commenced an emigration which, depriving the throne of its natural supporters, left the field open to the declared enemies of the monarchy. This ministry had, no doubt, many difficulties to contend with; but an accurate examination of their conduct excites a suspicion which, whilst it exculpates them from much that has been laid to their charge, does little honour either to their talents or their character, namely, that they had come into office without having formed any regular plan of conduct, and that, acting without decision, they became the sport of events which they wanted skill and vigour to direct or control.

The king visits the assembly and the capital.

But in spite of all that had occurred, the monarch was still personally beloved. Early the following morning the king went to the assembly, though with none of the usual solemnities. He regretted the commotions of the capital, disavowed any knowledge of an intention against the persons of the deputies, and intimated that he had commanded the removal of the troops. A deep silence prevailed for some moments, but this was succeeded by vehement and universal shouts of applause. When the king rose to depart, the whole assembly instantly crowded around him, and attended him to his palace. The queen appeared at a balcony with the dauphin in her arms; and the music played the pathetic air *Où peut on être mieux qu'au sein de sa famille.* The enthusiasm of loyalty communicated itself to the surrounding multitudes, and nothing was heard but acclamations of joy. On the following day the king declared his resolution to visit in person the city of Paris; and accordingly he set out, attended by some members of the assembly, and by the militia of Versailles. He was met by Lafayette at the head of a body of the national guard, of which he had been chosen commander in chief; and M. Bailly, in whose person the ancient office of mayor of Paris had been revived, received the king at the gates, and delivered to him the keys. During all this time no shout was heard from the innumerable crowd of spectators but that of *Vive la Nation.* The king advanced to the Hôtel de Ville, where the tricolor cockade was presented to him, which he put on, and with this badge on his breast presented himself at the window. At the sight of the patriotic emblem an universal shout of *Vive le Roi* burst forth from every quarter, and Louis returned to Versailles amidst loud demonstrations of apparent loyalty and attachment. But much confusion still prevailed in the capital, notwithstanding there was more appearance of order than might have been expected at such a crisis. This arose from a casual concurrence of circumstances. In order to conduct the elections with facility, Paris had been divided into sixty districts, each of which had a separate place of meeting. The people did not elect the members of the States General, but they chose delegates, who, under the name of electors, voted for the members. At the commencement of the disturbances, the electors, at the request of their fellow-citizens, assumed a temporary authority; but of this they speedily became weary, and as soon as possible procured the public election of a hundred and twenty persons, as municipal officers, for the government of the city. The citizens, having acquired the habit of meeting in their districts, grew fond of doing so; and assembling frequently, they made rules for their own government, and sent commissioners to communicate with other districts. The tumultuous nature of these meetings, and the vehemence of debate which prevailed in them, were incredible; but they gradually ripened into clubs, which ere long assumed the whole power of the state.

Neckar's return.

The banishment of Neckar was of short duration. He returned to France in consequence of an invitation by the king, and was received with equal joy by the assembly and the capital. But on this occasion he committed what has been considered as a great political error. In deploring the late excesses and murders, and in noticing the arrest of M. Bezenval, an officer of the Swiss guards, he recommended to the electors at the Hôtel de Ville, in a solemn harangue, that the past should be forgotten, that proscriptions should cease, and that a general amnesty should be proclaimed. In a moment of enthusiasm, this was agreed to, and the electors decreed what unquestionably exceeded their powers. The districts of Paris were instantly in commotion. The electors, alarmed, declared that they only meant that henceforth the people would punish no man except according to law; and to prove that they themselves were free from ambition, they formally renounced all their own powers. The assembly now took up the question, upon which Lally-Tolendal, Mounier, Clermont-Tonnerre, Garat, and others, declared that no person ought to be arrested without a formal accusation; whilst Mirabeau, Robespierre, Barnave, and Gleizen, alleged, on the contrary, that the people were entitled to lay hold of any man who had publicly appeared at the head of their enemies. The debate ended by admitting the explanation of the electors, and by a declaration that it was the duty of the assembly to see justice executed in all cases.

State of the country.

The commotions and enthusiasm which distracted the capital were speedily communicated to the provinces. In every quarter the people seized upon all the arms which could be found, and the military uniformly refused to act against them. Many acts of outrage were committed in Bretagne, at Strasbourg, in the Lyonnois, and elsewhere, in which the nobility were the sufferers. The mischiefs which occurred were usually magnified at a distance; but that very circumstance constituted an additional evil. It was stated in the National Assembly that M. de Mesmay, lord of Quincey, had invited to his house a number of patriots, amongst whom were the officers of a neighbouring garrison, to a splendid entertainment, in celebration of the happy union of the three orders; and that in the midst of the feast the master of the house contrived to withdraw unnoticed, and to set fire to a train previously laid, which communicated with a quantity of gunpowder in the cellars, by the explosion of which the whole company were blown into the air. On inquiry, however, it was found that the story was utterly destitute of truth. But before the fact could be ascertained, all France had resounded with accounts of the bloody tragedy; and the whole nobility of the kingdom suffered in a greater or less degree from the prejudices excited by this unhappy report, the origin of which has never been well explained. It would be vain to state all the idle rumours to which at this time the blind credulity of the multitude gave currency. At one time the aristocrats were cutting down the green corn; at another they were burying flour in the common sewers, or casting loaves into the river Seine. One report had no sooner been proved to be false than another was invented, and the whole nation was agitated by suspicion and alarm. The National Assembly were engaged in framing the declaration of the Rights of Man, which was to form the basis of the new constitution, when the alarming accounts, received from all quarters, of the state of anarchy into which the kingdom was falling, obliged them suddenly to turn their attention to questions of practical necessity. The privileged orders finding themselves objects of universal jealousy and hatred, became convinced that something must instantly be done to save their families and property, which were menaced on every side with persecution and pillage; and regarding the popular torrent as irresistible, they resolved to sacrifice a part in order to save something out of the general wreck.

Night of sacrifices.

On the afternoon sitting of the 4th of August the Viscount de Noailles, seconded by the Duke d'Aguillon, opened one of the most important scenes in the French Revolution, or in the history of any country. These noblemen stated, that the true cause of all the commotions which had convulsed the kingdom was to be found in the misery of the people, who groaned under the double oppression of public contributions and of feudal services. "For three months," said M. de Noailles, "the people have beheld us engaged in verbal disputes, whilst their own attention and their wishes are directed only to things. What is the consequence? They have armed to reclaim their rights, and they see no prospect of obtaining them except by force." He therefore proposed to do justice, as the shortest way of restoring tranquillity, and for this purpose to decree that henceforth every tax should be imposed in proportion to the wealth of the contributors, and that no order of the state should be exempted from the payment of public burdens; that feudal claims should be redeemed at a fair valuation, but that such claims as consisted of personal services on the part of the vassal should be abolished without compensation, as contrary to the imprescriptible rights of man. The extensive possessions of the noblemen with whom these proposals originated, added lustre to the disinterested sacrifice which they had made; the speeches delivered on the occasion were received with the most enthusiastic applauses by the assembly and the galleries, and their proposals were decreed by acclamation. In fact, no nation is so powerfully influenced by sudden emotions as the French. On this occasion the patriotic contagion spread with inconceivable rapidity, and a contest of generosity ensued. The hereditary jurisdictions possessed by the nobles within their own territories were unconditionally sacrificed. All places and pensions granted by the court were suppressed, unless given as the reward of merit or of actual services. The game laws, which condemned the husbandman, under severe penalties, to leave his property a prey to infinite multitudes of animals preserved for pastime, having always been numbered amongst the most severe grievances of the French peasantry, were renounced, along with the exclusive rights of rabbit-warrens, fisheries, and dove-cots. The sale of offices was abolished, and the fees exacted from the poor, together with the privilege of holding a plurality of livings, were relinquished by the clergy. The deputies of the Pais d'Etat, or privileged provinces, with the deputies of Dauphiné at their head, next came forward, and offered to surrender their ancient privileges, requesting that the kingdom might no longer remain parcelled out amongst Dauphinois, Bretons, Provençaux, and others, but that they should all form one great mass of French citizens. They were followed by the representatives of Paris, Marseilles, Lyons, Bordeaux, Strasbourg, and other places, who requested leave to renounce all their separate privileges as incorporations, for the sake of placing every man and every village in the nation upon a footing of equality. And thus the assembly proceeded, until every member had exhausted his imagination upon the subject of reform. To close the whole, the Duke of Liancourt proposed that a solemn *Te Deum* should be performed, and a medal struck in commemoration of the events of that night of sacrifices; and that the title of Restorer of Gallic Liberty should be bestowed upon the reigning monarch. Several days were necessary to form into laws the decrees of the 4th August, and committees were appointed to make out reports for the purpose. But as one of these included the tithes and revenues of the clergy amongst the abuses which were to be done away with, and proposed in lieu of these to grant to the different ministers of religion a certain stipend payable by the nation, the clergy now attempted to make a stand in defence of their property; and violent debates ensued, in which they were ably supported by the Abbé Sieyes. As the clergy, however, had formerly deserted the nobles, so they were now in their turn abandoned to their fate by the hereditary aristocracy; and the popular party had long regarded the wealth of the church as an easy resource for supplying the wants of the state. Never, indeed, was there a more complete proof of the influence of opinion over the affairs of men. The Catholic clergy of France, though possessed of more property than at the time when princes took up arms or laid them down at their command, now found so few defenders, that they were terrified into a voluntary surrender of all which they and their predecessors had enjoyed for ages. In their overthrow they had not even the barren honour of falling the last of those privileged orders which had so long ruled over this ancient kingdom. They, as well as the nobles and the king, still possessed their former titles and nominal dignity; but all of them were now subdued, and completely at the mercy of the commons of France, who could now dismiss them at pleasure.

New ministry.

As a short season of tranquillity in the country and in the National Assembly succeeded these great popular sacrifices, the king thought it a fit opportunity for the appointment of a new ministry, consisting of the Archbishop of Vienne, the Archbishop of Bordeaux, M. Neckar, the Count de St Priest, Count de Montmorin, the Count de la Luzerne, and the Count de la Tour du Pin Paulin. M. Neckar, as minister of finance, stated the distressed situation of the revenue, and presented the plan of a loan of thirty millions of livres. But Mirabeau prevailed with the assembly to alter and narrow the conditions to such a degree that very few subscribers were found, and the loan could not be filled up. This failure involved the assembly in considerable unpopularity, and they allowed M. Neckar to prescribe his own terms for the purpose of obtaining a loan of eighty millions. But the moment of public confidence had been allowed to pass away, and the loan was never more than half filled up. Recourse was next had to patriotic contributions; and great numbers of gold rings, silver buckles, and pieces of plate, were presented to the assembly. The royal family themselves sent their plate to the mint, either to give countenance to these donations, or, as Neckar has since asserted, through absolute necessity, for the purpose of supporting themselves and their family. The confusion into which the nation had been thrown by recent events had produced a suspension in the payment of all taxes. There existed, in fact, no efficient government; and if society escaped dissolution, it was only in consequence of those habits of order which are produced by a state of long-continued civilization. The business of government could not be transacted without money, and many vain efforts were made by the ministry to procure it. At length M. Neckar was driven to the desperate resource of proposing a compulsory loan, by which every individual possessed of property was to advance to the state a sum equal to one fourth of his annual income. This bold but unwise proposition was supported by Mirabeau, and adopted by the assembly; but it does not appear to have ever been effectually executed.

Rights of Man, and the king's veto.

In the mean time the assembly was busily occupied in framing the celebrated declaration of the Rights of Man, which was afterwards prefixed to the new constitution; and this was followed by the discussion of a point of much delicacy and difficulty, namely, what share of legislative authority the king ought to possess under the new constitution, whether an absolute veto or negative, a suspensive veto, or no veto at all. This question operated like a touchstone for trying the sentiments of every person; and the assembly, consisting of twelve hundred men, was now seen to arrange itself into two factions, which soon came into violent conflict. The debates, which were vehement and tumultuous, continued for several days. But as the assembly sat in public, and as multitudes of people of all descriptions were admitted into the galleries, and even into the body of the hall among the members, the public at large became speedily interested in the discussion; the city of Paris took a side in opposition to the veto; and the whole empire was thrown into agitation by new and speculative questions. In fact, rumours of plots were spread throughout the country, and a new storm was obviously gathering, when the question was got rid of by a sort of compromise, which, however, involved an abridgment of the royal authority. Mounier observed, that the executive power could possess no negative against the decrees of the present assembly, which had been nominated by the nation with supreme powers for the express purpose of framing a constitution, to remain binding on all orders of men in the state; and with regard to future legislatures, the king by a message declared that all he desired to possess was a suspensive veto. It is not a little remarkable that Mirabeau concluded a speech in favour of the absolute veto of the crown, by declaring that it would be better to live in Constantinople than in France, if laws could be made without the royal sanction. He is, however, accused of having caused a report to be circulated in Paris that he had opposed the veto with all his influence; and, to give credit to the story, he is said to have quitted the assembly immediately before the division, that his vote might not appear on record against him.

Constitution of the legislative body.

The month of August was spent in the debates about the veto; but in the beginning of September a new constitutional question was presented to the assembly by one of its numerous committees. This was, whether the legislative body should consist of one or of two chambers. Mounier, Lally-Tollendal, Clermont-Tonnerre, and others, who were zealous lovers of freedom upon moderate principles, supported eagerly the idea of establishing two independent chambers, in imitation of the British constitution; but they were deserted both by the democratic and the aristocratic parties. The former regarded an upper house or senate as a refuge for the old aristocracy, or at least as the cradle of a new one; whilst the nobility and clergy were afraid lest such an arrangement might prevent the future re-establishment of the ancient division into three orders. Accordingly, of a thousand members who voted, only eighty-nine supported the proposal for dividing the legislature into two chambers. Soon after this the king gave his sanction to the important decrees of the 4th of August, though not without hesitation, and expressing doubts of the wisdom of some of them in a letter to the assembly. At the same time were decreed the inviolability of the person of the monarch, the indivisibility of the throne, and its hereditary descent from male to male in the reigning family.

State of parties.

In consequence of the debates on the subject of the veto and that of the two chambers, the minds of parties had become much excited. Paris wore the same threatening aspect as it had done in the months of June and of July preceding; and every thing seemed tending towards a crisis. The aristocratic party accused their antagonists of a design to excite new insurrections; and the charge was retorted by circulating a report that a plot for conveying the king to Metz was already ripe for execution. From the period of the defection of the French guards, who were now in the pay of the capital, the protection of the royal family had been intrusted to the militia or national guard of Versailles, together with the regiment of the *gardes du corps*, which was composed entirely of gentlemen. But when the report of the intended flight of the king was circulated, the French guards desired to be restored to their ancient employment of attending his person, in order to prevent any attempt of the kind. This idea was eagerly caught hold of in the capital; and, notwithstanding every effort which M. de Lafayette could use, the approach of disturbances became every day more obvious. The popular party perceived the advantage which they would derive from placing the assembly and the king in the midst of that turbulent metropolis, which had given birth to the Revolution, and upon the attachment of which they could most securely depend; and every encouragement was therefore given by the most active leaders of what was now called the democratic party to the project of establishing the court at Paris. The ministry were under no small degree of apprehension; and the Count d'Estaing, who commanded the national guard of Versailles, requested the aid of an additional regiment. The regiment of Flanders was accordingly sent for, and its arrival caused no small degree of anxiety; but every artifice was instantly employed in order to gain over both officers and soldiers to the popular cause.

On the first of October the *gardes du corps*, probably for the purpose of ingratiating themselves with the newly-arrived corps, and perhaps to attach them more steadily to the royal cause, invited the officers of the regiment of Flanders to a public entertainment; and several officers of the national guard, and others of the military, were also invited. The entertainment was given in the opera-house adjoining to the palace, and several loyal toasts were drunk; but it is asserted, that when the favourite popular toast, The Nation, was given, the *gardes du corps* refused to drink it. In ordinary cases, so trifling a circumstance as this would be regarded as unworthy of notice; but such was now the position of affairs, that the most trivial occurrences became instrumental in producing important consequences. The queen, having seen from a window of the palace the gaiety which prevailed amongst the military, prevailed on the king, who had just returned from hunting, to visit them, in company with herself and the dauphin. The sudden appearance of their majesties in the saloon kindled in an instant the ancient enthusiasm of French loyalty. The grenadiers of the regiment of Flanders, along with the Swiss chasseurs, had been admitted to the dessert; and they, as well as their officers, drank the health of the king, queen, and dauphin, with their swords drawn. The royal family then bowed to the company and retired. As they withdrew, the music played the favourite air, *O Ricard, O mon roi, l'univers t'abandonne;* and, in the enthusiasm of the moment, the national cockade was thrown aside, and white cockades mounted as fast as they could be made by the ladies of the court. When these circumstances were next day reported in Paris, with the usual amount of exaggeration, they gave rise to the most violent alarm. The capital was at that time suffering all the horrors of famine; and in such a situation, the news of a feast enjoyed by others seldom gives much pleasure to hungry men. A rumour of an intended flight on the part of the royal family was also got up: it was also asserted that a counter revolution was speedily to be attempted by force of arms; and the people were told that the present scarcity had been artificially created by the court for the purpose of reducing them to submission.

For several days no notice was taken in the assembly of what had passed at the entertainment given by the *gardes du corps;* but on the 5th of October Petion mentioned it for the first time, and a violent debate ensued, during which Mirabeau rose and exclaimed, "Declare that the king's person alone is sacred, and I myself will bring forward an impeachment;" thereby alluding to the conduct of the queen. During this debate at Versailles, Paris was in the most violent commotion. A vast multitude of women of the lowest rank, with some men in women's clothes, having assembled at the Hôtel de Ville, they resolved to proceed instantly to Versailles, to demand bread from the king and from the National Assembly. Lafayette in vain opposed them; for his soldiers refused to turn their bayonets against the women. Upon this Stanislaus Maillard, who had distinguished himself at the taking of the Bastille, having offered himself as leader of the insurgents, had the address to prevail on them to lay aside the arms which they had procured; and about noon he set out for Versailles, having established as much order amongst his followers as could well be expected in such a motley assemblage. The mayor and municipality of Paris also gave orders to Lafayette instantly to set out for that place at the head of the national guard.

In the mean time Maillard approached Versailles with his tumultuous band, which he had arranged in three divisions, and persuaded to behave with tolerable decency. The king was hunting in the woods of Mendon when he was informed of the arrival of a formidable band of women calling aloud for bread. "Alas," replied he, "if I had it, I should not wait to be asked." Maillard entered the assembly, accompanied by a deputation of his followers, to state the object of their journey; and, in order to pacify them, that body sent a deputation of their own number along with them to lay their complaints before the king. His majesty received them with great politeness, and readily agreed to go into any measures which could be suggested for the supply of the capital. The report of this gracious conduct produced a great effect upon the multitude collected around the palace, and they began to disperse; but they were speedily succeeded by another crowd not less numerous. A sudden resolution to fly seems now to have been proposed by the court, as the king's carriages were brought to the gate of the palace which communicates with the orangery; but the national guard of Versailles refused to allow them to pass, and the king himself declined to remove, or to permit any blood to be shed in his cause.

At length Lafayette, with his army, arrived, about ten o'clock at night, and found the assembly in a very unpleasant predicament, their hall and galleries being crowded by the Parisian fishwomen and others of the mob, who at every instant interrupted the debates. Lafayette waited upon the king, and informed him of the proceedings of the day; planted guards in every direction; and, after a scanty banquet had been procured for the multitude, prevailed with the assembly to close their sitting for the night. For this last part of his conduct Lafayette has been much censured, and not without reason; for it could scarcely be expected that such an immense assemblage of turbulent characters as were now brought together would pass the night without disorder. All remained tranquil, however, until about six in the morning of the 6th, when a great number of women and desperate persons rushed towards the palace, and attempted to force their way into it. Two of the *gardes du corps* were killed, and the crowd ascended the staircase leading to the queen's apartment, but were bravely resisted by a sentinel named Miemandre, who gave the alarm, and defended his post until he fell covered with wounds, from which, however, he afterwards recovered. The ruffians, reeking with blood, rushed into the chamber of the queen, and pierced with bayonets and poniards the bed whence she had scarcely had time to fly almost wholly undressed, and, through passages unknown to the murderers, escaped to seek refuge at the feet of the king, who, already alarmed, had gone to seek her. The tumult became every moment more violent, and sudden death seemed to threaten the royal family; but Lafayette was by this time at the head of his troops, whom he earnestly beseeched to save the *gardes du corps* from massacre; and in this he was happily successful. Some who had been taken prisoners were surrounded by the grenadiers of the French guards, who protected them, and the retreat of the whole corps was secured. The crowd was speedily driven from the different parts of the palace, which they had already begun to pillage; and the royal family at length ventured to show themselves at a balcony. A few voices now exclaimed *Le roi à Paris*, the king to Paris; the shout became general, and the king, after consulting with Lafayette, declared that he had no objection to take up his residence at Paris, provided he was accompanied by the queen and his children. When this proposal was reported to the assembly, the popular leaders expressed much satisfaction; they ordered a deputation of a hundred members to attend the king thither, and voted the National Assembly inseparable from the king. At two o'clock his majesty set out a prisoner in the custody of a turbulent mob; and thus humbled, the royal captives were conducted so slowly that a short journey of twelve miles was protracted during six hours. The king, the queen, and their children, were lodged in the old palace of the Louvre, whilst Monsieur went to reside at the Luxembourg; the city was illuminated, and the evening spent in triumph by the Parisians. The removal of the king to Paris was justly regarded as a triumph by the popular party. The higher order of nobility considered it as completely ruinous to their hopes; and many men of talents, such as Mounier, Lally-Tollendal, and others, now regarded every prospect of attaining constitutional freedom as at an end, seeing the national representatives would now be exposed to the insults, and overawed by the influence, of a turbulent capital. Several members of the assembly accordingly took refuge in foreign countries, and used every effort to excite other nations against France. As the Duke of Orleans had been regarded as the chief promoter of the late disturbances, Lafayette waited on him, and insisted on his leaving the kingdom for a time. The duke, not less timid than intriguing, felt overawed, and, on pretence of public business, proceeded to England, where he remained during several months.

First session of the assembly in Paris.

On the 19th of October the National Assembly held its first session in Paris. The king was closely guarded in his own palace; and no apparent obstacle now remained to prevent the popular party giving to their country such a constitution as they might judge expedient. Much, however, was still to be done, and many difficulties, arising from the habits of men educated under a different order of things, yet remained to be overcome. Two days after the assembly had gone to Paris, a baker was publicly murdered by the mob, upon a charge of having concealed a quantity of bread. Whilst the assembly was at a distance, events of this nature had been little attended to, as the leading party did not attempt to check those ebullitions of popular fury, from which they had derived so much advantage; but that party had now become all-powerful, and so flagrant an offence committed against the law was regarded as an insult to the sovereignty of the National Assembly. Two leaders of the mob were therefore tried and publicly executed; and a severe law was passed, of the nature of our riot act, authorizing the magistrates to act by military force against any assemblage of persons who should refuse to disperse when legally required to do so. The peace of the capital was thus secured for several months; but in the country no small degree of anxiety and excitement still existed. The same suspicious temper which had prevailed at Paris agitated the provinces with the apprehension of plots and monopolies of grain. Besides, the nobility in the country were by no means satisfied with the liberality which their representatives had evinced upon the 4th of August, in voting away their privileges and their property; a circumstance which produced violent jealousies between the peasantry and their landlords, and gradually conveyed to every corner of the kingdom the political ferment which had commenced at Paris.

The kingdom divided into departments.

The National Assembly being now in tolerable security, proceeded with the arduous task of framing a free constitution for the kingdom of France. The Abbé Sieyes presented a plan for dividing the kingdom into eighty-three departments, of about three hundred and twenty-four square leagues each, the department into several *arrondissemens* or districts, and the district into *communes* or cantons, of about four square leagues in extent. Thus all the ancient divisions of the kingdom into governments, generalities, and bailiwicks, was in an instant overturned. An attempt was also made to simplify in an equal degree the relative situation of individuals in civil life, by a decree which put an end to all distinction of orders and immunities, as far as privileges were concerned. A bold and important measure was at the same time adopted, namely, the confiscation of the whole lands belonging to the church, for the purpose of supplying the exigencies of the state. In this transaction all regard to justice was of course thrown aside. The lands of the church were as certainly the property of those who then possessed them, as any entailed estate amongst us is the property of the holder. In the former the clergy had as clear a life interest as the heir of entail could by possibility possess in the latter. The state may have had a right to appropriate to itself the church lands upon the death of the incumbents; but it might with as much justice have seized on the enormous revenues of the Duke of Orleans, as confiscated a single acre belonging to the most useless abbot in the kingdom. This iniquitous measure was proposed by the Bishop of Autun, M. de Talleyrand Perigord, who had been promoted to the episcopal bench in an irregular manner, in order to accomplish this premeditated robbery. On the property thus confiscated it was resolved to issue assignats, which were to be received by the state in payment of taxes, and of church lands when set up to sale. A provision was at the same time made for the national clergy, who were in future to be paid by the state. On the day following that upon which this important measure was adopted, a decree was also passed, suspending the functions of the different parliaments of the kingdom.

Fruitless attempts of the parliaments.

But proceedings in which the interests of so great a multitude of individuals were involved, could not be carried into effect without opposition. The parliaments in particular exerted themselves, by protests and other publications, to invalidate the decrees of the assembly; but these privileged bodies, who had long been accustomed to contend against the despotic administration of their country, and who on that account had for ages been objects of public favour, now found themselves unable to resist the mandate of a popular assembly; and, after a few fruitless struggles, they were all of them under the necessity of submitting to their fate. The assembly then proceeded to organize the kingdom by the establishment of municipalities, and by reforming the jurisprudence of the country. When the parliament of Paris had been abolished, however, the second court in that city, called the Châtelet, was retained for the purpose of trying such persons as had become obnoxious by their attachment to the royal cause; and this tribunal had the spirit to acquit the Baron de Bezenval, Marshal Broglio, and the Prince de Lambesc. But having incurred much popular odium by this acquittal, they sought to regain credit by condemning to death the Marquis de Favres, for a pretended conspiracy to massacre Lafayette, Bailly, and Neckar, and to convey the king to Peronne.

During the whole of this winter the king had been so strictly watched by numerous guards placed round his palace, that in other nations he was naturally considered as in a state of captivity. To do away with this impression, if possible, and to make the king appear a voluntary agent in the measures which had lately been adopted, every effort was employed to prevail on him to repair to the assembly, and there, as of his own voluntary motion, to declare his adherence to the measures in question. For some time, however, he resisted the proposal to take such a step; but at length, on the 4th of February, he suddenly appeared in the National Assembly, where he complained of the attempts which had been made to shake the new constitution, and declared his wish that it should be universally known that the monarch and the representatives of the nation were united, and their wishes the same; that he would defend the constitutional liberty of the state; and that, in conjunction with the queen, he would early form the sentiments of his son in strict accordance with the new order of things which the circumstances of the empire had introduced. This declaration dispirited the aristocratical party, and increased the unhappy tendency to look for aid from foreign countries, which they had always been too prone to indulge. On the 13th of February, monastic establishments were suppressed, and their lands confiscated; but the inmates of these establishments were allowed pensions for their subsistence, and permitted to continue the observance of their monastic vows if they thought fit to do so.[1]

An event occurred at this time (March 15th), which tended in no small degree to increase the odium under which the old government already laboured. This was the publication of the Red Book, or list of pensions and donations granted by the crown. After many entreaties on the one hand, and the most solemn promises of secrecy on the other, it had been communicated by M. Neckar to a committee of the assembly; but it afforded too striking an advantage to the popular party not to be made use of, and in a few days the minister, to his no small surprise, found this register publicly sold by every bookseller in Paris. He ought not, indeed, to have been surprised; and, in fact, the giving up of this list forms one of the many proofs which the transactions of this period afford of his utter unfitness for the office which he held. With much indignation, however, he demanded why the committee had published it without the permission of the assembly or the king; but he was told, that as to the assembly, they were sure of its approbation, and as to the king, they were not his representatives. To give an idea of the effect of this publication, it is only necessary to remark, that, under the short administration of Calonne, the two brothers of the king had received from the public treasury, independently of their legitimate income, nearly two millions sterling, and that six hundred thousand pounds had been granted to one individual, merely because he was the husband of Madame de Polignac. Neckar's opposition to the publication of this register tended in no small degree to injure his popularity, and the rest of the ministry began to lose the confidence of the public. Indeed, fertile causes of alarm prevailed on all sides. The clergy were attempting to revive in the provinces the ancient animosities between the Catholics and the Protestants, to whom the late decrees of the assembly were ascribed. The German princes who possessed property in the north of France complained loudly of the violation of their rights by the abolition of the feudal system, although the National Assembly had voted them a compensation; and the most melancholy intelligence was received from the colonies in the West Indies. The assembly had not recognized the right of the free negroes to enjoy the same privileges with other citizens, but still they hesitated to go the length of denying these privileges. This uncertain conduct produced infinite mischief. The whites contended with those commonly called people of colour, who again occasionally stood in opposition to the free negroes or to the slaves; and hence it sometimes happened that at the same time, and in the same colony, not less than three hostile assemblies were held, and made war upon one another with the most inveterate fury; and each party found protectors in the National Assembly, because those who favoured or opposed the existence of distinctions at home, in general followed out the same principle in reference to the colonies.

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[1] It is probable that, in consequence of the suppression of the monasteries, the Breton Committee began about this time to assume the appellation of the Jacobin Club, from the hall belonging to the Jacobin friars at Paris, in which their meetings were now held.

Upon the 14th of May M. de Montmorency having made known to the National Assembly the preparations for war in which England and Spain were engaged, this communication gave rise to the constitutional question, Who ought to possess the power of declaring war and making peace? Clermont-Tonnerre, Sarent, Virieu, and Dupont, supported the royal prerogative; whilst, on the other side, the exclusive right of the legislative body to exercise this important prerogative was supported by D'Aiguillon, Garat, Fréteau, Jellot, Charles Lameth, Silléry, Petion, Robespierre, and others. Petion proposed that the French nation should for ever renounce all idea of conquest, and confine itself entirely to defensive war; and this was decreed with universal acclamation. But Mirabeau at length successfully proposed that the right of declaring war or making peace should be vested in the king and the legislative body conjunctly; and the decree which was passed on the subject formed a strange farrago of contradictions and absurdities. It enjoined the king to guard the state from all external attacks; but it did not say how this could be done, without repelling any attack which might be made upon it. In fact, the king could do nothing without previously informing the National Assembly; and if that body chanced not to be sitting at the time, he was bound to let the enemy advance without opposition, until he had convened the deputies, dispersed over twenty thousand square leagues, and listened to their metaphysical quibbles in Paris.

Strange farce.

On the 16th of June a very singular farce was enacted in the assembly. A Prussian refugee, called Anacharsis Clootz, on an evening sitting, which was generally ill attended by persons of high rank, introduced to the assembly a number of persons dressed in the habits of all the different countries that could be thought of; and in a formal harangue told them that he was come, as the orator of the human race, at the head of the representatives of all nations, to congratulate them upon the formation of their new constitution. He was answered by the president with much solemnity, upon which he retired with his motley group. This fantastical piece of folly, which in any other country would scarcely have excited a smile, was treated by the assembly in a serious light. Alexander Lameth proposed, that the figures of different nations exhibited in chains at the feet of Louis XIV. should be destroyed, as an insult to mankind. M. Lambel, a lawyer, then proposed the abolition of all hereditary titles; and in this he was supported by Lafayette, St Fargeau, and the Viscount de Noailles. The decree passed, along with another for suppressing all armorial bearings. No part of the proceedings of the French National Assembly was received with so much indignation as this. The feudal system had been abolished, and the property of the church wrested from it, with comparatively little notice; but when those nominal distinctions which antiquity had sanctioned and personal vanity rendered dear were attacked, the surrounding nations instantly took the alarm, and beheld with terror the levelling precedent which had thus been established. Nor is it a little remarkable, that of all the king's ministers, Neckar alone, a plebeian, a republican born, and bred in a democracy, advised his majesty to refuse his assent to the decree, as a violent but useless encroachment upon the prejudices of a powerful order in the state.

In the mean time, the capital was entirely engrossed with preparations for a grand festival. M. Bailly having proposed to commemorate the anniversary of the taking of the Bastille, his plan was adopted, because it flattered the vanity of the people, by presenting them with a splendid spectacle, in commemoration of their own exertions. As the army had been much disorganized, it was also resolved to attempt to unite all its branches, as well as the whole departments of the state, in one common attachment to the new order of things, by collecting into one place deputations for the purpose of swearing fidelity to the new constitution. In the middle of the Champ de Mars an altar was erected, at which the civic oath was to be taken; and around the altar an amphitheatre was erected capable of containing four hundred thousand spectators. All ranks of persons, the nobility, clergy, and even ladies, with that eagerness for novelty which is so peculiar to the French people, united their efforts; and crowds of foreigners, as well as natives, hurried to the capital to be present at this solemnity, which was denominated the Confederation. The long-expected 14th of July at length arrived. At six o'clock in the morning the procession was arranged on the boulevards, and consisted of the electors of the city of Paris, the representatives of the commons, the administrators of the municipality, a battalion of children with a standard on which was inscribed The Hopes of the Nation; deputies from the troops of France wherever quartered, and of every order, along with deputies from all the departments; to which were added immense detachments of the military and of the national guards, with an almost infinite multitude of drums, trumpets, and musical instruments. The procession was extremely splendid, as every district had its peculiar decorations. The National Assembly passed through a triumphal arch; and the king and queen, attended by the foreign ministers, were placed in a superb box. After a solemn invocation to God, the king approached the altar, and, amidst the deepest silence, took the prescribed oath to employ the power delegated to him according to the constitutional law of the state, to maintain the constitution, and to enforce the execution of the law. The president of the National Assembly then went up to the altar, and took the civic oath, swearing to be faithful to the nation, the law, and the king, and to maintain the constitution as decreed by the National Assembly, and accepted by the king; and every member of the assembly standing up, said, "That I swear." Lafayette then advanced and took the oath, which the other deputies of the national guards pronounced after him; and the words were solemnly pronounced by every individual of this immense assembly. *Te Deum* was then sung, and the solemnity concluded. The performance was altogether sublime. Never before perhaps was there such an orchestra, or such an audience; their numbers baffled the eye to reckon, and their shouts fell on the ear like the noise of many waters. It is impossible to enumerate all the means which were employed to add splendour to this day; it ended with a general illumination, and no accident disturbed the public tranquillity.

The assembly now proceeded with the formation of the constitution; but the public tranquillity was disturbed by an unhappy event at Nancy. Most of the officers of the army were unfriendly to the late revolution; and every means had been employed by them to excite disgust in the minds of the soldiers. At Nancy, in particular, necessaries had been denied them, and their pay was kept back, upon the pretence that such was the will of the National Assembly. Driven to despair, the regiments in garrison broke out in open mutiny; demanded loudly the regimental accounts; and having seized the military chest, sent a deputation to state their case to the National Assembly. But the officers had anticipated their men, and prepossessed the minister of war against them, and upon his representation a decree was passed, authorizing the commander-in-chief of the province, M. Bouillé, to reduce the mutineers by force. This was no sooner known than the national guard of Nancy assembled, and sent a deputation to give a fair statement of facts. But Bouillé, without waiting the result of an explanation, hastened to Nancy at the head of all the troops he could collect; and having fallen upon the regiments of Chateauvieux and Mestre de Camp, put a number to the sword, and took four hundred prisoners. The news of these events filled Paris with indignation, and the assembly afterwards reversed its own decrees against the mutineers at Nancy; but Bouillé could not be punished, because he had only acted in obedience to authority.

As Neckar was unwilling to go all lengths with the ruling party, his popularity had for some time been gradually declining. He therefore tendered his resignation on the 4th of September, and immediately thereafter left the kingdom. He was regretted by no party. Regarded, on the one hand, as having ruined the kingdom, by the concessions which he had advised the king to make in favour of the *tiers état*, he was despised, on the other, as a politician of lukewarm principles, narrow views, and limited understanding. He retired, however, with an unblemished reputation for integrity. This minister does not seem to have been capable of penetrating deeply into the characters of men, or forming any adequate conception of the effects of that energy which is called forth in a nation that attempts to make important changes in its ancient manners and government; and having formed no just estimate of the important era about to open on the country of which he was the minister, he was far from being qualified to direct or control its affairs amidst the violent convulsions through which it was destined to pass. Unable to brook the loss of his popularity, he retired to Switzerland, and there published a work, which, whatever it fails to establish, clearly shows the honest intentions of the French king, and the boundless ambition of the popular leaders, whom he himself had armed with power.

The assembly commenced the year 1791 with a decree announcing the termination of its session, which was to take place as soon as it should have finished the discussion of a list of constitutional articles. In the mean time, hostile appearances began to be exhibited on the side of Germany, Spain, Italy, and Savoy, and bodies of troops advanced towards the French frontiers. The Emperor Leopold was, however, too cautious to announce his intentions; and the king soon communicated a letter which he had received from that potentate, containing protestations of amicable dispositions, but adding, that the innovations occasioned by the decrees of the 4th of August ought to be done away. The king treated this merely as an official measure on the part of the emperor, in order that he might not appear to compensate the claims of certain German princes on Alsace and Lorraine. But the assembly expressed some alarm, and voted an augmentation of the national force. On the 20th of February public attention was roused by a circumstance, which in any other state of affairs would have been accounted unimportant. The king announced to the assembly, that his aunts, the daughters of Louis XV., had that morning left Paris; but as he did not apprehend that the existing laws laid them under any restraint in this respect, he had not opposed their departure. After some debate, the assembly agreed that the king had judged well; and these princesses were left to pursue their journey to Rome. The kingdom had thus been gradually deserted by every branch of the royal family, excepting the king and his eldest brother; the panic which had seized the nobility, and induced them to desert the country and the throne at the moment when they ought to have stuck firm to both, communicated itself to those most nearly connected with the latter, who also abandoned their posts. The assembly, however, continued its labours with unremitting perseverance and amidst tolerable tranquillity.

Death of Mirabeau.

Towards the end of the month of March, the National Assembly was deprived by death of its most gifted member, and, in one sense, greatest ornament, Mirabeau. The death of this extraordinary man had in it something sublime. Though sensible of his approaching dissolution, he was so far from being intimidated by the prospect, that he gloried in the name which he was to bequeath to posterity. Towards the close of his illness his sufferings were acute; and at one moment, when deprived of the power of speech, he wrote on a slip of paper the words of Hamlet, " To die, to sleep; no more." But a few hours before his death the commencement of mortification relieved his sufferings, without overclouding the brightness of his faculties. " Remove from the bed," said he, " all that sad apparatus. Instead of these useless precautions, surround me with the perfumes and flowers of spring; dress my hair with care; let me fall asleep amidst the sounds of harmonious music." Aware that recovery was hopeless, he earnestly implored his attendants to give him laudanum, to put a period to his sufferings. " When a sick man is given over," said he, " and he suffers frightful pains, can a friendly physician refuse to give him opium ?" His extremities were already cold, and death was fast doing its work; but his countenance still retained its animation, his eye its wonted fire, his mind its energies unimpaired. Feigning to comply with his request, his attendants gave him a cup containing what they assured him was opium. He drank it off calmly, fell back on his pillow, and almost instantly expired. Endowed with a constitution naturally robust, his physical powers sunk under the combined waste of boundless ambition, continual excitement, and excessive indulgence. At his death he received from his countrymen marks of respect unparalleled in modern history. During his short illness his door was besieged by anxious citizens. A mourning of eight days was decreed by the assembly, and also a grand procession, which was attended by all the public functionaries. He was likewise the first interred in the new Pantheon, consecrated to receive the remains of illustrious men; but his ashes were afterwards removed, in consequence of pretty conclusive proofs that he had not been incorruptible.

His character.

Such was the end of the first commanding spirit which arose amidst the troubles of the Revolution. Mirabeau was upwards of forty years of age when he entered public life; but even at the opening of the States General his reputation was already great; and notwithstanding the disfavour produced by his vices, he was regarded as the tribune who alone could support the cause of the people against the designs of the court. Nor were these expectations disappointed, notwithstanding all the defects inherent in his character. He was endowed with splendid talents, but impelled by insatiable ambition; gifted with a penetrating intellect, but the prey of inordinate passions; sagacious in the perception of truth, but indifferent as to the means by which distinction was to be acquired; without great information derived from study, but unrivalled in the power of converting that which he possessed to the best possible account; of matchless tact and promptitude, dauntless intrepidity, and unconquerable energy, but of suspected integrity, and destitute of either moral or religious principles. His temperament was too ardent and impetuous to permit him to master any subject; he studied nothing profoundly, and owed almost all the writings to which his name was attached, and many of the most effective speeches he delivered, to Dumont, Duroverai, and Clavière, who each assisted him in his labours. His strength lay in a vivid imagination, a nervous elocution, and an unrivalled power of seizing hold on the spirit of the assembly which he addressed, and applying the whole force of his mind to the point whence the resistance proceeded. It was in moments of the greatest difficulty that his faculties shone forth in the greatest splendour; it was when apparently on the verge of annihilation that he shot forth those thunderbolts by which his ascendency was confirmed. But great as was his influence in the National Assembly, it fell far short of what it might have been but for the consequences of his irregular life; and the general impression of his total want of principle, combined with his habitual profusion and extravagance, made the league which he formed with the court towards the close of his career be ascribed to venal and corrupt motives. But in undertaking to heal the wounds of the Revolution, which he believed himself to hold as it were in the hollow of his hand, he miscalculated his own power, great as it undoubtedly was. The work of destruction had proceeded too far to be suddenly stopped; a spirit had been unchained which no magic of genius or talents could allay, until it had spent its force in levelling with the dust all old and time-honoured distinctions. In the character of a mediator, which he proposed to assume, he would have most probably sunk into insignificance; and, with the loss of his influence as a popular tribune, his power to re-establish the monarchy, even upon the basis of constitutional freedom, would also have vanished. Besides, the instruments with which he proposed to work were not adapted to his handling; and, after a short trial, he would have found himself obliged to throw them aside.[1]

During the whole of this spring great fear was entertained that attempts were to be made to bring about a counter revolution. The emigrant army under the prince of Condé had assembled on the borders of Alsace. The king also was surrounded by crowds of nonjuring priests, and other disaffected persons. The popular jealousy, which in every period of the Revolution strikingly marked the French character, was thus kept on the alarm, and soon vented itself in an aggression on the royal family. On the 18th of April, when the latter were preparing to remove to St Cloud, there to pass some days, a report was instantly spread that the king was about to fly from the country. The carriages were immediately surrounded by people. Lafayette called out the national guard, but they refused to act. "We know," said they, "that we are violating the laws, but the safety of our country is the first law." The king instantly went to the assembly, and with much spirit complained of the insult. He was answered respectfully by the president, and permitted to continue his journey. As the royal family had enjoyed for some time a considerable degree of freedom, the present opportunity was embraced to intimate to foreign courts his acceptance of the constitution; and all obnoxious persons were dismissed from about his person. But the breach of discipline on the part of the national guard was so much resented by Lafayette, that he resigned his command, and Paris was thrown into consternation; nor was it until after universal solicitation that he could be prevailed upon to resume his functions.

Flight of the king.

About this time M. de Bouillé, to whom the protection of the frontiers had been intrusted, was reported to be employing every means in his power in order to render the country defenceless. The garrisons were left unprovided; disunion spread amongst the national troops, who were removed from the frontiers, and their place occupied by foreigners; the emigrants abroad, and their friends at home, were lying in wait for an opportunity to revolt: such were the rumours in circulation, when suddenly, on the 21st of June, it was announced from the Tuilleries, that the king, the queen, the dauphin, with monsieur and madame, had quitted the palace and the capital, without leaving any information of their intention or their route. The feeling excited by this intelligence among the multitude was a mixture of rage and consternation. The National Assembly, however, acted with much coolness and promptitude. They instantly took upon themselves the government, and decreed their sittings permanent; and they at the same time sent messengers in all directions, to attempt to lay hold of the fugitives. The latter, however, had taken different routes; and monsieur and madame arrived safely at Brussels on the 23d. The king, queen, and their children, when they reached a considerable distance from the capital, were furnished by M. de Bouillé with a guard of dragoons, under pretence of protecting treasure for the pay of the troops. But, at the distance of 156 miles from the capital, and when only a few leagues from the frontier, they were arrested at St Menehould by the postmaster, M. Drouet, formerly a dragoon in the regiment of Condé. At half past seven o'clock in the evening, the carriages having stopped at his house to change horses, Drouet thought that he recognized the queen, and imagined that the king's face resembled the impressions stamped upon the assignats. The escort of dragoons increased the suspicion. He suffered them to depart at eleven o'clock without notice; but taking a companion, he proceeded by a shorter road to Varennes, and with the assistance of the postmaster of that place, he gave the alarm; overturned a carriage on the bridge, which detained the royal travellers till the national guard of the place had assembled; and succeeded, without bloodshed, in effecting the arrest of the whole party, who were brought back to Paris by a deputation from the assembly. At his departure, the king had imprudently left behind him a memorial, in which he declared that he never had thought any sacrifice too great for the restoration of order; but that the destruction of the kingdom and the triumph of anarchy being the only reward of all his efforts, he had thought it necessary to leave it. He then took a review of the faults of the new constitution, with the grievances he had suffered, and protested against every thing which he had been compelled to do during his captivity.

Different parties were variously affected by this ill-conducted and unfortunate flight of the king. A republican party had already begun to appear; and during the king's absence attempts were made to induce the public at large to consider the royal authority as no necessary part of a free constitution. But the minds of men were not yet altogether prepared for the reception of this doctrine. The idea, however, having been thus publicly proposed, left impressions which in time contributed to give rise to important events. By far the greater number of the leading men were at this time convinced that it was impossible to govern a great empire like France without the assistance of an hereditary chief; and hence they determined to pass over the journey to Varennes as quietly as possible, and to hasten the period when the new constitution should be completed. But their intentions, as will be seen in the sequel, were rendered abortive; and there is reason to believe that this unfortunate journey was, in its consequences, instrumental in bringing about the tragedy which consummated the overthrow of the monarchy. The flight of the king seemed the signal for a general emigration. Many of the aristocratic party sent in resignations of their seats in the National Assembly; and troops were levied on the frontiers in the name of the king, though he took care to disavow any connection with such proceedings.

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[1] Dumont, 276, 277; Lacretelle, viii. 133; Thiers, i. 281, 282; Mad. de Stael, i. 408: Alison, i. 240, 241, 242. On his death-bed Mirabeau foresaw, in the clearest manner, the consequences which were certain to flow from the direction given to the Revolution, and the boundless scope thus afforded to popular ambition. "When I am no more," said he, "my worth will become known. The misfortunes which I have arrested will then pour in on all sides on France; the criminal faction which now trembles before me will be unbridled. I have before my eyes unbounded presentiments of disaster. We now see how much we erred in not preventing the commons from assuming the name of the National Assembly. Since they gained that victory they have never ceased to show themselves unworthy of it. They have chosen to govern the king, instead of governing by him; but soon neither he nor they will rule the country, but a vile faction which will overspread it with horrors." (Dumont, 267, 268.) The sagacity and foresight displayed in these remarkable words make us cease to wonder that the death of Mirabeau, at this crisis, should have been regarded as a public calamity.

The assembly, in sanctioning the detention of the king at Varennes, and sending commissioners to bring him back to Paris, yielded to popular clamour, in opposition probably to their better judgment; at all events they committed a great political error. The leaders of the democratic party had every reason to rejoice at the near prospect of a republic which his flight opened up; the constitutionalists must have desired to see him established at Montmedy, and emancipated from the state of thraldom in which he had been so long held by the rabble of Paris; many of the royalists were not probably displeased at the retreat of a king whose concessions had brought the monarchy to the brink of ruin; and all the better part of society must have been gratified at his escape from the iron despotism of the Parisian mob. But all these considerations went for nothing in opposition to the clamours of the multitude; and, either from cowardice or a base love of popularity, the assembly adopted a course which their own minds must have disapproved, and which men of all parties have united to condemn. "The National Assembly," says Napoleon, "never committed so great an error as in bringing back the king from Varennes. A fugitive and powerless, he was hastening to the frontier, and in a few hours would have been out of the French territory. What should they have done in these circumstances? Clearly facilitated his escape, and declared the throne vacant by his desertion: they would thus have avoided the infamy of a regicide government, and attained their great object of republican institutions. Instead of this, by bringing him back, they embarrassed themselves with a sovereign whom they had no just reason for destroying, and lost the inestimable advantage of getting rid of the royal family without an act of cruelty."[1] In the truth and justice of these observations history must acquiesce.

Treaty of Pilnitz.

A considerable calm followed the events just related, and France might almost be regarded as in a state of tranquillity. It contained, indeed, parties who entertained much animosity against each other, and many citizens had withdrawn to foreign countries; but the general peace was not disturbed, and moderate men hoped that prosperity would succeed to the late agitations. But this calm was delusive; and in the midst of it projects were formed which were destined afterwards to prove fatal to the peace of France and Europe. Towards the close of summer the famous meeting at Pilnitz in Saxony took place between the emperor and the king of Prussia, and led to the celebrated declaration, which was conceived in the following terms: "Their majesties, the emperor, and king of Prussia, having considered the representations of monsieur, brother of the king, and of his excellency the Count d'Artois, declare conjointly that they consider the situation of the king of France as a matter of common interest to all the European sovereigns. They hope that the reality of that interest will be duly appreciated by the other powers, whose assistance they will invoke, and that in consequence they will not decline to employ their forces conjointly with their majesties, in order to put the king of France in a situation to lay the foundation of a monarchical government, conformable alike to the rights of sovereigns and the wellbeing of the French nation. In that case the emperor and king are resolved to act promptly with the forces necessary to attain their common end. In the mean time they will give the requisite orders for the troops to hold themselves in immediate readiness for active service." Such was the celebrated declaration of Pilnitz; but, either from a cooling of zeal upon the part of the allied sovereigns, or a sense of the danger which the king of France would have run, after he had, in consequence of the flight to Varennes, become a prisoner in the hands of the assembly, it remained without effect. It was alleged by the French, however, that there was a treaty as well as a declaration of Pilnitz, or, in other words, that several secret articles, stipulating the partition of some of the fairest provinces of France, were at the same time agreed to by the allied sovereigns; but no sufficient evidence has ever been produced to substantiate the allegation, and it is now indeed generally agreed that there was no such thing as a treaty of Pilnitz.[2]

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[1] Napoleon's *Mémoires*, vol. i. p. 1.

[2] The following paper, which has been repeatedly published as the copy of a treaty concluded and signed at Pavia, is generally understood to have been identical with, and is therefore known by the name of, the treaty of Pilnitz. We have already stated that its authenticity is more than questionable. It may have been fabricated by the National Assembly, to unite all parties against the foreign powers which threatened France with invasion. But, in relating the events of this revolution, it is as necessary, for the purpose of rendering the actions of men comprehensible, to give an account of what was at the time believed to have occurred, as it is to ascertain what was actually true. The treaty in question bears, "That his majesty the emperor will take all that Louis XIV. conquered in the Austrian Netherlands, will give it to his serene highness the elector palatine; that he will preserve for ever the property and possession of Bavaria, to form in future an indivisible mass with the domains and hereditary possessions of the house of Austria; that the Archduchess Maria Christina shall be, conjointly with her nephew the Archduke Charles, put into hereditary possession of the duchy of Lorraine; that Alsace shall be restored to the empire; that if the Swiss Cantons consent to accede to the coalition, it may be proposed to them to annex to the Helvetic league the bishopric of Porentrui, the defiles of Franche Comté, and even those of Tyrol, with the neighbouring bailiwicks, as well as the territory of Versoy, which intersects the Pays de Vaud; that should his majesty the king of Sardinia subscribe to the coalition, La Bresse, Le Bugey, and the Pays de Gex, usurped by France from Savoy, shall be restored to him; that in case his Sardinian majesty can make a grand diversion, he shall be suffered to take Dauphiné, to belong to him for ever, as the nearest descendant of the ancient dauphins; that the king of Spain shall have Roussillon and Bearn, with the island of Corsica, and also the French part of the island of St Domingo; that the empress of all the Russias shall take upon herself the invasion of Poland, and at the same time retain Kaminiech, with that part of Podolia which borders on Moldavia; that the emperor shall oblige the porte to give up Choczim, as well as the small forts of Servia, and those on the river Lurna; that the king of Prussia, by means of the above-mentioned invasion of Poland, shall make an acquisition of Thorn and Dantzic, and unite the palatinate on the east to the confines of Silesia; that the king of Prussia shall besides acquire Lusace, and the elector of Saxony shall in exchange receive the rest of Poland, and occupy the throne as hereditary sovereign; that the king of Poland shall abdicate the throne

The new constitution.

In the mean time, the National Assembly was hastening towards the completion of the new constitution, which was finished on the 3d of September, and immediately presented to the king. It begins with a declaration of the rights of man; this is followed by the provisions regarding other matters. According to it, all men are born, and remain, free and equal in rights; and social distinctions can only be founded on common utility. The end of all political associations is the preservation of the natural and imprescriptible rights of man; and these rights are liberty, property, security, and resistance against oppression. The principle of sovereignty resides essentially in the nation; and no body of men, no individual, can exercise an authority which does not emanate expressly from that source. Liberty consists in the power of doing every thing except that which is hurtful to another; and hence the exercise of the natural rights of every man has no other bounds than those which are necessary to ensure to the other members of society the enjoyment of the same rights; bounds which can only be determined by law. The law has a right to forbid those actions alone which are hurtful to society. Whatever is not forbidden by the law cannot be hindered; and no person can be constrained to do that which the law does not ordain. The law is the expression of the general will; and all the citizens have a right to concur personally, or by their representatives, in the formation of the law; it ought therefore to be the same for all, whether it protect or whether it punish. All citizens being equal in the eye of the law, are equally admissible to dignities, places, and public offices, according to their capacity, and without any other distinction than that of their virtue and their talents. No man can be accused, arrested, or detained, except in cases determined by the law, and according to the forms which the law has prescribed. Those who solicit, dispatch, execute, or cause to be executed, arbitrary orders, ought to be punished; but every citizen who is summoned or seized in virtue of the law ought to obey instantly, otherwise he becomes culpable by resistance. The law ought to establish such punishments only as are strictly and evidently necessary; and no person can be punished except in virtue of a law established and promulgated prior to the offence, and legally applied. Every man being presumed innocent till such time as he has been declared guilty, if it shall be deemed absolutely necessary to arrest a man, every kind of rigour employed, not necessary to secure his person, ought to be severely repressed. No person shall be molested for his opinions, even such as are religious, provided the manifestation of those opinions does not disturb the public order established by the law. The free communication of thought and of opinion is one of the most precious rights of man. Every citizen, therefore, may freely speak, write, and publish his sentiments; subject, however, to answer for the abuse of this liberty in the cases determined by the law. The guarantee of the rights of men and citizens involves a necessity of public force; but this force is then instituted for all, and not for the particular utility of those to whom it is confided. For the maintenance of the public force, and for the expenses of the administration, a common contribution is indispensably necessary; but this contribution should be equally divided amongst all the citizens in proportion to their abilities. Every citizen has a right, by himself or by his representatives, to decide concerning the necessity of the public contribution; to consent to it freely; to look after the employment of it; and to determine the quantity, the distribution, the collection, and duration. Society has a right to demand from every public agent an account of his administration. Every society in which the guarantee of rights is not assured, nor the separation of powers determined, has no constitution. Property being a right inviolable and sacred, no person can be deprived of it, except when the public necessity, legally ascertained, shall evidently require it, and on condition of a just and previous indemnification.

The constitution guarantees, as natural and civil rights, first, that all citizens are admissible to places and employments, without any distinction but that of ability and virtue; secondly, that all contributions shall be divided equally among all the citizens, in proportion to their means; thirdly, that the same crimes shall be subject to the same punishments, without any distinction of persons. The constitution, in like manner, guarantees, as natural and civil rights, liberty to all men, of going, staying, or departing, without being arrested or detained, except according to the forms prescribed by the constitution; liberty to all men, of speaking, writing, printing, and publishing their thoughts, without having their writings subjected to any examination or inspection before publication, and of exercising the religious worship to which they are attached; liberty to all citizens, of assembling peaceably, and without arms, complying with the laws of police; liberty of addressing to all constitutional authorities petitions individually signed; and the inviolability of property, or a just and previous indemnity for that of which public necessity, legally proved, shall require the sacrifice. A system of public instruction shall be created and organized, common to all citizens, gratuitous with regard to those parts of tuition indispensable for all men, and of which the establishment shall be gradually distributed, in a proportion combined with the division of the kingdom.

The kingdom is one and indivisible; its territory for administration is distributed into eighty-three departments, each department into districts, each district into cantons. Those are French citizens who are born in France of a French father; who, having been born in France of a foreign father, have fixed their residence in the kingdom; who, having been born in a foreign country, of a French father, have returned to settle in France, and have taken the civic oath; and, lastly, who, having been born in a foreign country, being descended in whatever degree from a Frenchman or Frenchwoman, have left their country from religious motives, come to reside in France, and taken the civic oath. The right of French citizenship is lost, first, by naturalization in a foreign country: secondly, by being condemned to penalties which involve the civic degradation, provided the person condemned be not reinstated; thirdly, by a sentence of contumacy, provided the sentence be not annulled; fourthly, by initiation into any foreign order or body which supposes either proofs of nobility or distinctions of birth, or requires religious vows. The law considers marriage as only a civil contract.

The sovereignty is one, indivisible, unalienable, and imprescriptible, and it belongs to the nation; no section of the people, and no individual, can arrogate the exercise of it. The nation, from which alone flow all powers, cannot exercise them but by delegation. The French constitution is representative, and the representatives are the legislative body and the king. The National Assembly, forming the legislative body, is permanent, and consists of one chamber only. It shall be formed by new elections every two years. The legislative body cannot be dissolved by the king. The number of representatives to the

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on receiving a suitable annuity; and that the elector of Saxony shall give his daughter in marriage to the youngest son of the grand duke of all the Russias, who will be the father of the race of the hereditary kings of Poland and Lithuania." And this is signed by LEOPOLD, PRINCE NASSAU, COUNT FLORIDA BLANCA, and BISCHOFFSWERDER.

legislative body shall be seven hundred and forty-five, on account of the eighty-three departments of which the kingdom is composed, and independently of those who may be granted to the colonies. The representatives shall be distributed among the departments, according to the three proportions of land, of population, and of the direct contributions or taxes. Of the seven hundred and forty-five representatives, two hundred and forty-seven are attached to the land. Of these, each department shall nominate three, excepting the department of Paris, which shall nominate only one. Two hundred and forty-nine representatives are attached to the population. The total mass of the active population of the kingdom is divided into two hundred and forty-nine parts, and each department nominates as many of the deputies as it contains parts of the population. Two hundred and forty-nine representatives are attached to the direct contributions. The sum total of the direct contributions of the kingdom is likewise divided into two hundred and forty-nine parts, and each department nominates as many deputies as it pays parts of the contribution.

In order to form a Legislative National Assembly, the active citizens shall convene, in primary assemblies, every two years in the cities and cantons. The primary assemblies shall meet of full right on the first Sunday of March, if not convoked sooner by the public officers appointed to do so by the law. To be an active citizen, it is necessary to be a Frenchman, or to have become a Frenchman; to have attained twenty-five years complete; to have resided in the city or the canton during the time determined by the law; to pay in any part of the kingdom a direct contribution or tax, at least equal to the value of three days' labour, and to produce the acquittance; not to be in a menial capacity, namely, that of a servant receiving wages; to be inscribed in the municipality of the place of his residence in the list of the national guards; to have taken the civic oath. The primary assemblies shall name electors in the proportion of the number of active citizens residing in the city or canton. There shall be named one elector to the assembly or not, according as there shall happen to be present a hundred active citizens. There shall be named two when there are present from a hundred and fifty-one to two hundred and fifty, and so on in this proportion. The electors named in each department shall convene in order to choose the number of representatives whose nomination shall belong to their department, and a number of substitutes equal to the third of the representatives. The assemblies shall be held of full right on the last Sunday of March, if they have not been before convoked by the public officers appointed to do so by law. All active citizens, whatever be their state, profession, or contribution, may be chosen representatives of the nation; excepting, nevertheless, the ministers and other agents of the executive power, and other persons named. The members of the legislative body may be re-elected to a subsequent legislature, but not till after an interval of one legislature. No active citizen can enter or vote in an assembly if he be armed. The representatives shall meet on the first Monday of May, in the place of the sittings of the last legislature.

The royalty is indivisible, and delegated hereditarily to the race on the throne from male to male, by order of primogeniture, to the perpetual exclusion of women and their descendants. Nothing is prejudged as to the effect of renunciations in the race on the throne. The person of the king is inviolable and sacred; his only title is King of the French. If the king put himself at the head of an army, and direct the forces of it against the nation, or if he do not oppose, by a formal act, any such enterprise undertaken in his name, he shall be held to have abdicated. If the king, having gone out of the kingdom, do not return to it, after an invitation by the legislative body, within the space which shall be fixed by the proclamation, and which cannot be less than two months, he shall be held to have abdicated the royalty. After abdication, express or legal, the king shall be in the class of citizens, and may be accused and tried like them for acts posterior to his abdication. The nation makes provision for the splendour of the throne by a civil list, of which the legislative body shall fix the amount at the commencement of each reign, for the whole duration of that reign. The king is a minor till the age of eighteen complete; and during his minority there shall be a regent of the kingdom. The regency belongs to the relation of the king next in degree according to the order of succession to the throne, who has attained the age of twenty-five, provided he be a Frenchman resident in the kingdom, and not presumptive heir to any other crown, and have previously taken the civic oath. The presumptive heir shall bear the name of Prince Royal. The members of the king's family called to the eventual succession of the throne shall add the denomination of French Prince to the name which shall be given them in the civil act proving their birth; and this name can neither be patronymic nor formed of any of the qualifications abolished by the present constitution. The denomination of prince cannot be given to any individual, and shall not carry with it any privilege or exception to the common right of all French citizens. To the king alone belong the choice and dismission of ministers.

The members of the present National Assembly, and of the subsequent legislatures, the members of the tribunal of appeal, and those who shall be of the high jury, cannot be advanced to the ministry, nor receive any place, gift, pension, allowance, or commission of the executive power, or its agents, during the continuance of their functions, or during two years after ceasing to exercise them; and the same shall be observed respecting those who shall only be inscribed on the list of high jurors as long as their inscription shall continue. No order of the king can be executed if it be not signed by him, and countersigned by the minister or comptroller of the department. In no case can the written or verbal order of the king shelter a minister from responsibility.

The constitution delegates exclusively to the legislative body the powers and functions following: To propose and decree laws, as the king can only invite the legislative body to take a subject into consideration; to fix the public expenses; to establish the public contributions; to determine the nature of them, the amount of each sort, the duration, mode of collection, and so forth. War cannot be resolved on except by a decree of the National Assembly, passed on the formal and necessary proposition of the king, and sanctioned by him. During the whole course of war the legislative body may require the king to negotiate peace; and the king is bound to yield to this requisition. It belongs to the legislative body to ratify treaties of peace, alliance, and commerce; and no treaty shall have effect but by this ratification.

The deliberations of the legislative body shall be public, and the minutes of the sittings shall be printed. The legislative body may, however, upon any occasion form itself into a general committee. The project of a decree or law shall be read thrice, at three intervals, the shortest of which cannot be less than eight days. The decrees of the legislative body are presented to the king, who may refuse them his consent. In case of a refusal of the royal consent, that refusal is only suspensive. When the two following legislatures shall successively present the same decree in the same terms in which it was originally conceived, the king shall be deemed to have given his sanction. The king is bound to express his consent or refusal to each decree within two months after its presentation. No decree to which the king has refused his consent can be again presented to him by the same legislature.

The supreme executive power resides exclusively in the hands of the king. The king is the supreme head of the land and sea forces. He names ambassadors, and the other agents of political negotiations. He bestows the command of armies and fleets, and the ranks of marshal of France and admiral: he names two thirds of the rear-admirals, one half of the lieutenant-generals, major-generals, captains of ships, and colonels of the national gendarmerie: he names a third of the colonels and lieutenant-colonels, and a sixth of the lieutenants of ships: he appoints, in the civil administration of the marine, the directors, the comptrollers, the treasurers of the arsenals, the masters of the works, the under-masters of civil buildings, half of the masters of administration, and the under-masters of construction. He appoints the commissaries of the tribunals; as also the superintendents in chief of the management of indirect contributions, and the administration of national domains. He superintends the coinage of money, and appoints officers intrusted with this superintendence in the general commission and the mints. The effigy of the king is struck upon all the coinage of the kingdom. There is in each department a superior administration, and in each district a subordinate administration. The administrators are specially charged with distributing the direct contributions, and with superintending the money arising from the contributions, and the public revenues in their territory. The king has the right of annulling such acts of the administrators of department as are contrary to the law or the orders transmitted to them; and he may, in case of obstinate disobedience, or of their endangering, by their acts, the safety or peace of the public, suspend them from their functions. The king alone can interfere in foreign political connections. Every declaration of war shall be made in these terms: "By the king of the French, in the name of the nation." The judicial power can in no case be exercised either by the legislative body or the king. Justice shall be gratuitously administered by judges chosen from time to time by the people, and instituted by letters-patent of the king, who cannot refuse them. The public accuser shall be nominated by the people. The right of citizens to determine disputes definitively by arbitration, cannot receive any infringement from the acts of the legislative power. In criminal matters, no citizens can be judged except on an accusation received by jurors, or decreed by the legislative body in the case in which it belongs to it to prosecute the accusation. After the accusation shall be admitted, the facts shall be examined and declared by the jurors. The person accused shall have the privilege of challenging twenty jurors, without assigning any reason. The jurors who declare the fact shall not be fewer than twelve. The application of the law shall be made by the judges. The process shall be public; and the person accused cannot be denied the aid of counsel. No man acquitted by a legal jury can be apprehended or accused on account of the same fact.

For the whole kingdom there shall be one tribunal of appeal, established near the legislative body. A high national court, composed of members of the tribunal of appeal and high jurors, shall take cognizance of the crimes of ministers, and the principal agents of the executive power; and of crimes which attack the general safety of the state, when the legislative body shall pass a decree of accusation. It shall not assemble except on the proclamation of the legislative body, and at the distance of thirty thousand toises at least from the place of meeting of the legislative body.

The national guards do not form a military body, or an institution in the state; they are the citizens themselves called to assist the public force. Officers are chosen for a time, and cannot again be chosen till after a certain interval of service as privates. None shall command the national guard of more than one district. All the parts of the public force employed for the safety of the state from foreign enemies are under the command of the king.

Public contributions shall be debated and fixed every year by the legislative body, and cannot continue in force longer than the last day of the following session, if they are not expressly renewed. Detailed accounts of the expense of the ministerial departments, signed and certified by the ministers or comptrollers-general, shall be printed and published at the commencement of the sessions of each legislature; and the same shall be done with the statements of the receipt of the different taxes, and all the public revenues.

The French nation renounces the undertaking of any war with the view of making conquests, and will never employ its forces against the liberty of any people. And it is also declared, that the nation has the imprescriptible right of changing its constitution; but considering that it is more conformable to the national interest to employ only, by means provided in the constitution itself, the right of reforming those articles of it of which experience shall have shown the inconveniences, it is further decreed, that the proceeding by an assembly of revision shall be regulated in the form following: When three successive legislatures shall have expressed an uniform wish for the change of any constitutional article, the revision demanded shall take place. The next legislature, and the following, cannot propose the reform of any constitutional article. The fourth legislature, augmented by two hundred and forty-nine members, chosen in each department, by doubling the ordinary number which it furnishes in proportion to its population, shall form the assembly of revision.

The French colonies and possessions in Asia, Africa, and America, though they form part of the French empire, are not included in this constitution.

With respect to the laws made by the National Assembly which are not included in the act of constitution, and those anterior laws which it has not altered, they shall be observed as long as they are not revoked or modified by the legislative power.

Constitution accepted by the king.

On the 13th of September the king announced, by a letter to the president of the assembly, his acceptance of this constitution, which, however defective in some points, is based upon solid principles of liberty; and the event was ordered to be notified to all the foreign courts, whilst the assembly decreed a general amnesty with respect to the events of the Revolution. On the following day the king repaired in person to the National Assembly; and being conducted to a chair of state prepared for him by the side of the president, he signed the constitutional act, and took an oath to maintain it. He then withdrew, and was attended back to the Tuilleries by the whole assembly, with the president at their head. On the 30th of September, the National, which has since been known by the name of the Constituent Assembly, dissolved itself, and gave place to the Legislative National Assembly, which had been elected according to the rules prescribed in the new constitution.

Character and labours of the Constituent Assembly.

Of the character and labours of the Constituent Assembly, which contained many men of distinguished talents, and not a few of eminent virtue, it is by no means easy, even at this distance of time, to form an accurate and altogether dispassionate estimate. Called together at a period of unexampled difficulty and distress; intrusted with the performance of duties altogether new to its members; required at once to regenerate a superannuated monarchy and to lay the foundations of constitutional liberty; and placed in the midst of a famishing people, resolved to cast off their chains, but not yet prepared for the enjoyment of freedom; it was expected to reform every abuse which time and misgovernment had engendered, to renovate an empire gray with feudal corruption, and to direct into safe channels the recently-excited energy of the people. The convocation of the States General formed the last resource of the monarchy overburdened by its own vices, and the first hope of the nation groaning under the pressure of accumulated evils; and to this body, therefore, the court looked for help in overcoming the difficulties with which it was beset, at the expense of some concessions in favour of general liberty, and the people for an entire re-organization of the system of government on a footing adapted to their opinions and their wants. How it accomplished the task thus imposed on it, is now matter of experience. That much still remains in dispute cannot be denied; but time, the great expositor of truth, has nevertheless unfolded its errors and illustrated its virtues.

The principal evils which afflicted France were removed by this assembly. Liberty of religious worship, which had been but imperfectly provided for in 1787, was secured in its fullest extent; torture and the punishment of the wheel were abolished; trial by jury, publicity of criminal proceedings, the examination of witnesses in presence of the accused, and counsel for his defence, were fixed by law; the ancient parliaments, the fastnesses of prejudice and partiality, were suppressed, and one uniform system of criminal jurisprudence established; *lettres de cachet* were abolished for ever; the exemption from taxation of the nobility and the clergy was extinguished, and an equal system of contribution established throughout the kingdom; the most oppressive imposts, as those on salt and tobacco, together with the taille and the tithes, were abrogated; and the privileges of nobility, with the feudal burdens, were abolished. To the Constituent Assembly France has also been indebted for the institution of national guards; the opening of the army to the courage and ability of every class of society; and the division of landed property amongst the middle ranks, one of the greatest benefits which can be conferred upon a nation. The same body also had the merit of authoritatively recognising and proclaiming the natural, social, and civil rights of man; of establishing that equality in the eye of the law without which there can be no true liberty; and of rendering the whole genius, talent, and virtue of the nation available to the public service in all its departments. These were no doubt mighty changes, and their beneficial effects were demonstrated even amidst all the calamities and convulsions which ensued. They enabled the nation to bear up and prosper under a vast accumulation of evils, any one of which would have exhausted the national strength under the monarchy; under public bankruptcy, enormously-depreciated assignats, civil divisions, political anarchy, the reign of terror, the wars of Napoleon, foreign invasion, and subjugation by Europe. In a word, by means of these reforms, France has at length, in spite of every obstacle, become great, glorious, and free; the terror of the despots of continental Europe, and one of the greatest bulwarks of modern civilization.

The errors of the Constituent Assembly, though scarcely of less magnitude, have happily not produced consequences equally lasting. By destroying in a few months the constitution of a thousand years, they set afloat the ideas of men, and spread the fever of innovation throughout the empire; by confiscating the property of the church, they established a precedent for injustice, which was but too closely followed in subsequent years; by establishing the right of universal suffrage, and conferring on the nation the nomination to all offices of trust, they conceded the exercise of powers incompatible with the monarchical form of government they themselves had established, and which the people were as yet incapable of exercising with advantage. They diminished the influence of the crown to such a degree as to render it incapable of controlling the people; they limited the royal negative in such a manner as to render it nearly inoperative; and they thus left the kingdom a prey to the factions to which the recent changes had unavoidably given birth. Lastly, by excluding themselves from the Legislative Assembly (and this was their greatest error), they deprived France of the benefit of their experience, and permitted their successors to commence the same circle of experimental innovation, to the extreme hazards of which they had latterly been fully awakened. But all these were either reparable or terminable evils, which, though severely felt for a season, have, in the natural course of events, been either cured or ended; and, fortunately for France, the good seed sown by this body is still producing its fruits, whilst the tares scattered amongst it have at length withered and died

The Legislative Assembly.

The new assembly was opened by the king in person on the 7th of October, in a speech recommending unanimity and confidence between the legislative and the executive powers, which speech was received with unbounded applause. The character of the men who composed the new National Assembly was inauspicious to the court. At the commencement of the Revolution, the great body of the people at a distance from the capital felt little interested in those projects of freedom which occupied the more enlightened but more turbulent inhabitants of Paris. But they had gradually been roused from their lethargy. The variety of powers conferred upon the people at large by the new constitution, and the multiplicity of offices of which it gave them the patronage, had kindled in the minds of men a sense of their own importance, and a desire to intermeddle in public affairs. This attached them to the new order of things. The love of power, which is perhaps the least disguised passion in the human heart, and equally strong in the breast of the meanest and most elevated of mankind, had thus, under the name of liberty, become a leading passion throughout the empire; and they who flattered it most, and were loudest in praise of the rights of the people, became speedily the favourites of the public. The new National Assembly was chiefly composed of country gentlemen of principles highly democratic, or of men of letters who had published popular books or conducted periodical publications; and as the members of the Constituent Assembly had by their own act excluded themselves from holding seats in the Legislative Assembly, the members of the latter entertained but little regard for a constitution which they themselves had not framed, and which was not protected by the sanction of antiquity.

When this assembly first met, it showed much attention to formalities, and an extreme jealousy of the ministers of the crown; and as the treaty of Pilnitz now began to be rumoured abroad, France was thrown into a state of great anxiety for the safety of its newly-acquired liberties. Although the Prussians and Germans still continued to temporize, Sweden and Russia had entered into strict engagements to restore the old despotism of France. Accordingly, on the 9th of November a decree was passed, by which it was provided that the emigrants who, after the first of January 1792, should be found assembled in a hostile manner beyond the frontiers, should be considered as guilty of a conspiracy, and suffer death; and that the French princes and public functionaries who should not return before that period, should be punishable in the same manner, and their property forfeited during their lives. On the 18th a number of severe decrees were also passed against such of the ejected clergy as still refused to take the civic oath. But to all these the king opposed his *veto* or negative. The moderate party, who were attached to the constitution, rejoiced at this, as a proof of the freedom of the sovereign; but, on the other hand, it raised a violent clamour, and became the means of exciting new suspicions against the court. About this time answers from the different foreign courts to the notification sent them of the king having accepted the new constitution were received. These were generally conceived in a style of great caution, and avoided employing language calculated to produce irritation. The emperor even prohibited all assemblages of emigrants within his states; and Louis intimated to the assembly that he had declared to the elector of Treves, that unless the emigrants ceased before the 15th of January to make hostile preparations within his territories, he would be considered as the enemy of France. All this, however, did not serve to allay suspicion; for although the different foreign courts had openly declared pacific intentions, yet the French emigrants boldly asserted that all Europe was actually arming in their favour, and accordingly ceased not to solicit such of their friends as still remained within the country to leave it and join them in what they called the royal cause. Placed between a republican party which was gradually gathering strength, and an aristocratical party which was rousing Europe to arms against a nation of which he was the constitutional chief, with a combination of princes suspected of wishing to seize upon part of his dominions, the unhappy king stood in a situation which would have perplexed the most skilful statesman; and it is no proof of incapacity that he fell a sacrifice to circumstances which might have overwhelmed any ordinary measure of human sagacity. Addresses were crowding into the assembly disapproving the conduct of the court. M. Montmorin resigned; M. Delessart succeeded him; and M. Cahier de Gerville became minister of the interior. M. Duportail resigned also, and was succeeded as minister of war by M. de Narbonne. In the month of November M. Bailly's mayoralty terminated; and the once popular Lafayette appeared as a candidate for the office. But he was successfully opposed by M. Petion, a declared republican, who was elected mayor by a great majority.

The Feuillants.

At this period the moderate men, friends of the constitution, attempted to counteract the influence of the Jacobin Club by the establishment of a similar one. This new club derived its name from the vacant convent of the Feuillants, in which it assembled; and the most active members of the Constituent Assembly belonged to it, such as MM. d'André, Barnave, the two Lameths, Duport, Rabaud, Sieyes, Chapelier, Thouret, Labord, Talleyrand, Montesquieu, Beaumetz, and others. But the Jacobins contrived to excite a riot at the place of their meeting, which was in the vicinity of the hall of the National Assembly; and this afforded a pretext for applying to the assembly for the removal of the new club. The assembly complied with the request, and thereby evinced its favourable disposition towards the Jacobins.

State of France.

At the close of the year 1791 the kingdom of France was by no means in a prosperous state. The public revenue had fallen far short of the expenditure; the emigrant nobility had carried out of the kingdom the greater part of the current coin; and a variety of manufacturers, who depended upon their ostentatious luxury, were reduced to much distress. The dispositions of foreign courts appeared at best doubtful. The year 1792, however, opened with a delusive prospect of tranquillity. The German princes seemed to be satisfied with the mode of compensation which the French had offered for the loss of their possessions in Alsace and Lorraine; the Prince of Lowenstein accepted of an indemnification; the Princes of Hohenlohe and Salm-Salm declared themselves ready to treat upon the same terms; whilst Prince Maximilian, and the Dukes of Wirtemberg and Deux-Ponts, also negotiated an arrangement. It is unnecessary to state in detail the subterfuges employed by Leopold for amusing the French with the appearances of peace. To these, and probably also to the undecided character of Louis, M. Delessart, minister of foreign affairs, fell a sacrifice. He was accused by Brissot of not having given timely notice to the National Assembly of the dispositions of foreign powers, and of not pressing proper measures for securing the honour and safety of the nation; a decree of accusation was passed against him in his absence; and having been apprehended, tried by the high court at Orleans, and convicted, he was executed in virtue of its sentence.

The unexpected death of Leopold on the first of March gave rise to a transient hope that peace might still be preserved. On the 16th of the same month the king of Sweden was wounded by a nobleman of the name of Ankerström, and died on the 29th. This enterprising prince, having overturned the constitution of his own country, had formed the project of conducting in person his troops to the frontiers of France, and of commanding or accompanying the combined armies of Europe in their attempt to avenge the cause of insulted royalty; and it was in a great measure to counteract this scheme that he was assassinated.

The sudden fall of these two enemies, however, rather accelerated than retarded the meditated hostilities. The young king of Hungary, who succeeded to the empire, made no secret either of his own intentions or of the existence of a concert of princes against France. Dumouriez was now at the head of the war office, Roland held the portfolio of the interior, and Clavière was minister of finance. The Jacobins were all-powerful, and the court gave way to the torrent. The property of the emigrants was confiscated, reserving only the rights of creditors. Meanwhile the imperial minister, Prince Kaunitz, demanded three things of France: first, the restitution of all their feudal rights to the German princes; secondly, the restoration of Avignon to the pope, the inhabitants of which had some time previously thrown off their allegiance, and prevailed with the Constituent Assembly to receive their country as part of France; and, lastly, a guarantee that the neighbouring powers should have no reason for apprehension from the present weakness of the internal government of France. On receiving these demands, the king proposed a declaration of war, which, on the 20th of April, was accordingly decreed by the National Assembly against the king of Hungary and Bohemia.

The Austrian Netherlands attacked.

The French immediately began the contest, by attacking in three different columns the Austrian Netherlands. Dillon advanced from Lisle to Tournay, where he found a strong body of Austrians ready to receive him. But the national force, unaccustomed to sustain the fire of regular troops, were instantly thrown into confusion, and fled even to the gates of Lisle. The cry of treason resounded on all sides; and their commander, an experienced and faithful officer, was murdered by his own soldiers and the mob. A second division of ten thousand men, under General Biron, took possession of Quivrain on the 29th, and marched towards Mons, at which place he was attacked by the Austrians, whom he repulsed; but hearing of the defeat of Dillon, he retreated. A third division advanced to Furnes, but afterwards withdrew; and Lafayette, who had simultaneously advanced towards Bouvines, half way to Namur, was also obliged to retire. All these expeditions were ill contrived, inasmuch as they divided the French undisciplined troops, and exposed them in small bodies to the attack of veteran forces. Some time elapsed before the Austrians attempted to retaliate. At length, however, on the 11th of June they attacked Gouvion, who commanded the advanced guard of Lafayette's army, near Maubeuge; but Lafayette having come to his assistance, the Austrians abandoned the field.

In the mean time, matters were hastening towards a

Indications of an approaching crisis.

violent crisis in Paris. Two parties, both equally hostile to the present constitution, had been gradually formed, one of which wished to give more effectual support to the royal authority, by establishing a senate, to prevent the king's vote from being the sole check upon popular enthusiasm; whilst the other desired to set aside royalty altogether, and to hazard the perilous experiment of converting France into a republic. These last were supported by the Jacobin Club, which had now contrived to concentrate within itself an immense mass of influence. In every town and village of the provinces innumerable popular societies were established; and with these a regular correspondence was kept up, both by letters and by emissaries. Every scheme was thus instantaneously propagated throughout the empire, and all the violent spirits which it contained were enabled to act in concert. But the more immediate engine of the republican party consisted of the immense population of the metropolis, whom they now endeavoured to keep in a state of continual alarm. For this purpose, it was alleged that an Austrian committee, or a conspiracy in favour of the enemies of the country, existed amongst the friends of the court; and both Gensonné and Brissot offered in the assembly to prove the existence of this pretended committee. A report was next circulated that the king intended to abscond from the capital on the 23d of May; and though his majesty publicly contradicted the rumour, which he treated as a calumny, it made no small impression upon the minds of the public. New decrees were now passed against the refractory clergy, but these his majesty refused to sanction. A proposal was also made and adopted in the assembly to form a camp of twenty thousand men under the walls of Paris, and for this purpose to levy from every canton in the kingdom one horse and four infantry soldiers. But the national guard of Paris disliked the proposal, and the king gave it his negative. At this time the king seems to have come to a resolution of making a stand against the Jacobin party, to which he had for some time yielded. With the exception of Dumouriez, therefore, the ministry were dismissed, and others appointed in their stead. Dumouriez lost the confidence of the Jacobin Club in consequence of the exception in his favour; but he saw his error, resigned his office, and immediately joined the army. In the mean time a decree had been passed, authorizing the manufactory of pikes for the purpose of arming cheaply the lower class of citizens. Attempts were also made, by means of inflammatory writings and harangues, to render the king odious; and in both ways Marat, who afterwards acquired such infamous notoriety, appears to have taken the lead.

On the 20th of June, Roederer, the procureur-general, informed the assembly that, contrary to law, formidable bodies of armed men were preparing to present petitions to the king and to the assembly; and part of them speedily made their appearance, with St Huruge, and Santerre, a brewer, at their head. They marched through the hall in a procession which lasted two hours, and to the number of about forty thousand. They then surrounded the Tuilleries, the gates of which were thrown open; and on an attempt to break open the door of the apartment where the king was, he ordered them to be admitted. During the four or five hours that he was surrounded by the multitude, and compelled to listen to every indignity, his sister the Princess Elizabeth never departed from his side. All this time Petion, the mayor of Paris, was most unaccountably absent; but at length he arrived at the palace, as did also a deputation from the assembly. The queen, with her children and the Princess de Lamballe, were in the mean while in the council-chamber, where, though protected from violence, they were nevertheless exposed to insult. At last, on the approach of evening, the multitude, yielding to the entreaties of Petion, gradually dispersed. The indignities suffered by the royal family on this occasion were in some respects not unfavourable to their cause. The respectable inhabitants of the capital, ashamed of such proceedings, complained of them in a petition which they presented to the assembly; and addresses to the same purpose were received from several departments. The directory of the department of Paris, at the head of which were M. Rochefoucault and M. Talleyrand, published a declaration, disapproving of the conduct of the mayor, and of Manuel the procureur of the commune, whom they afterwards suspended from their offices, to which however the delinquents were speedily restored by a decree of the assembly. About the same time Lafayette having suddenly quitted the army, appeared at the bar of the assembly, where he declared that he came to express the indignation with which the whole army regarded the events of the 20th, and called upon the assembly to punish the promoters of these excesses, and to dissolve the factious clubs. The sudden appearance of Lafayette threw the Jacobins into consternation, and from that period they never ceased to calumniate him.

On the 1st of July the assembly, on the motion of Jean de Brie, ordered a proclamation to be issued that the country was in danger; and on the 6th, Louis intimated that the king of Prussia was marching with fifty-two thousand men to operate against France. The French armies had about this time obtained some successes in the Austrian Netherlands; but the cabinet thought it necessary to order them to retreat, a measure which was afterwards publicly censured by Marshal Luckner. On the 7th an extraordinary scene took place in the National Assembly. At the moment when Brissot was about to commence an oration, M. Lammourette, bishop of Lyons, requested to be heard for a few minutes, and after expatiating on the necessity of union amongst the members of the assembly, and of sacrificing their passions and prejudices on the altar of their country, concluded an animated address by proposing that all who held in equal detestation a republic and two chambers, and who wished to maintain the constitution as it stood, should immediately rise up. The words were scarcely pronounced when the whole assembly started from their seats; men of all parties solemnly embraced each other, protesting their adherence to the constitution; and a deputation announced the happy event to the king, who came to the assembly, and congratulated them on what had occurred. But the only good effect produced by this temporary agreement was, that the festival of the 14th of July, which was celebrated with the usual magnificence, passed in tranquillity.

Duke of Brunswick's manifesto.

On the 25th of July, the Duke of Brunswick issued at Coblentz his celebrated manifesto. It declared that the purpose of the intended invasion of France was to restore the French king to full authority; held the national guard responsible for the preservation of tranquillity; and threatened with the punishment of death, as rebels to their king, all those who should appear in arms against the allied powers. The same language was employed towards all persons holding offices, civil as well as military; whilst the city of Paris and the National Assembly were declared responsible for every insult which might be offered to the royal family. It was added, that if the latter were not immediately placed in safety, the allies were resolved to inflict upon those who should deserve it the most exemplary and ever-memorable punishment, by giving up the city of Paris to military execution, and exposing it to total destruction; and the same vengeance was denounced against all those who should be guilty of what was called illegal resistance. This sanguinary and imprudent manifesto operated almost as a warrant for the destruction of the unfortunate Louis XVI. It left no middle party in the nation. All who wished to preserve freedom in any form, and all who loved the independence of their country, were instantly united. The reproaches cast upon the king by the Jacobins now gained universal credit. The sovereigns of Prussia and of Hungary announced to the French nation that their monarch was secretly hostile to the constitution; and the restoration of the king and his family to despotic power was made the sole pretence for a most unjustifiable aggression. The republican party saw at once the advantage which they had gained, and resolved on the deposition of the king. The chief engine which they meant to employ in this service consisted of about fifteen hundred men, who had come to Paris at the period of the confederation on the 14th of July, hence called *Fédérés*, and who were also sometimes denominated *Marseillois*, from the place which had sent the greater number; and next to these, dependence was placed upon the populace of the suburbs of the capital. The designs of the republicans were not unknown to the court, and both parties now formed their plans of operation. The royal party intended, it is said, that the king and his family should suddenly leave the capital, and proceed to as great a distance as the constitution permitted; whilst the republicans, on the other hand, are alleged to have meditated seizing the person of the king, and confining him in the castle of Vincennes until a national convention should decide upon his fate. Both assertions are probably true. Every motive which can influence the mind of man must have induced Louis to wish to be at a distance from the factious and sanguinary capital; and the subsequent conduct of the republicans warrants us in believing that they already contemplated the destruction of the king and the monarchy.

Lafayette accused and acquitted.

Various charges had at different times been brought forward in the assembly against Lafayette, and the 8th of August was appointed for their discussion. In the mean time, on the 3d of August, Petion the mayor, at the head of a deputation from the sections of Paris, appeared at the bar, and formally demanded the deposition of the king. The discussion of the accusation against Lafayette was considered as a trial of strength between the parties; but he was acquitted by a majority of nearly two hundred; and the republican party, despairing of carrying their point by a vote of the assembly, resolved to have recourse to the bolder experiment of insurrection.

On the evening of the 9th, about fifteen hundred gentlemen, officers of the army, and others, repaired to the palace, resolved to protect the royal family, or to die in their defence; and besides these, there were within its walls seven hundred Swiss guards, with a body of cavalry amounting to about a thousand. Mandat, the commander of the national guards, a man firmly attached to the constitution, had also procured two thousand four hundred of that body, with twelve pieces of cannon. There can be no doubt that, with such a force vigorously directed, the palace, which is a kind of castle, might have been successfully defended; and that which is now termed a revolution might have received the name of a rebellion. But. unhappily for the cause of monarchy in France, its supporters, military as well as civil, were paralysed by the uncertainty and vacillation which characterized the royal counsels, and, through indecision, all was lost. Meanwhile the assembly declared its sittings permanent. Petion was at the palace late in the evening of the 9th; and as some apprehensions were entertained, or pretended to be entertained, for his safety, a deputation from the assembly brought him away. At midnight the tocsin was sounded, and the drums beat to arms throughout the city, when a number of the most active leaders of the republican party assembled, and elected a new common council. The persons thus irregularly chosen instantly took possession of the common-hall, and drove out the lawful members, who, infected with that weakness which shrinks from stations of responsibility in perilous times, readily gave place to the usurpers. The new council then sent repeated messages to Mandat, requiring his attendance upon important business. He was occupied in arranging the troops around the palace; but suspecting nothing, he went to the common-hall, and was there astonished to find a different assembly from that which he expected to meet there. He was abruptly accused of a plot to massacre the people, and ordered to prison; but as he descended the stairs he was shot through the head with a pistol, and Santerre appointed in his stead to command the national guard. In the palace all was anxiety and alarm.

Tenth of August.

About six o'clock in the morning of the 10th the king descended into the gardens to review the troops. He was received with shouts of *Vive le roi*, excepting from the artillery, who shouted *Vive la nation.* The king returned to the palace, and the multitude continued to assemble. The national guard seemed undecided what to do, as they assembled in divisions near the palace; and had a steady resistance been made from within, it is probable they would have joined the royal party. But towards eight o'clock M. Roederer procured admission into the palace, and told the king that armed multitudes were assembling in hostile array around the Tuilleries; that the national guard was not to be depended upon; and that, in the event of resistance, the whole royal family would certainly be massacred. He therefore advised the king to seek protection in the hall of the National Assembly; and with this advice the king, with his usual facility of temper, prepared to comply; but the queen vehemently opposed the humiliating proposal. Having, however, become gradually alarmed for the safety of her children, she at length gave her consent; and the king, queen, and Princess Elizabeth, together with the prince and princess royal, went on foot to the hall of the assembly. "I am come hither," said his majesty, "to prevent a great crime. Among you, gentlemen, I believe myself in safety." But by an article of the constitution the assembly could not deliberate in presence of the king. The royal family were, therefore, placed in a narrow box separated from the hall by a railing, where they remained during fourteen hours, without having any place to which they could retire for refreshment, excepting a small closet adjoining; and here they sat listening to debates in which the royal character and office were treated with every species of contumely and insult.

When the king left the palace of the Tuilleries, he unfortunately forgot to order it to be immediately surrendered. This he recollected as soon as he reached the assembly, and sent orders accordingly; but unhappily it was now too late. The insurgents, amounting to about twenty thousand in number, were drawn up in tolerable order by Westermann, a Prussian by birth, and had with them thirty pieces of cannon. The gentlemen within the palace, who had assembled to protect the king's person, now became dispirited, and knew not what to do. Afry, the commander of the Swiss, was absent, and the captains were left without orders, whilst, in consequence of the death of Mandat, the national guard had no leader. About nine o'clock the outer gates were forced, and the insurgents formed their line in front of the palace. A bloody combat now commenced, chiefly between the Marseillois and the Swiss. But after a brave resistance of about an hour, the latter were overpowered by numbers, and gave way. All those found in the palace were massacred, some even whilst imploring quarter on their knees; but others escaped into the city, and were protected by individuals. Of this brave regiment only two hundred survived; but every human being, including even the lowest domestics, found within the palace, was put to death. Those of the Swiss who had been made prisoners in various quarters were conducted to the door of the assembly, and, by a decree, taken under the protection of the state; but the sanguinary multitude insisted upon putting them to instant death; and the assembly would, in all probability, have been unable to protect them, had not the Marseillois generously interfered in their favour.

The royal authority suspended.

The suspension of the royal authority was now decreed, and the nation invited to elect a convention to determine the nature of its future government. On this occasion all Frenchmen of twenty-one years of age were declared capable of electing, and of being elected, deputies to the new National Convention. The same evening commissioners were dispatched to give to the armies a favourable account of the transactions which had just taken place. The royal family were sent to the old palace of the Temple, there to remain under a strict guard; and all persons of rank who had been attached to them were seized and committed to different prisons.

As an instance of the temper by which the people of Paris were at this time actuated. it is proper to mention, that at the very moment when the multitude were massacring the menial servants in the palace, and could scarcely be restrained from offering violence to the Swiss who had been made prisoners, they would not suffer an act of pillage to pass unpunished; and several attempts of the kind were instantly followed by the death of the offenders. The plate, jewels, and money found in the Tuilleries were brought to the National Assembly, and thrown down in the hall; and one man, whose dress and appearance bespoke extreme poverty, cast upon the table a hat full of gold. But the minds of those men were elevated by enthusiasm; and they conceived themselves at the moment the champions of freedom, and objects of terror to the kings of the earth.

In the mean time, the situation of France had become extremely critical, and it appeared doubtful if the new Convention would ever be suffered to assemble. Lafayette having accidentally got early notice of the events of the tenth of August, advised the magistrates of the town of Sedan to imprison the commissioners of the National Assembly as soon as they should arrive there; and this was accordingly done. He at the same time published an address to the army, calling upon them to support the king and the constitution; but finding that they were not to be depended upon, he left the camp in the night of the 19th August, accompanied only by his staff and a few servants. The party took the route of Rochefort in Liège, which was a neutral country; but having been met by a small body of the enemy, they were made prisoners, and Lafayette was detained for several years in close confinement. The severe treatment of this weak but well-meaning man was a great error in policy upon the part of the allies. His fidelity to the king and the constitution is now generally admitted; and though some have entertained strong suspicions of his conduct towards that unfortunate monarch, and in the British House of Commons he was even stigmatized as an abandoned ruffian, it is certain that he was actuated by the purest motives, and would have saved the king if it had been in his power to do so. His errors, in fact, were those of the head rather than of the heart; he still fancied that he could guide a revolution which he had had a share in originating, and seemed altogether unconscious that the direction of the movement had passed into other hands. But, however this may be, he should have been protected by the allies, if for no other reason, at least to encourage desertion amongst the officers of the republican army. The commissioners arrested at Sedan were soon afterwards set at liberty, and received with applause by the army of Lafayette. General Arthur Dillon at first entered into the sentiments of Lafayette; but Dumouriez diverted him from his purpose, and thus regained his credit with the Jacobins, by whose influence he was appointed commander-in-chief. The other generals, Biron, Montesquieu, Kellerman, and Custines, offered no opposition to the will of the National Assembly.

Entry of the allies into France.

Meanwhile the combined armies of Austria and of Prussia had entered France. The Duke of Brunswick's army was above fifty thousand strong; and General Clairfayt had joined him with fifteen thousand Austrians and a considerable body of Hessians, besides twenty thousand French emigrants, amounting in all to near ninety thousand men. To oppose these, Dumouriez had only seventeen thousand men collected near the point from which the enemy were approaching in Luxembourg. The French emigrants had given the Duke of Brunswick such an account of the distracted state of the country, and of the alleged disaffection of all orders of men towards the ruling faction in Paris, that no resistance of any importance was expected by him; and, in fact, when the combined forces, consisting either of steady Austrian or Hungarian battalions, or of well-trained Prussians, whom Frederick had inured to the best discipline, were reviewed in Germany before setting out on their march, the spectators, amongst whom the French cause was not unpopular, beheld them with anxiety and regret, pitying the unhappy country against which this irresistible force was to be directed. The officers and soldiers considered themselves as departing for a hunting match, or an excursion of pleasure; and many of the usual accommodations of an army were in consequence but ill attended to. The commencement of their invasion of France justified these expectations. Longwy surrendered after a siege of fifteen hours, although well fortified, possessed of a garrison of near four thousand men, and defended by seventy-one pieces of cannon.[1] Verdun was next summoned, and the governor, M. Beaurepaire, compelled by the municipality to surrender.[2] The news of this second capture, and of the approach of the Prussians, spread consternation throughout Paris; and it was proposed to raise a volunteer army, which should set out immediately to meet the enemy. The municipality, which was now led by Robespierre, Danton, Marat, and others of the most sanguinary character, ordered the alarm guns to be fired, and enjoined the populace to meet in the Champ de Mars to enroll themselves to march against the enemy. The people assembled, and, either in consequence of a premeditated plan, or, which is not very probable, of an instantaneous movement, a number of voices exclaimed, that the domestic foes of the nation should be destroyed before its foreign enemies were attacked.

Massacres of September.

Parties of armed men proceeded without delay to the prisons where the nonjuring clergy, the Swiss officers, and those confined since the tenth of August on account of alleged practices against the state, were detained in custody. They took out the prisoners one by one, gave them a kind of mock trial before a jury of their own number, acquitted some few, and murdered the remainder. Amongst these was the Princess de Lamballe, who was taken from bed, dragged before this bloody tribunal, and massacred; after which her head, stuck on a pike, was carried by the populace to the Temple, that it might be seen by her friend the queen. These massacres continued two days, and upwards of a thousand persons were put to death. In all history, indeed, there is scarcely any thing to parallel them; they were committed, it is believed, by less than three hundred men, in the midst of an immense city, which heard of them with horror, and in the vicinity of the National Assembly, which, by going in a body, could have put an end to them. But such was the confusion and dismay which prevailed during these two disgraceful days, that no man dared to stir from his house; every one believed that the whole city, excepting his own street, was involved in massacre and bloodshed. The national guards were all ready at their respective posts, but no man directed them to act; and there is good reason to suspect that Santerre and the chiefs of the commune connived at, if indeed they were not actually implicated in, this atrocious butchery.

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[1] The news of this event greatly irritated the assembly, who decreed, that when the town was retaken, the houses of the citizens should be razed to the ground; and, mistrustful of the officers of the army, they also ordained that the municipal officers of a town should hereafter have power to control the deliberations of the council of war.

[2] This officer, disappointed and enraged, shot himself dead with a pistol in presence of the council; and on the 2d of September the Prussian troops entered the town.

In the mean time, General Dumouriez was occupied in taking measures to protract the march of the enemy till the army of Kellerman, consisting of about twenty thousand men, could arrive from Lorraine, and that of Bournonville, amounting to thirteen thousand, from Flanders; together with whatever new levies Luckner might be able to send from Chalons. The forest of Argonne, extending from north to south upwards of forty miles, lay directly in the line of march of the Duke of Brunswick, who had either to force his way through it, or to make a circuit of forty miles by the pass of Grandpré on the north, or by Barleduc on the south. The pass which lay most directly in his line of march was that of Biesme. But after examining Dillon's position at this point, the duke left a force of twenty thousand men to observe it, and with the main body of his army took the circuitous route by Grandpré on the north. Here Dumouriez waited to receive him, and was attacked on the 12th and 13th without success; but on the 14th the attack of the Prussians was irresistible, and Dumouriez abandoned his position. On his retreat he was so closely pressed by the cavalry of the Prussian advanced guard, that his army was seized with a panic, and fled before fifteen hundred horse, who, if they had pushed their advantage, might have entirely dispersed it. On the 15th, however, Dumouriez having encamped at St Menehould, began to fortify his position, and Bournonville's army joined him on the 17th. The Duke of Brunswick now resolved to attack Kellerman before he could effect his junction with Dumouriez; and, accordingly, on the 19th, when that officer had arrived within a mile of the French camp, the projected attack took place. The Prussians manœuvred with their usual coolness and address; but in an attempt to surround Kellerman's army they were completely foiled, and, in the face of the enemy, Kellerman joined Dumouriez at the close of the action. At the same time that the army of Kellerman was attacked, an attempt was also made to force Dillon's camp at Biesme, by the twenty thousand men who had been left in its vicinity; but the attempt failed, and this large detachment was thus prevented from penetrating the forest of Argonne and joining the Duke of Brunswick. In these engagements the French owed the advantage they obtained chiefly to the superiority of their artillery; a circumstance which served to convince their enemies that they had to contend with regular military bodies, and not, as they expected, with undisciplined multitudes.

The Duke of Brunswick now encamped his army at La Lun, near the position of Dumouriez; and here the Prussians began to suffer extreme distress, both from sickness and from famine. No temptation could induce the inhabitants of the country to carry provisions to the hostile camp, whilst at the same time the French army was abundantly supplied; whilst Bournonville, with a body of four thousand men, had intercepted several herds of cattle and other convoys of provisions destined for the Prussians. The rain fell in torrents, and the roads were uncommonly deep. Exposed to cold and damp, and suffering from want of provisions, the Prussians ate freely of the grapes of Champagne; in consequence of which an epidemical distemper appeared, and spread through the army with such rapidity, that ten thousand men were at one time unfit for duty. The Duke of Brunswick, however, was still at the head of a force more numerous than that of Dumouriez; and he has therefore been much censured for not attacking his opponent, and forcing him to receive battle. It has been said that the numerous and veteran force which he commanded would have marched to certain victory against the raw troops who opposed them; and that, having defeated Dumouriez's army, there was nothing to oppose his march towards Paris. But the Duke of Brunswick having entered France upon the supposition that in its present distracted state no regular army could be brought into the field against him, and that the people at large were hostile to the ruling faction, felt disconcerted by discovering that he had been deceived, and that all his expectations were disappointed. Instead of a friendly he found himself in the midst of a hostile people; where he had expected to meet with nothing but confusion, disorder, and weakness, he observed all enthusiastically united in defence of their country; and, so far from encountering little or no resistance, he saw before him armies, imperfectly disciplined, it is true, but hourly increasing in numbers and improving in training, and at the same time conducted by skilful military chiefs. In such a situation a defeat would have brought certain ruin on his army; and even a victory might in its consequences have proved equally fatal. Accordingly, after proposing a truce for eight days, which was agreed to, he commenced his retreat towards Grandpré, and continued it without molestation. Verdun was retaken by the French on the 12th of October, and Longwy on the 18th; and the siege of Thionville, a small but strong fortress under the command of General Wimpfen, was at the same time raised.

Whilst the Prussians were advancing from the north-east, the Austrians under the Duke of Saxe-Teschen laid siege to Lisle. To the summons of the besiegers the council-general of the commune answered that they had just renewed their oath to be faithful to the nation, and to maintain liberty and equality, or to die at their post; and that they would not perjure themselves. The Austrian batteries opened on the 29th, and were chiefly directed against that quarter of the town which was inhabited by the lower class of citizens, in the hope, no doubt, of exciting disturbance within. But this proceeding was exceedingly ill judged. The lower classes of mankind are always accustomed to hardships, and hence they are prepared to go much further in support of any principle which they may have enthusiastically adopted, than those who have been accustomed to enjoy all the comforts and luxuries of life. Accordingly, though a great part of the city was reduced to a heap of ruins, the citizens of Lisle became daily more obstinate; every vault and cellar was occupied; and although upwards of thirty thousand red-hot balls and six thousand bombs were thrown into the city, not to mention the effect produced by an immense battering train, yet the loss sustained by the garrison and people did not exceed five hundred persons, most of whom were women and children. After a fortnight of fruitless labour, the Austrians were therefore obliged to raise the siege. Meanwhile war had been declared against the king of Sardinia, whose conduct towards France had for some time assumed a threatening character. On the 20th of September General Montesquieu entered the territories of Savoy, and was received at Chambery, and throughout the whole country, with marks of unbounded welcome; and on the 29th

General Anselm, with another body of troops, took possession of Nice and the surrounding country. On the 30th General Custines advanced to Spires, where, finding the Austrians drawn up in order of battle, he attacked and drove them out of the city, taking three thousand prisoners. The capture of Worms succeeded that of Spires; Mentz surrendered by capitulation; and Frankfort fell into the hands of the French on the 23d. Out of this last place, however, they were afterwards driven on the 2d of December.

The National Convention assembled.

On the 20th of September the French National Convention assembled. This body was found to contain men of all characters, orders, and ranks. Many distinguished members of the Constituent Assembly were returned as members, and several who had belonged to the Legislative Assembly were also elected; whilst even foreigners were invited to become French legislators. Thomas Paine and Dr Priestley were elected by certain departments; and Clootz, whom we formerly noticed as having appeared at the bar of the Constituent Assembly at the head of a grotesque deputation professing to represent all the nations of the earth, was also chosen. The general aspect of the new Convention showed that the republican party had acquired a decided superiority. On the first day of meeting Collot-d'Herbois, who had formerly been an actor, ascended the tribune, and proposed the eternal abolition of royalty in France. This proposition was carried by acclamation, after which the house adjourned. Messages were then sent to all parts of the country intimating the decree, and through the influence of the Jacobins these were everywhere received with applause. Next day it was decreed that all public acts should be dated by the year of the French Republic; and every citizen was declared eligible to vacant offices and places. Nor was this all. The rage of republicanism soon proceeded so far that the ordinary titles of Monsieur and Madame were abolished, and the appellation of Citizen substituted in their stead, as more suitable to the principles of liberty and equality.

Two factions in the Convention.

It was soon discovered that the leading republicans were divided into two opposite factions. The one of these was called Girondists, because Vergniaud, Gensonné, Guadet, and some others of its leaders, were members for the department of the Gironde. The celebrated Condorcet also belonged to this party, which was sometimes denominated Brissotine, from Brissot their principal leader. The Girondists supported the ministry now in office, at the head of which was Roland; and the majority of the Convention was obviously attached to them. In opposition to these was the smaller party of the Mountain, so called from its members usually sitting on the upper seats of the hall of the Convention. They were men possessed of less personal respectability, and inferior literary accomplishments, but of daring and sanguinary characters. At the head of this party were Danton and Robespierre, and subordinate to these were Couthon, Bazire, Thuriot, Merlin de Thionville, Saint-André, Camille Demoulins, Chabot, Collot-d'Herbois, Sergent, Legendre, Fabre d'Eglantine, Panis, Marat, and others. These two parties evinced the diversity of their characters in the manner in which they treated the massacres of the 2d and 3d of September. The Brissotines, with the majority of the Convention, wished to bring the murderers to trial; but the question was always eluded by the other party, with the assistance of the Jacobin Club and of the populace.

Decree of fraternisation.

On the 9th of October it was resolved that all emigrants, when taken in arms, should suffer death; and on the 15th of November, in consequence of an insurrection in the duchy of Deux Ponts, and an application for aid upon the part of the insurgents, a decree was passed, declaring that "the National Convention, acting in name of the French nation, would grant fraternity and assistance to all those people who wished to procure liberty;" and charging the executive power to send orders to the generals to give assistance to such people as had suffered, or were still suffering, in the cause of liberty. Of this decree foreign nations loudly complained, as calculated, if not intended, to provoke insurrection in other states; and in the rupture which subsequently took place between Great Britain and France, it was founded on by the government of the former country as of itself affording a sufficient justification of hostilities, and, in fact, as rendering war with France a necessary measure of self-defence.

Battle of Jemmappes.

But it is now time to return to the military affairs of the Republic. The final retreat of the allies had left Dumouriez at liberty to carry into execution a project he had long meditated, of invading the Low Countries, rescuing these fine provinces from the Austrian dominion, and thus advancing the frontier of the Republic to the Rhine. He received unlimited powers from the government, and the losses sustained by the allies during their invasion of France gave him a great superiority of force. His right wing consisted of sixteen thousand men, detached from the Argonne Forest, whilst between it and the centre was placed General d'Harville with fourteen thousand; Dumouriez himself commanded the main body, amounting to forty thousand men; and the left wing, under Labourdonnaye, was about thirty thousand strong; in all a hundred thousand men, filled with enthusiasm, and anticipating nothing but victory. To oppose this immense force, the Austrians had only about forty thousand men, who, according to the tactics of the time, were disseminated along an extended line of nearly thirty miles. Their main body, consisting of about eighteen thousand men, was entrenched in a strong position, which had been deliberately chosen by the imperialists, and extended through the villages of Ausmes and Jemmappes to the heights of Berthaimont on the one hand, and the village of Sifly on the other, sweeping over a succession of eminences which commanded the adjacent plain; whilst fourteen redoubts, strengthened by all the resources of art, and armed with a hundred pieces of cannon, seemed amply to compensate for inferiority in point of number. But formidable as this position undoubtedly was, Dumouriez resolved to assault it, and to make trial of the new system of accumulating masses upon one point, which, if thus forced, would necessitate the abandonment of the whole.

The battle commenced at day-break on the 6th of November, with an attack on the village of Cuesmes, led by Bournonville; but, after sustaining a severe fire of artillery, which for some hours arrested his efforts, he at length succeeded in turning the village of Jemmappes, and the redoubts on the left of the Austrian position were carried by the impetuous onset of the French columns. Dumouriez now caused his centre to advance against the front of Jemmappes, and the column moved forward rapidly to the attack; but upon approaching the village, they were taken in flank by some squadrons of horse, which broke through the column, and drove back the French cavalry which supported it. The moment was eminently critical; for whilst the flank of the column was thus maltreated, the leading battalions, checked by a destructive fire of grape, were beginning to waver at the foot of the redoubts. In this extremity, an attendant of the general-in-chief rallied the disordered troops, and arrested the victorious squadrons, whilst a young officer restored the front of the attack. Rallying the disordered regiments into one mass, which he called the column of Jemmappes, the latter placed himself at its head, renewed the attack on the redoubts, carried the village, and at length drove the Austrians from their intrenchments in the centre of the position.[1] But though thus victorious in the centre, Dumouriez had still great cause for anxiety respecting the attack on the right. Bournonville, though at first successful on that side, had hesitated when he observed the confusion in the column of the centre, vacillating between a reluctance to abandon the ground he had gained, and a desire to withdraw part of his forces to support the column in the plain. As soon as this hesitation was perceived by the enemy, they redoubled their fire, and kept in hand a large body of cavalry ready to charge on the least appearance of disorder. Dumouriez flew to the spot, rode along the front of two brigades of old soldiers from the camp at Maulde, and succeeded in rallying the squadrons of horse, who were beginning to fall into confusion. The imperial horse charged immediately after, but receiving a close and well-directed volley, they wheeled, and, being instantly attacked by the French cavalry, were completely routed, and driven from the field. The victorious brigades now advanced, chanting the *Marseilloise*, and entering the redoubts by the gorge, carried every thing before them. Dumouriez was still uneasy about his centre; but whilst he was in the act of setting off to that point with a reinforcement of six squadrons of cavalry, he received intelligence that the battle there was already won, and that the Austrians were retiring at all points towards Mons. Such was the battle of Jemmappes, the first pitched battle which had been gained by the republican armies, and on that account not only celebrated beyond its real merits, but most important in its consequences. The loss on both sides was great, that of the Austrians amounting to five thousand men, whilst the French lost above six thousand; but the results of the victory upon the spirits and the moral strength of the two parties were incalculably different, and in fact led to the immediate conquest of the whole Netherlands. Mons and Brussels surrendered to Dumouriez; Tournay, Malines, Ghent, and Antwerp, were taken possession of by General Labourdonnaye; Louvaine and Namur submitted to General Valence; and the whole Austrian Netherlands, Luxembourg only excepted, fell into the hands of the French. Liège was taken on the 28th of November, after a successful engagement, in which the Austrians lost five or six hundred men and an immense train of artillery.

Contests between the Girondists and the Mountain.

France was now in a situation not unusual in the history of nations, successful abroad, but distracted by contending factions at home. The two parties in the Convention were engaged in a struggle, which daily became more and more implacable. The party called the Mountain did not hesitate to employ any means, however criminal, to effect the ruin of their antagonists; and they are even suspected of having, through the medium of the minister of war, retarded the supplies for the armies, in order to render the ruling party odious from want of success. But they were for some time unfortunate in this respect, and the daily news of victories obtained supported the credit of the Girondists. A new subject was therefore started, namely, how the dethroned monarch was to be disposed of. The moderate party wished to save him, and this was a sufficient reason for their antagonists resolving on his ruin. A committee was accordingly appointed to report upon his conduct; and a variety of charges having in consequence been brought against him, the Convention resolved to constitute itself at once prosecutor and judge.

The king brought to trial.

On the 11th of December the ill-fated monarch was ordered to the bar of the Convention; and when the act of accusation had been read, he was summoned by the president Barrère to answer the charges separately. These consisted of an enumeration of the whole crimes of the Revolution, from its commencement in 1789, all of which were imputed to him. The following is the substance of this extraordinary act of accusation:—

"Louis, the French nation accuses you of having committed a multitude of crimes to establish your tyranny, by destroying her freedom. You, on the 20th of June 1789, attacked the sovereignty of the people, by suspending the assemblies of their representatives, and expelling them with violence from the places of their sittings. This is proved in the procès-verbal entered at the tennis court of Versailles by the members of the Constituent Assembly. On the 23d of June you wanted to dictate laws to the nation; you surrounded their representatives with troops; you presented to them two royal declarations, subversive of all liberty, and ordered them to separate. You ordered an army to march against the citizens of Paris. Your satellites have shed the blood of several of them, and you would not remove this army till the taking of the Bastille and a general insurrection announced to you that the people were victorious. The speeches you made on the 9th, 12th, and 14th of July, to the deputations of the Constituent Assembly, show what were your intentions; and the massacres of the Tuilleries rise in evidence against you. After these events, and in spite of the promises which you made on the 15th in the Constituent Assembly, and on the 17th in the Hôtel de Ville of Paris, you have persisted in your projects against national liberty. You long eluded the execution of the decrees of the 11th of August, respecting the abolition of personal servitude, the feudal government, and the tithes; you long refused acknowledging the rights of man; you doubled the number of the life-guards, and called the regiment of Flanders to Versailles; you permitted, in orgies held before your eyes, the national cockade to be trampled under foot, the white cockade to be hoisted, and the nation to be slandered. At last you rendered necessary a fresh insurrection, occasioned the death of several citizens, and did not change your language till after your guards had been defeated, when you renewed your perfidious promises. You took an oath at the confederation of the 14th of July, which you did not keep. You soon tried to corrupt the public opinion, with the assistance of Talon, who acted in Paris, and Mirabeau, who was to have excited counter revolutionary movements in the provinces. You lavished millions of money to effect this corruption, and you even used your popularity as a means of enslaving the people. These facts are the result of a memorial of Talon, on which you have made your marginal comments in your own handwriting; and of a letter which Laporte wrote to you on the 19th of April, in which, recapitulating a conversation he had had with Rivarol, he told you, that the millions which you had been prevailed upon to throw away had been productive of nothing.

"For a long time you had meditated on a plan of escape. A memorial was delivered to you on the 28th of February, which pointed out the means for you to effect it; you approved of it by marginal notes. On the 28th a great number of the nobles and military came into your apartments in the castle of the Tuilleries, to favour that escape. You wanted to quit Paris on the 10th of April, to go to St Cloud; but the resistance of the citizens made you sensible that their distrust was great. You endeavoured to discredit it, by communicating to the Constituent Assembly a letter, which you addressed to the agents of the nation near foreign powers, to announce to them that you had freely accepted the constitutional articles, which had been presented to you; and, notwithstanding, on the 21st you took flight with a false passport. You left behind a protest against these self-same constitutional articles; you ordered the ministers to sign none of the acts issued by the National Assembly; and you forbade the minister of justice to deliver up the seals of state. The public money was lavished to ensure the success of this treachery; and the public force was employed to protect it, under the orders of Bouillé, who shortly before had been charged with the massacre of Nancy, and to whom you wrote on this head, 'to take care of his popularity, because it would be of service to you.'

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[1] This young officer was the Duke de Chartres, then called General Egalité, and afterwards Louis Philippe, king of the French.

"After your detention at Varennes, the exercise of the executive power was for a moment suspended in your hands, and you again formed a conspiracy. On the 17th of July the blood of citizens was shed in the Champ de Mars. A letter, in your own handwriting, written in 1790 to Lafayette, proves that a criminal coalition subsisted between you and Lafayette, to which Mirabeau had acceded. The revision began under these cruel auspices; all kinds of corruptions were made use of. You have paid for libels, pamphlets, and newspapers, designed to corrupt public opinion, to discredit the assignats, and to support the cause of the emigrants. You seemed to accept the constitution on the 14th of September; your speeches announced an intention of supporting it; and you were busy in overturning it, even before it was completed. A convention was entered into at Pilnitz on the 24th of July, between Leopold of Austria and Frederic-William of Brandenburg, who pledged themselves to re-erect in France the throne of absolute monarchy; and you were silent upon this convention till the moment when it was known by all Europe. Arles had hoisted the standard of rebellion; you favoured it by sending three civil commissaries, who made it their business not to repress the counter revolutionists, but to justify their proceedings. Avignon, and the county of Venaissin, had been united with France; you caused the decree to be executed; but a month afterwards civil war desolated that part of the country. The commissaries you sent thither helped to ravage it. Nismes, Montauban, Mende, Jales, felt great shocks during the first days of freedom. You did nothing to stifle those germs of counter revolution, until the moment when Saillant's conspiracy became notorious. You sent twenty-two battalions against the Marseillais, who marched to reduce the counter revolutionists of Arles. You gave the southern command to Wittgenstein, who wrote to you on the 21st of April 1792, after he had been recalled: 'A few instants more, and I shall call around the throne of your majesty thousands of French, who are again become worthy of the wishes you form for their happiness.' You paid your late life-guards at Coblentz; the registers of Septeuil attest this; and general orders signed by you prove that you sent considerable remittances to Bouillé, Rochefort, Vauguyon, Choiseul, Beaupré, Hamilton, and the wife of Polignac. Your brothers, enemies to the state, caused the emigrants to rally under their banners; they raised regiments, contracted for loans, and concluded alliances in your name; you did not disclaim them. The soldiers of the line, who were to be put on the war establishment, consisted of only a hundred thousand men at the end of December; you therefore neglected to provide for the safety of the state from abroad. Narbonne required a levy of fifty thousand men; but he stopped the recruiting at twenty-six thousand, giving assurances that all was ready; yet there was no truth in these assurances. Servan proposed after him to form a camp of twenty thousand men near Paris; it was decreed by the Legislative Assembly, but you refused your sanction. A spirit of patriotism made the citizens repair to Paris from all quarters. You issued a proclamation, tending to stop their march; at the same time our camps were without soldiers. Dumouriez, the successor of Servan, declared that the nation had neither arms, nor ammunition, nor provisions, and that the posts were left defenceless. You waited to be urged by a request made to the minister Lajard, when the Legislative Assembly wished to point out the means of providing for the external safety of the state, by proposing the levy of forty-two battalions. You gave commission to the commanders of the troops to disband the army, to force whole regiments to desert, to make them pass the Rhine, and to put them at the disposal of your brothers, and of Leopold of Austria, with whom you had intelligence. You charged your diplomatic agents to favour this coalition of foreign powers and your brothers against France, and especially to cement the peace between Turkey and Austria, and to procure thereby a larger number of troops against France from the latter. The Prussians advanced against our frontiers: your minister was summoned on the 8th of July to give an account of the state of our political relations with Prussia; you answered, on the 10th, that fifty thousand Prussians were marching against us, and that you gave notice to the legislative body of the formal acts of the pending hostilities, in conformity to the constitution. You intrusted Dabancourt, the nephew of Calonne, with the department of war; and such has been the success of your conspiracy, that the posts of Longwy and Verdun were surrendered to the enemy at the moment of their appearance. You have destroyed our navy; a vast number of officers belonging to that corps had emigrated; there scarcely remained any to do duty in the harbours: meanwhile Bertrand was granting passports every day; and when the legislative body represented to you his criminal conduct on the 8th of March, you answered that you were satisfied with his services.

"You have favoured the maintenance of absolute government in the colonies; your agents fomented troubles and counter revolutions throughout them, which took place at the same epoch when it was to have been brought about in France, which indicates plainly that your hand laid this plot. The interior of the state was convulsed by fanatics; you avowed yourself their protector, in manifesting your evident intention of recovering by them your ancient power. The legislative body had passed a decree on the 29th of January, against the factious priests; you suspended its execution. The troubles had increased; the minister declared that he knew nothing in the laws extant upon which to arraign the guilty. The legislative body enacted a fresh decree, which you likewise suspended. The uncitizen-like conduct of the guards whom the constitution had granted you had rendered it necessary to disband them; the day after, you sent them a letter expressive of your satisfaction, and continued their pay. You kept near your person the Swiss guards; the constitution forbade you this, and the Legislative Assembly had expressly ordained their departure. You had private companies at Paris, charged to operate movements useful to your projects of a counter revolution. You wished to suborn, with considerable sums, several members of the Legislative and Constituent Assemblies. You suffered the French name to be reviled in Germany, Italy, and Spain, since you omitted to demand satisfaction for the bad treatment which the French suffered in those countries. You reviewed the Swiss on the tenth of August, at five o'clock in the morning; and the Swiss were the first who fired upon the citizens. You authorized Septeuil to carry on a considerable trade in corn, sugar, and coffee, at Hamburg." It was asked, "Why did you affix a veto on the decree which ordained the formation of a camp of twenty thousand men?" To which Louis answered, "The constitution left to me the free right of refusing my sanction of the decrees; and even from that period I had demanded the assemblage of a camp at Soissons."

Valazé, who sat near the bar, now presented and read a memoir of Laporte and Mirabeau, and some other papers, containing plans of a counter revolution, which the king, however, disowned. He then presented a number of other papers on which the act of accusation was founded, and having asked the king if he recognized them, the latter replied that he did not. By the admission even of his enemies, the answers of Louis were brief, firm, and for the most part judicious; he displayed remarkable presence of mind, and in most cases negatived the charges by the most satisfactory replies. The affair of Nancy, the journey to Varennes, the suppression of the revolt in the Champ de Mars, were justified by the decrees of the assembly; and the catastrophe of the tenth of March, by the power of self-defence conferred on him by the laws. To every question, in fact, he replied with clearness and precision; denying some, showing that the matters referred to in others were the work of his ministers, and justifying all that had been done by the powers conferred on him by the constitution. In a loud voice he repelled the charge of shedding the blood of the people on the tenth of August, exclaiming, "No, sir, it was not I who did it." But he was careful in his answers not to implicate any members of the Constituent and Legislative Assemblies; and many who now sat as his judges trembled lest he should compromise them with the dominant faction. The deep impression made on the Convention by the simple statements, and temperate but firm demeanour, of the sovereign, struck the Jacobins with such dismay that the most violent of the party proposed he should be hanged that very night. But the majority, composed of the Girondists and the neutrals, decided that he should be formally tried and defended by counsel. He then returned to the Temple, where the resolution of the municipality, that he was no longer to be permitted to see his family, was communicated to him; or, in other words, that a consolation, which is never withheld even from the most atrocious criminals, was denied him. Next day, however, the Convention, less inhuman than the commune, decreed that the unfortunate father might enjoy the society of his children; but the king thinking them more necessary to the queen's comfort than his own, declined to take them from her, and, after a struggle with feelings which even demons might have respected, he submitted to the separation with a resignation which nothing could shake.

Louis had desired to be furnished with copies of the accusation, and of the papers upon which it was founded; and also to have the choice of his own counsel. Both requests were conceded, and he accordingly chose as his counsel M. Tronchet and M. Target. The former accepted, and faithfully discharged his duty;[1] the latter basely declined, on the pretence of age and infirmity. The venerable Malesherbes, whose official career had been distinguished by many wise and useful reforms, now came forward and volunteered his services as counsel for his sovereign. "I have been twice honoured," said he, in a letter to the president of the Convention, "with a place in the counsels of my sovereign, when it was an object of ambition to all the world; I owe him the same service when it imposes a duty which many consider as dangerous."[2] Malesherbes and Tronchet afterwards called in the assistance of M. Desèze, a celebrated pleader, who had at first embraced the popular side, but had withdrawn from political life since the Revolution had assumed a sombre and threatening aspect; and, unlike Target, who shrunk from a task which would have immortalized his name, he entered upon his arduous duties with great earnestness, and even more than his wonted ability. "I have often wished," said the king to Malesherbes, "I had the means of recompensing the zeal of your colleagues. I have thought of leaving them a legacy; but would it be respected by the Convention? would it not endanger them?" "Sire," replied Malesherbes, "the legacy is already bequeathed; in choosing them for your defenders, your majesty has immortalized their names."

On the 26th of December the king was again conducted to the assembly. He evinced as great serenity and self-possession as on the former occasion; discoursed of Seneca, Livy, and the public hospitals; and even addressed himself in a vein of pleasantry to one of the municipality who sat covered in the carriage. Whilst in the ante-chamber, Malesherbes, in conversing with the king, happened to make use of the words, "Sire, your majesty." "What," exclaimed Treilhard, a furious Jacobin, interrupting him, "what has rendered you so bold as to pronounce these words, which the Convention has proscribed?" "Contempt of life," replied the intrepid old man. When admitted into the assembly, Louis seated himself between his counsel, surveyed the crowded benches of his adversaries with perfect composure, and was even observed sometimes to smile as he conversed with Malesherbes. M. Desèze then read a defence which had been prepared by the king's counsel, and which was equally admired for the solidity of the argument and the beauty of the composition. In this address, the inviolability of the sovereign was ably argued; and it was proved that, if it were destroyed, the weaker party in the Convention would have no security against the stronger; a prophetic deduction, which the Girondists soon found fatally verified in their own persons, when conducted to the scaffold by their implacable enemies. The advocate then examined the whole life of the king, and showed that in every instance he had been actuated by a sincere love of his people. With reference to the tenth of August he observed, "Was the monarch under the necessity of submitting to an armed multitude? Was he constrained by law to yield to force? Was not the power which he held in the constitution a deposit, for the preservation of which he was answerable to the nation? If you yourselves were surrounded by a furious and misguided rabble, which threatened, without respect for your sacred character, to tear you from this sanctuary, what could you do other than what he has done? The magistrates themselves authorized all that he did, by having signed the order to repel force by force. But notwithstanding their sanction, the king was unwilling to make use of his authority, and retired into the bosom of the Convention, to avoid the shedding of blood. The combat which followed was neither undertaken by him, nor continued by his orders; he interfered only to put a stop to it, as is proved by the fact that it was in consequence of an order signed by him that the Swiss abandoned the defence of the Chateau, and surrendered their lives. There is a crying injustice therefore in reproaching him with the blood shed on the tenth of August; in truth, his conduct in that particular is above reproach." M. Desèze concluded with these words: "Louis mounted the throne at the age of twenty, and even then he set an example of an irreproachable life; he was governed by no weak or corrupt passion; he was economical, just, and severe. He proved himself from the beginning the friend of his country. The people desired the removal of a destructive tax; he removed it. They wished the abolition of servitude; he abolished it in his domains. They prayed for a reform in the criminal laws; he reformed them. They demanded that thousands of Frenchmen, whom the rigour of our usages had excluded from political rights, should enjoy them; he conceded them. They longed for liberty; he gave it. He even anticipated their wishes; and yet it is the same people who now demand his punishment."

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[1] Napoleon knew how to admire heroism, even when exerted in another cause, and regarded it as the noblest title to preferment. One of his first acts, on attaining to sovereign power, was to place Tronchet at the head of the supreme court of Cassation.

[2] This generous offer drew tears from the eyes of many in the Convention, and even the Jacobins were silent; for a moment their humanity was in the ascendant. As to the poor king, he was deeply affected by this proof of devotion on the part of his venerable friend. When the latter entered the Temple, Louis clasped him in his arms, exclaiming, with tears in his eyes, "Ah! it is you, my friend. You see to what a state I am reduced by the excess of my affection for my people, and the self-denial which led me to remove the troops intended to protect the throne from the enterprises of the factions. You fear not to endanger your own life to save mine; but it is in vain; I am well aware they will bring me to the scaffold; but that is of no moment; let us enter upon the defence as if I were sure to be successful. I will gain it in reality through your exertions, since my memory will descend unspotted to posterity." (Lacretelle, x. 186, 193; Hue, p. 42; Mignet, i. 236; Thiers, iii. 336; Alison, i. 513.)

When the defence was concluded, the king rose, and holding a paper in his hand, pronounced, in a calm manner, and with a firm voice, what follows: "Citizens, you have heard my defence, I will not recapitulate it; but when now addressing you, perhaps for the last time, I declare that my conscience has nothing to reproach itself with, and that my defenders have said nothing but the truth. I have no fears for the public examination of my conduct; but my heart bleeds at the accusation brought against me of having caused the misfortunes of my people, and, most of all, of having shed their blood on the tenth of August. The multiplied proofs I have given in every period of my reign, of my love for my people, and the manner in which I have conducted myself towards them, might, I had hoped, have saved me from so cruel an imputation." Having said these words, he withdrew along with his counsel, and in a transport of gratitude he embraced M. Desèze, exclaiming, "I am now at ease; I will have an honoured memory; the French will regret my death."

A stormy discussion immediately ensued in the assembly, and Lanjuinais had the boldness to demand a revocation of the decree by which the king had been brought to the bar of the Convention. "If you insist on being judges," said he, in concluding a powerful speech, "cease to be accusers. My blood boils at the thought of seeing in the judgment-seat men who openly conspired against the throne on the tenth of August, and who have in such ferocious terms anticipated the judgment without hearing the defence." The delivery of these words was instantly followed by the most violent agitation; and cries of "To the Abbaye with the perjured deputy; let the friends of the tyrant perish along with him," resounded through the hall. But the storm was at length appeased by a proposal to discuss the question, whether an appeal should be made to the people; a proposal which was adopted, and the discussion that thereupon ensued lasted twenty days. The most powerful declaimer against the sovereign was the infamous Saint-Just; the most vehement and direct, the sanguinary Robespierre. Vergniaud replied in a strain of impassioned eloquence worthy of his reputation as the first orator of France. But his forcible, nay sublime, appeal was unavailing. At the conclusion of the debate the assembly unanimously pronounced the ill-fated Louis guilty of the offences charged against him, and the appeal to the people was rejected by a majority of 423 to 281.[1] This unanimous vote upon the question of guilt is one of the most remarkable facts in the history of the Revolution. That among seven hundred men great difference of opinion must have existed on this subject, is beyond all doubt; and if any evidence were wanting to establish the fact, it would be supplied by the division which immediately followed on the proposal to appeal to the people, and by the narrow majority which decreed the punishment of death. But such was the temper of the time, and the ascendency of democratic influence in the Convention, that even the friends of the king were compelled to commence their efforts for his salvation by voting him guilty of the crimes which had been charged against him.

The only question which now remained to be decided was, what punishment should be inflicted. The debate on this subject lasted forty hours, during which Paris was in the most violent agitation. The Jacobin Club resounded with cries for death; the avenues leading to the Convention were filled with a ferocious rabble, menacing alike the supporters of the king and the neutrals; and as the termination of the voting drew near, the tumult increased. The most breathless anxiety pervaded the Convention, when the president, Vergniaud, at length rose to announce the result, which he did in these words: "Citizens, I announce the result of the vote; when justice has spoken, humanity should resume its place; there are seven hundred and twenty-one votes; a majority of twenty-six have voted for death. In the name of the Convention, I declare that the punishment of Louis Capet is *death*." Without the defection of the Girondists on this occasion, the king's life would have been saved. Forty-six of their party, including Vergniaud, voted conditionally or unconditionally for his death. This was a fatal error, which almost all of them subsequently expiated on the scaffold. They were really anxious to save the king; but, destitute of political courage, and hurried on by the democratic fury of the times, they trusted to accomplish their object by an appeal to the people. In this, however, they were baffled; their weak and timid policy ruined all. The triumph of the Jacobins was complete. They had committed the Revolution by an act which cut off all retreat; and they had compelled their most able and dangerous enemies to participate in the guilt of the bloody deed.[2]

When the counsel of the unfortunate monarch were called in to hear the sentence, they were greatly affected. Malesherbes attempted to speak, but emotion choked his utterance. Desèze then read a protest, in which the king solemnly declared his innocence; and Tronchet urged the revocation of a decree which had been passed by so slender a majority. "You have either forgotten or destroyed," said this celebrated advocate, "the humane principle of the criminal law, which requires a majority of two thirds to constitute a definitive sentence." "The laws," it was answered, "are passed by a simple majority." "True," rejoined Desèze, "but the laws may be repealed; and who can recall human life?" The Girondists, as a last resource, then proposed a limited delay; but in this they also failed, and the fatal sentence was pronounced. This decisive step produced an intense sensation in Paris. The members of the Coté Droit, and the royalists, secret or avowed, were in equal consternation. But the Jacobins, who could hardly believe that so great a victory had been gained, redoubled their activity, and put every engine in motion to keep up an incessant agitation; they besought their adherents to be vigilant for the next two days, and thus secure the fruits of so mighty a triumph. Nor were their efforts and entreaties in vain. The greater number were overawed and put to silence by the audacity of their movements; whilst, by the resolute few, whose minds burned with indignation at their conduct, nothing could be attempted.

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[1] Eight members were absent from bad health; thirty-seven declared Louis guilty, but voted only for precautionary measures; six hundred and eighty-three declared him guilty. (Thiers, iii. 377.)

[2] Of those who voted for death, there were many, such as the Duke of Orleans, influenced by base or selfish motives; and even at that moment their characters were appreciated. When Egalité, with a faultering step, and a countenance pale as a corpse, advanced to the place where he was to put the seal to his infamy, and read in these terms his vote, "Exclusively governed by my duty, and convinced that all those who have resisted the sovereignty of the people deserve death, my vote is for DEATH," exclamations of "Oh, the monster!" and, "How infamous!" broke forth from all sides, and he returned to his seat amidst the imprecations even of the assassins of September, and all the wretches of every description who were there assembled. But there were other persons of a very different character; many men, both great and good, who inclined with sorrow to the side of severity, from an honest opinion of its absolute necessity to annihilate a dangerous enemy, and establish the republic on a settled basis. Amongst this number was Carnot, who, when called on for his vote, gave it in these words: "Death, and never did word weigh so heavily on my heart." (Alison, i. 523; Carnot, *Mémoires*, p. 97; *Histoire Pittoresque de la Convention Nationale*, tom. ii. p. 143.)

Louis was fully prepared for his fate. When Malesherbes, dissolved in tears, came to announce the sentence of death, he found the unhappy king alone, with his elbows resting on a table, his forehead leaning on his hands, and absorbed in profound meditation. Without inquiring concerning his fate, Louis raised himself as his friend approached, and observed to him, "For two hours I have been revolving in my memory whether during my whole reign I have voluntarily given any cause of complaint to my subjects; and with perfect sincerity I can declare, when about to appear in the presence of God, that I deserve no reproach at their hands, and that I have never formed a wish but for their happiness." Malesherbes encouraged him to hope that the sentence might yet be superseded. Louis shook his head, and only entreated his friend not to leave him in his last moments. Malesherbes promised to return, and repeatedly applied at the gate for admission, which however was refused by order of the municipality. Louis often asked for his aged friend, and was deeply afflicted at not seeing him again. He received without emotion the official announcement of his sentence made by the minister of justice on the 20th of January, and demanded a respite of three days to prepare himself for death, and also to be allowed an interview with his family, and to have the assistance of a confessor whom he named. The two last requests were alone conceded by the Convention, and the execution was fixed for the following morning at ten o'clock. The interview with his family presented a heart-rending scene, which lasted nearly two hours, and may be more easily imagined than described. When the terrible moment of separation arrived, Louis promised to see them again on the morrow; and having embraced them all in the tenderest manner, bade them a mournful adieu; but on entering his chamber he felt that a second trial would be too much for all parties, and resolved to spare them the agony of a final separation. This was his last struggle; he now only thought of preparing for death. The remainder of the evening was therefore spent with his confessor, the Abbé Edgeworth, who, with heroic devotion, discharged the perilous duty of administering the last consolations of religion to his dying sovereign. On the night which preceded his death, Louis slept tranquilly until five in the morning, when he was awaked by Cléry, whom he had ordered to call him at that hour. He then gave his last instructions to his faithful attendant, and put into his hands the little property which he had at his disposal, a ring, a seal, and a lock of hair. Already the drums were beating, and the heavy roll of cannon dragged along the streets, interrupted at intervals by a confused sound of voices, was also heard.

About nine o'clock, Santerre arrived at the Temple. "You come to seek me," said the king; "allow me a minute." He went into his closet, and immediately returned with his testament in his hand, which he intrusted to a municipal officer; after which he asked for his hat, and said with a firm voice, "Let us set off." He calmly seated himself in the carriage beside his confessor, and during the passage from the Temple to the Place de la Révolution, which occupied two hours, he never ceased reciting the psalms which were pointed out by his spiritual guide. The route was lined with double files of soldiers; more than forty thousand men were under arms; and the aspect of Paris was mournful. Amongst the citizens who were present at the execution there reigned the most profound silence, uninterrupted by any external manifestation either of approbation or regret. When the procession arrived at the place of execution, he descended from the carriage, ascended the scaffold with a firm step, and received on his knees the sublime benediction of his confessor, "Son of St Louis, ascend to heaven." He suffered his hands to be bound, though not without repugnance, nor until after M. Edgeworth had exclaimed, "Submit to that outrage, as the last resemblance to the Saviour who is about to recompense your sufferings;" and advancing quickly to the left of the scaffold, "I die innocent," said he; "I forgive my enemies, and you, unfortunate people...." At these words his voice was drowned by the sound of drums placed at the front of the scaffold to prevent his being heard; three executioners seized and hurried him to the block; and in a few seconds he had ceased to live. One of the assistants grasped his head, and waved it in the air, whilst the blood fell on the confessor, who was still on his knees beside the mutilated body of his sovereign.

Thus perished, in the thirty-ninth year of his age, and seventeenth of his reign, one of the best but at the same time weakest of sovereigns. He inherited a revolution from his ancestors, but he was better fitted than any of his predecessors to prevent or to terminate it; for he was capable of being a reforming king before it broke out, and of becoming a constitutional sovereign under its influence. He was perhaps the only prince who had no passion, not even that of power, and who united the two qualities most essential to a good king, the fear of God and the love of his people. He perished the victim of passions which he did not participate; of those of his supporters to which he was a stranger, and those of the multitude, which he had not excited. Few kings have left so spotless a memory, and history will say of him, that, with a little more force of mind and decision of character, he would have bequeathed to posterity a name unique among princes. Such, in the opinion of the ablest of the republican writers of France,[1] was Louis XVI.; a man better qualified to adorn a private station than to govern a great people at a period of unexampled excitement; one whose virtues ought to have ensured him a different fate, and whose misfortunes were the result of that long-continued misrule which he had endeavoured to correct.

Rupture with Great Britain.

In a political point of view, this tragical event proved injurious to the republican cause throughout Europe. No man out of France ventured to justify it; and in all countries it excited the most violent indignation against the rulers of the French republic. Accordingly new enemies now hastened to join the general league against France. It is unnecessary here to enter into any detail of the political struggles which occurred in other countries, particularly our own. It is sufficient to remark generally, that at this time the British government thought itself endangered by the propagation of those speculative opinions which had overturned the French monarchy, and that almost all the men of property in the kingdom concurred with the ministry in thinking a war with France necessary for the purpose of securing the constitution, and checking the progress of levelling doctrines. After the tenth of August the British minister had been recalled; but the Republic had still suffered the ambassador of France, M. Chauvelin, to remain in England.

The ostensible grounds of quarrel on the part of Great Britain were two; the decree of the 15th of November 1792, by which it was considered that encouragement to rebellion had been held out to the subjects of every state, and war thereby waged against every established government; and the question relative to the opening of the Scheldt. Of the decree the French executive council gave explanations, denying the fairness of the interpretation put upon it, and alleging that the intention of the Convention was only to give aid to such countries as had already acquired their freedom, and by a declaration of the general will requested aid for its perservation. But this explanation was not admitted, inasmuch as the decree expressly says that the French nation will "grant assistance to all who wish to procure liberty;" and, considering the notions of liberty then entertained in France, it was not doubted that their real intention was to excite rebellion in foreign nations. With regard to the opening of the Scheldt, as this river runs from Brabant through the Dutch territory to the sea, the Dutch had shut up its mouth, and thus prevented any maritime commerce being carried on by the people of Brabant by means of the river. To render themselves popular in Brabant, however, the French declared that they would open the navigation of the Scheldt. But Great Britain having some time previously become bound by treaty with the Dutch to assist them in obstructing this navigation, now intimated to the French government that the project of opening the Scheldt must be abandoned. The French, however, alleged that by the law of nations navigable rivers ought to be open to all who reside upon their banks; that nevertheless the point was of no importance either to France or to England, and but of little importance even to Holland; and that if the people of Brabant themselves chose to give it up, they would make no objection. In the mean time the Dutch gave themselves no concern about the matter. They did not even solicit the assistance of England; and the merchants, when applied to individually, declared that if the Scheldt was opened, they could conduct their commerce as well at Antwerp as at Amsterdam. But in all this there is nothing remarkable. Amongst the Dutch there were many republicans, who wished for the downfall of the stadtholder, and rejoiced at every thing which distressed him, or had a tendency to render his office useless in the eyes of the people; whilst others who thought differently were afraid to speak their sentiments, as Dumouriez was in their neighbourhood at the head of a victorious army. The result of the whole was, that the British government ordered M. Chauvelin to quit this country. The French executive council accredited another minister, M. Maret, who was also invested with powers to negotiate, and requested that a passport might be given him; but he was not even suffered to land. The republicans having thus far humbled themselves before the British government, were fired with indignation at the manner in which their envoy was treated; and on the 1st of February 1793 the National Convention, on the motion of Brissot, decreed that George king of England had never ceased, since the revolution of the tenth of August 1792, to give the French nation proofs of his attachment to the concert of crowned heads; that he had drawn into the same combination the stadtholder of the United Provinces; that, contrary to the treaty of 1783, the English ministry had granted protection to the emigrants and others who had openly appeared in arms against the French; that they had committed an outrage against the French republic, by ordering the ambassador of France to quit Great Britain; that the English had stopped different boats and vessels laden with corn for France, whilst, at the same time, contrary to the treaty of 1786, they continued the exportation of grain to other foreign countries; and that, to thwart more efficaciously the commercial transactions of the republic with England, they had by an act of parliament prohibited the circulation of assignats. The Convention therefore declared, that in consequence of these acts of hostility and aggression, the French republic was at war with the king of England and with the stadtholder of the United Provinces. The absurdity of pretending that any treaty with France made in 1783 could be violated by protecting the emigrants who fled from the vengeance of the Convention, must be sufficiently obvious. The Convention itself was a usurpation of the government with which that treaty had been concluded. On the other hand, the prohibition of the assignats was certainly contrary to no law, and was sanctioned by every motive of expediency, unless the Convention could prove that all nations were bound by the law of nature to risk their own credit upon that of the French republic. About a fortnight after this declaration appeared, war was likewise declared against Spain; and in the course of the summer France was in hostility with all Europe, excepting only Switzerland, Sweden, Denmark, and Turkey.

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[1] Mignet, *Histoire de la Révolution Française*, i. 334.

Progress of Dumouriez.

In the mean time General Dumouriez, proceeding agreeably to his orders, made an attack upon Holland; but in doing so he disseminated his troops in such a manner as to expose himself to attack upon the side of Germany. He commanded General Miranda to invest Maestricht, whilst he advanced to blockade Breda and Bergen-op-Zoom. Breda, however, surrendered on the 24th of February, Klundert was taken on the 26th, and Gertruydenberg yielded on the 4th of March. But here the triumphs of Dumouriez ended. The sieges of Williamstadt and Bergen-op-Zoom, though vigorously pressed, proved unsuccessful. On the 1st of March General Clairfayt, having passed the Roer, attacked the French posts, and compelled them to retreat with the loss of about two thousand men. The following day the archduke attacked them anew with considerable success; and on the 3d the French were driven from Aix-la-Chapelle, with the loss of four thousand men killed and sixteen hundred taken prisoners. The siege of Maestricht was now raised, and the French retreated to Tongres, where they were also attacked, and forced to retreat to St Tron. Here Dumouriez joined them, but did not bring his army along with him from Holland. After some skirmishes, a general engagement took place at Neerwinden, and was contested on the part of the French with great obstinacy; but they were at length overpowered by numbers, and forced to retreat. This defeat had well nigh proved fatal to the republican arms. The French lost three thousand men in the battle, and six thousand immediately afterwards deserted and returned to their homes. Dumouriez continued to retreat, and on the 22d he was again attacked near Louvain; but, through the medium of Colonel Mack, who afterwards became so unenviably famous, he entered into an arrangement with the imperialists that his retreat should not be seriously interrupted. It was also fully agreed that whilst the imperialists took possession of Condé and Valenciennes, he should march to Paris, dissolve the Convention, and place the son of the late king upon the throne.

The rapid retreat and successive defeats of General Dumouriez having rendered his conduct suspicious, commissioners were sent by the executive government, for the purpose of discovering and defeating his designs. The latter dissembled, and pretended to communicate to him a scheme of a counter revolution. Dumouriez fell into the snare which they had laid for him, and confessed his intention of dissolving by force the Convention and the Jacobin Club, and restoring monarchy. On the report of these commissioners the Convention sent Bournonville, the minister of war, along with Camus, Blancal, Lamarque, and Quinctte, as commissioners, to supersede and arrest Dumouriez. The attempt on the part of these functionaries to arrest a general in the midst of his army was certainly hazardous; and in fact Dumouriez, on the first of April, sent them prisoners to General Clairfayt's head-quarters at Tournay, as hostages for the safety of the royal family. He next attempted to seduce his army from their fidelity to the Convention; but he speedily found that he had mistaken the character of his troops. When the report reached them that their general was to be carried as a criminal to Paris, they were seized with vehement indignation; but as soon as they learned that an attempt was being made to prevail on them to turn their arms against their country, their sentiments underwent a sudden alteration, and resentment succeeded to the generous feeling of indignation which at first prompted them to interpose in his behalf. On the 5th of April two proclamations were issued, one by General Dumouriez, and the other by the Prince of Saxe-Cobourg, declaring that their only purpose was to restore the constitution of 1789, 1790, and 1791. The latter announced that the allied powers wished merely to co-operate with General Dumouriez in giving to France a constitutional king and the constitution which she had framed for herself; and he declared, upon his word of honour, that he came not into the French territory for the purpose of making conquests. On the same day Dumouriez went to the advanced guard of his own camp at Maulde; but he there learned that the corps of artillery had risen upon their general, and were marching to Valenciennes; and he also found that the whole army were resolved to stand by their country. Seven hundred cavalry and eight hundred infantry were all who deserted with Dumouriez to the Austrians, and many of these afterwards returned.

State of France.

By the defection of Dumouriez, however, the army of the north was dissolved, and in part disbanded, in presence of a numerous, well-disciplined, and victorious enemy. The Prussians were at the same time advancing in immense force, and were about to commence the siege of Mayence. In the interior of the Republic, evils even more serious were threatened. In the departments of La Vendée and La Loire, or the provinces of Bretagne and Poitou, immense multitudes of emigrants and other royalists had gradually assembled in the course of the winter, professing to act in the name of Monsieur, as regent of France; and about the middle of March they advanced against Nantes to the number of about forty thousand. In the beginning of April they defeated the republicans in two pitched battles, possessed themselves of fifty leagues of country, and even threatened, by their own efforts, to shake the republic to its very foundations. On the 8th of April there assembled at Antwerp a congress of the combined powers, which was attended by the Prince of Orange and his two sons, with his excellency Vander Spiegel, on the part of Holland; by the Duke of York and Lord Auckland on the part of Great Britain; and by the Prince of Saxe-Cobourg, Counts Metternich, Staremberg, and Dargenteau, and the Prussian, Spanish, and Neapolitan envoys. In this congress it was definitively determined to commence active operations against France; the Prince of Cobourg's proclamation was recalled, and a scheme of conquest announced.

The republican army again assembled.

Commissioners from the Convention now set up anew the standard of the republic, and the scattered battalions flocked around it. General Dampierre was appointed commander-in-chief, and on the 13th he was able to resist a general attack upon his advanced posts. On the 14th his advanced guard yielded to superior numbers, but on the 15th he was victorious in a long and well-fought battle. On the 23d the Austrians were again repulsed, and on the 1st of May General Dampierre was himself defeated in an attack upon the enemy. On the 8th another engagement took place, in which the French general was killed by a cannon ball. On the 23d a determined attack was made by the allies upon the fortified camp of Famars, which covered the town of Valenciennes. The French made a very gallant resistance, but were at length overcome, and in the night abandoned their camp. By this victory the allies were enabled to commence the siege of Valenciennes; Condé having been blockaded since the first of April. About the same time General Custines on the Rhine made a vigorous but unsuccessful attack upon the Prussians, and in consequence they were soon enabled to lay siege to Mayence. At this period also the Corsican general Paoli revolted; and the Republic, assaulted from without by the whole strength of Europe, was undermined by treachery and faction within.

Revolutionary Tribunal.

Whilst the country was in a state verging upon utter ruin, the parties in the Convention were gradually waxing fiercer and fiercer in their animosity; and, regardless of what was passing at a distance, they seemed only anxious for the extermination of each other. In the month of March the Revolutionary Tribunal was established, for the purpose of trying crimes committed against the state; and the Girondists, the mildness of whose administration had contributed not a little to increase the evils of their country, began to see the necessity of adopting measures of severity. But the public calamities, which now followed in rapid succession, were ascribed by their countrymen to the imbecility or perfidy of that party. This gave to the party of the Mountain a fatal advantage. On the 15th of April the communes of the forty-eight sections of Paris presented a petition, requiring that the chiefs of the Girondists therein named should be impeached and expelled from the Convention; and this was followed on the 1st of May by another petition of the same description from the faubourg St Antoine. In the mean time the Girondist party impeached Marat, but the miscreant was acquitted by the jury. With the assistance of the Jacobin Club, the Mountain had now acquired a complete ascendency over the city of Paris. The Girondists therefore proposed to remove the Convention from the capital; and to prevent this, the Mountain resolved to make the same use of the people of the capital against the Girondist party which they had formerly done against the monarch on the tenth of August. It is unnecessary to relate in detail all the tumults which occurred either in Paris or in the Convention during the remaining part of the month of May. On the 31st, at four o'clock in the morning, the tocsin was sounded, the générale beat, and the alarm guns fired. All was commotion and terror. The citizens flew to arms, and assembled round the Convention, where some deputations demanded a decree of accusation against thirty-five of its members. The day, however, passed without coming to a decision. On the afternoon of the 1st of June an armed force made the same demand, which was repeated on the 2d of June, when the tocsin again sounded, and an hundred pieces of cannon surrounded the hall of the Convention. At length Barrère, who was considered as a moderate man, and respected by both parties, mounted the tribune; but he now artfully deserted the Girondists, and invited the denounced members voluntarily to resign their character of representatives. Some of them complied, and the president attempted to dissolve the sitting; but the members now found themselves prisoners in their own hall. There Henriot, commander of the armed force, compelled them to remain; and the obnoxious deputies, amounting to upwards of ninety in number, were put under arrest, and a decree of accusation passed against them. It is very obvious that on this occasion the liberties of France were trodden under foot. The minority of the national representatives, with the assistance of an armed force raised in the capital, had compelled the majority to submit to their measures, and taken the leading members prisoners. The city of Paris thus assumed to itself the whole powers of the French Republic; and the nation was no longer governed by representatives freely chosen, but by a minority of the Convention of whose sentiments the city of Paris and the Jacobin Club had thought proper to approve. The history of nations, and, above all, of factions, is a mass of contradictions. The Mountain party came into power by preaching boundless liberty, and by practically violating its fundamental principles. How far the plea of political necessity may serve to excuse their conduct, we shall not venture to decide. Certain it is that they soon commenced, both at home and abroad, a career of the most terrible energy which is to be found in the records of nations.

The first result of their victory in the capital was calamitous to the Republic at large. Brissot and some other deputies escaped, and endeavoured to kindle the flames of civil war. In general, however, the influence of the Jacobin Club, and of its various branches, was such, that the north of France adhered to the Convention; but the southern departments were speedily in a state of rebellion. The department of Lyons declared the Mountain party outlawed. Marseilles and Toulon followed the example of Lyons, and entered into a confederacy, which has since been known by the appellation of Federalism. The departments of La Gironde and Calvados broke out into open insurrection. In a word, the whole of France was in a state of violent convulsion. Still, however, the enthusiastic garrisons of Mayence and Valenciennes protected it against the immediate entrance of a foreign force, and afforded leisure for one of its internal factions to gain an ascendency, and thereafter to protect its independence. In fact, the political enthusiasm of all orders of persons was such, that even the female sex did not escape its contagion. In the beginning of July a young woman of the name of Charlotte Corday came from the department of Calvados to devote her life for what she deemed the cause of freedom and her country. Having requested an interview with Marat, the most obnoxious of the Mountain party, she at length contrived to obtain it, and after conversing with him for some time, suddenly plunged a dagger in his breast, and walked carelessly out of the house. But she was immediately seized, condemned, and executed; behaving throughout with infinite constancy, and with her last breath shouting *Vive la République*. The party to which Marat was attached derived advantage from the manner of his death, as it seemed to fasten the odious charge of assassination upon their antagonists, and to give them the appearance of suffering in the cause of liberty; though the real truth is, that assassination was sanctioned by both parties, under pretence of defending the liberties of the Republic.

The constitution completed by the Mountain party.

One of the first acts of the Mountain party after their triumph was to complete the republican constitution. Previously to their fall, the Girondists had brought forward the plan of a constitution, which was chiefly the work of Condorcet; but it was never sanctioned by the Convention, and much too intricate to be practically useful. The constitution now framed, which was afterwards sanctioned by the nation, but never put in practice, abolished the former mode of electing the representatives of the people through the medium of electoral assemblies, and appointed them to be chosen immediately by the primary assemblies, which were to consist of from two to six hundred citizens, whilst each man was to give his suffrage by ballot or otherwise at his option. One deputy was allowed for every forty thousand individuals, and population formed the sole basis of representation. The elections were to take place every year on the first of May. Electoral assemblies were, however, retained. Every two hundred citizens in the primary assemblies named one elector, and an assembly of all the electors of the department was afterwards held, which chose candidates for the executive council, or ministry of the Republic; and out of this list of candidates the legislative body selected the members of the executive council. One half of this council was to be renewed by each legislature in the last month of the session. Every law, after being passed by the legislative body, was to be sent to the department; and if in more than half of the departments the tenth of the primary assemblies of each did not object to it, it became effectual. Trial by jury was also established. National conventions might be called for altering the constitution, and were to be summoned, if required, by the tenth of the primary assemblies of each department in a majority of the departments. The publication of this constitution secured no small degree of applause to the Convention and the Mountain party. The rapidity with which it had been framed[1] seemed to cast a reflection upon the slowness of the moderate party, and was regarded as a proof that its framers were decidedly serious in the cause of republicanism. No regard, however, was paid to it by the Convention, which declared itself permanent; nor indeed did it seem possible to carry it into execution.

We have mentioned that Condé was invested ever since the beginning of April; but it did not yield till the 10th of July, when the garrison was so much reduced by famine and disease, that out of four thousand men, of which it originally consisted, only fifteen hundred were fit for service. The eyes of all Europe were in the mean time fixed upon the siege of Valenciennes. Colonel Moncrieff had contended that batteries ought to be placed immediately under the walls, without approaching it by regular parallels; but the imperial engineer Ferraris asserted that the work of the great Vauban must be treated with more respect, and his opinion was adopted by the council of war. The trenches were opened on the 14th of June. Few sallies were attempted by the garrison, on account of the smallness of their number. The inhabitants at first wished to surrender; but the violence of the bombardment prevented their assembling, or giving much trouble to General Ferrand, the governor. The principal labour of the siege consisted of mines and countermines, some of which having been successfully sprung by the assailants, the town was surrendered by capitulation on the 27th of July, and the Duke of York took possession of it in behalf of the emperor of Germany. The siege of Mayence at the same time proceeded, and the place suffered much from famine; but at last, after an unsuccessful attempt to raise the siege by the French army of the Rhine, it surrendered on the 22d of July.

The allies divided as to their future proceedings.

After the termination of the siege of Valenciennes the allied powers became much divided as to their future proceedings. The Austrian commanders are understood to have presented two plans; the one to penetrate to Paris by means of the rivers which fall into the Seine; the other to take advantage of the consternation occasioned by the surrender of Valenciennes, and with fifty thousand light troops to penetrate suddenly to Paris, whilst a descent should be made on the coast of Bretagne to assist the royalists. The proposal of the British ministry, however, to divide the grand army, and to attack West Flanders, beginning with the siege of Dunkirk, was ultimately adopted; but this determination proved ruinous to the allies, as the French found means to vanquish in detail that army which they were unable to encounter when united.

It has been asserted that the Duke of York was in secret correspondence with Omeron, the governor of Dunkirk; but the latter was removed before any advantage could be taken of his treachery. On the 24th of August the Duke of York attacked and drove into the town the French outposts, after an action in which the Austrian general Dal-ton was killed. A naval armament was expected from Great Britain to co-operate in the siege, but it did not arrive in time to be of any avail. Meanwhile a strong republican force menaced the covering army of the allies, commanded by General Freytag; and, in point of fact, he was soon afterwards attacked and totally routed, in consequence of which the siege was raised. The British lost their heavy cannon and baggage, with several thousand men; but the Convention, believing that their general, Houchard, might have cut off the Duke of York's retreat, tried and executed him for this alleged neglect of duty. In the mean time the Prince of Saxe-Cobourg and General Clairfayt unsuccessfully attempted to besiege Cambray and Bouchain. Quesnoy was, however, taken by General Clairfayt on the 11th of September; and here terminated the success of the allies in the Netherlands during the present campaign.

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[1] This constitution was only the work of a fortnight; a short space, no doubt, for so important an undertaking.

A considerable part of the French army of the north having taken a strong position near Maubeuge, were there blockaded by Prince Cobourg; but upon the 15th and 16th of October the latter was repeatedly attacked by the French troops under General Jourdan, who had succeeded Houchard in the command. The French having now recovered their vigour, brought into the field a formidable train of artillery; and commissioners from the Convention harangued the soldiers, threatening the timid and applauding the brave. The attacks were repeated and furious, and the Austrians had the disadvantage, in consequence of which the Prince of Saxe-Cobourg retired during the night. The French now menaced maritime Flanders, took Furnes, and besieged Nieuport. But a detachment of British troops ready to sail to the West Indies were hastily sent to Ostend, and for the present prevented the further progress of the French.

Lyons. The multiplicity of the events which now occurred in France was so great, that it is difficult to give an outline of these with tolerable perspicuity. It has been already mentioned that violent dissensions occurred throughout the Republic, in consequence of the triumph of the Mountain party on the 31st of May. The department of Calvados was first in arms against the Convention, under the command of General Wimpfen; but before the end of July the insurrection had been subdued. The federalism of the cities of Marseilles, Lyons, and Toulon, however, still remained. On the 8th of August Lyons was attacked by the Conventional troops; and several actions followed, which were attended with great loss both on the part of the assailants and of the besieged. The city in fact was reduced almost to ruins; but it held out during the whole month of September. The besieging general, Kellerman, was removed from his command on account of his supposed inactivity; and the city surrendered on the 8th of October to General Doppet, a man who had lately been a physician. The walls and public buildings of Lyons were ordered to be destroyed, and its name changed to that of *Ville Affranchie;* many hundreds of its citizens were dragged to the scaffold on account of their alleged treasonable resistance to the Convention; and the victorious party, weary of the slow operation of the guillotine, at last destroyed their prisoners in multitudes, by discharges of grape-shot. With the party of the Mountain terror was now the order of the day. **Marseilles.** In the end of July General Carteaux was sent against Marseilles. In the beginning of August he gained some successes over the advanced guard of the federalist troops; and on the 24th he took the town of Aix, upon which the Marsellois submitted. **Toulon.** But the leading persons of the important town of Toulon, one of the first naval stations in France, entered into a negotiation, which terminated in their submitting to the British admiral Lord Hood, upon the conditions that he would preserve as a deposit the town and shipping for Louis XVII. and assist in restoring the constitution of 1789 The siege of Toulon was commenced by General Carteaux in the beginning of September; and it continued without much vigour during that and the succeeding month, Neapolitan, Spanish, and English troops having been brought by sea to assist in its defence. But in the beginning of November, General Carteaux was removed to the command of the army in Italy, and General Dugommier succeeded him in the direction of the siege. General O'Hara also arrived with reinforcements from Gibraltar, and assumed the command of the town, under a commission from his Britannic majesty. Upon the 30th of November the garrison made a vigorous sally, in order to destroy some batteries which were erecting upon heights that commanded the city. The French were surprised, and the assailants effected their object; but, elated with this success, the troops rushed onward in pursuit of the enemy, and were unexpectedly met by a strong French force brought up by the commandant of artillery to check their advance. General O'Hara now arrived from the city to endeavour to bring off his troops; but he received a wound in the arm, and was taken prisoner. The total loss of the assailants in this affair was estimated at a thousand men. The French now mustered in great force around Toulon, and prepared to prosecute the attack with vigour. It commenced on the 19th of December, and was chiefly directed against Fort Mulgrave, occupied by the British. This fort was protected by an intrenched camp, and thirteen pieces of cannon consisting of twenty-four and thirty-six pounders, with five mortars and three thousand troops; but such was the fury of assault, that it was carried in an hour, and the whole garrison either killed or taken. The British and their allies now found it impossible to defend the place; and in the course of the day embarked their troops, after having set on fire the arsenal and the ships. A scene of confusion now ensued, such as has rarely been exhibited in modern warfare. Crowds of people of every rank, age, and sex, hurried on board the ships, to escape the vengeance of their enraged countrymen. Some of the inhabitants began to fire upon their late allies; others in despair were seen plunging into the sea, and making a vain effort to reach the ships; and not a few put an end at once to their own existence on the shore. No language, indeed, can do justice to the horrors of the scene. Mothers clasping their helpless babes, and old men weighed down with the load of years, might be seen stretching their hands towards the harbour, shuddering at every sound behind them, and even rushing into the waves to escape the less merciful death which awaited them from their countrymen. Sir Sidney Smith, with honourable humanity, suspended the retreat until not a single individual who claimed his assistance remained on shore, though the total number borne away amounted to nearly fifteen thousand. Of thirty-one ships of the line found by the British at Toulon, thirteen were left behind, ten were burned, and four had been previously sent to Brest and Rochefort, with five thousand republicans who could not be trusted; so that Great Britain finally obtained by this expedition only three ships of the line and five frigates. The recovery of this important place by the French was in a great measure, if not altogether, owing to the superior genius and conduct of the commandant of artillery, Napoleon Bonaparte, who here made his first conspicuous essay in arms.

The storm which now burst on the devoted heads of the Toulonese was indeed terrible. The infuriated soldiers rushed into the town, and, in their frantic rage, massacred two hundred Jacobins who had gone out to welcome their approach. During twenty-four hours the inhabitants were left at the mercy of the soldiers, and the galley slaves, who had been let loose on the city; and a stop was only put to these horrors by the citizens redeeming themselves for four millions of francs. Dugommier, a brave, honourable, and humane soldier, did his utmost to check the violence of the troops, and to mitigate the severity of the Convention; but though he succeeded in restraining the former, nothing could soften the inexorable hearts of the latter. Several thousand citizens of every age and both sexes perished in a few weeks, either by the sword or the guillotine; for a considerable time two hundred were beheaded daily; and twelve thousand labourers were hired from the surrounding departments to demolish the buildings of the city. On the motion of Barrère, it was decreed that the name of Toulon should be changed to that of Port de la Montagne, that the houses should be razed to the foundations, and nothing should be left but the naval and military establishments; and Barras, Fréron, and Robespierre the younger were chosen to execute the vengeance of the Convention upon the fallen city. Military commissions were immediately formed, and a revolutionary tribunal was established; the prisons were crowded with the unhappy persons destined for the guillotine; and the mitraillades of Lyons were imitated with fearful effect. One of the victims, an aged merchant, named Hugues, was eighty-four years old, deaf, and nearly blind. His only crime consisted in the possession of a fortune of L.800,000, all of which, excepting L.20,000, he offered, to save his life. The judge, however, deeming the offer inadequate, sent him to the guillotine, and confiscated the whole. "When I beheld this old man executed," said Napoleon, "I felt as if the end of the world was at hand." It seemed, indeed, as if a legion of evil spirits had been let loose upon earth, to revel for a season in crimes hitherto unheard of among the children of men.[1]

War in La Vendée.

On the side of Spain the war produced nothing of importance; and in the mountainous country of Piedmont little advantage had been gained on either side. But more terrible scenes were acting in other quarters. In La Vendée a most fierce and sanguinary contest was maintained by the royalists. In that part of the country the language of the rest of France was but little understood. The people were superstitious, and had acquired almost no knowledge of the new opinions which had recently been propagated throughout the rest of the country. They were chiefly headed by priests, and taught to regard their cause as that of religion. Their usual mode of warfare was to proceed in their ordinary occupations as peaceable citizens, but suddenly to assemble in immense bands at the prescribed rendezvous, when the alarm was given. At one time, indeed, they were said to amount to one hundred and fifty thousand men. They besieged Nantes and Orleans; and even Paris itself was not considered altogether safe from their enterprises. The war was inconceivably bloody; neither party gave quarter; and La Vendée proved a dreadful drain on the population of France. On the 28th of June the Conventional general Biron drove the royalists from Lucon; and Nantes was relieved by General Beysser. But after obtaining some success, General Westermann was surprised, and compelled to retreat to Parthenay. In the beginning of August the royalists were defeated by General Rossignol; but on the 10th of that month they again, under Charette their commander-in-chief, attacked Nantes, though without success. Our limits do not admit of our entering into the details of this fierce contest, rich as it is in daring actions and heroic adventures. The royalists were often defeated and apparently dispersed, but they as often appeared again in crowds around the astonished republicans. At last, about the middle of October, they were completely defeated, driven from La Vendée, and forced to divide into separate bodies; one of which threw itself into the island of Noirmoutier, where they were destroyed, whilst another took the road of Maine and Bretagne, where they struggled for some time against their enemies, and were at last either cut to pieces or dispersed. The royalists had long expected assistance from England; and an armament under the Earl of Moira was actually fitted out for that service, but it did not arrive till too late, and returned home without even attempting a landing. The Mountain party invariably disgraced their successes by the most ferocious cruelties. Humanity is shocked, and history would almost cease to obtain credit, were we to state in detail the unrelenting barbarities which were exercised against the unfortunate royalists, especially by Carrier, a deputy of the Convention, who had been sent into this quarter with unlimited powers. Multitudes of prisoners were crowded on board vessels in the Loire, which were afterwards scuttled and sunk. No age or sex was spared; and these executions were performed with every circumstance of wanton barbarity and insult. The infernal republican marriages, as they were denominated by the demon who invented them, usually preceded these *noyades*.

Progress of the allies on the Rhine.

On the side of the Rhine a great variety of events occurred during the months of August and September. Several engagements took place, in which the French were upon the whole successful. In September, however, Landau was invested by the combined powers; and it was resolved to make every possible effort to drive the French from their position on the Lauter. They occupied the ancient and celebrated lines of Weissenberg, constructed in former times for the protection of the Rhenish frontier, and stretching from the town of Lauterburg on the Rhine, through the village of Weissenberg to the Vosges Mountains; and during four months all the resources of art had been employed in strengthening them. Having approached the extreme left of this position, the allies formed the design of attacking it from left to right, and thus forcing the French to abandon the whole line of the intrenchments. Accordingly the Prussians, under the Duke of Brunswick, assaulted the left of the lines by the defiles of the Vosges Mountains, whilst the Austrians under Prince Waldeck crossed the Rhine to turn the right, and Wurmser, with the main body, endeavoured to force the centre. The attack on the right by Lauterburg obtained only a momentary success; but Wurmser having carried several redoubts in the centre, soon got possession of Weissenberg; and the left having been turned and forced back, the French army retired in confusion, and some of the fugitives even fled as far as Strasburg. Such was the tardiness of the allies, however, that the French, though completely routed, lost only a thousand men; whereas, if the victory had been improved, the ruin of the whole army would have been inevitable. The French retreated to Hagenau, from which they were driven on the 18th; and they suffered two other defeats on the 25th and 27th. Some of the principal citizens of Strasburg now sent a private deputation to General Wurmser, offering to surrender the town, upon condition that it should be restored to Louis XVII. But General Wurmser declined to accede to these terms, and insisted upon an unconditional surrender. The delay occasioned by this disagreement led to the discovery of the negotiation, and those citizens of Strasburg who had been engaged in it were seized by Saint-Just and Lebas, the commissioners of the Convention, and brought to the scaffold.

Prodigious efforts were now made by the French in order to recover the ground which they had lost. On the 9th of

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[1] Alison, vol. ii. p. 201, 202; Lacretelle, xi. 189, 190.

November General Irembert was shot at the head of the army, upon a charge, probably ill founded, of treachery in the storming of the lines of Weissenberg. But on the 14th Fort Louis was taken by the allies, not without suspicion of treachery on the part of the governor. With this the success of General Wurmser may be said to have terminated. On the 21st, the republican army drove back the Austrians, and penetrated almost to Hagenau; whilst the army of the Moselle advanced to co-operate with the army of the Rhine. On the 17th the Prussians were defeated near Sarbruck, and next day their camp at Bliescastel was stormed; the French then advanced to Deux-Ponts. On the 29th and 30th, however, the French were repulsed with great loss in two violent attacks which they made on the Duke of Brunswick near Lautern. It was obvious, indeed, that they had come into the field with a determination to conquer, whatever it might cost. Every day was a day of battle, and torrents of blood flowed on both sides. The allies had the advantage of the ground, which is very strong, on account of its inequalities and morasses; but the French army was far more numerous than theirs; and although inferior in point of discipline, yet it derived great moral force from the enthusiasm with which the troops were animated. On the 8th of December the French under Pichegru carried the redoubts which covered Hagenau at the point of the bayonet. In a word, the finest troops in Europe were unable to withstand the fury of the republicans, whose determination seemed only to increase in proportion to the slaughter of their companions in arms, and who were never more likely to conquer than immediately after a defeat. On the 22d the allies were driven with great loss from Hagenau, notwithstanding the works which they had thrown up for their defence. The intrenchments on the heights of Reishoffen were considered as stronger than those of Jemmappes; yet they were stormed by the army of the Moselle and the Rhine, under Hoche and Pichegru. On the 23d and 24th the allies were pursued to the heights of Wrotte; and on the 26th the intrenchments which they had thrown up there were, after a desperate conflict, forced at the point of the bayonet. On the 27th the republican army arrived in triumph at Weissenberg. Wurmser retreated across the Rhine, and the Duke of Brunswick hastily fell back to cover Mayence. The blockade of Landau, which had lasted four months, was raised; Fort Louis was evacuated by the allies, and Kayserslautern, Germersheim, and Spires, submitted to the French. During the last month of the year 1793 the loss of men on both sides was immense, and is said to have amounted to between seventy and eighty thousand.

Efforts of the Mountain party.

In the mean time violent efforts were made at Paris by the new administration, established under the auspices of the Jacobin Club and of the party called the Mountain. The new republican constitution had been presented to the people in the primary assemblies, and accepted; so that the business for which the Convention had been called together, namely, that of forming a constitution for France, was at an end. It was therefore proposed that they should now dissolve themselves, and order a new legislative body to assemble, according to the rules prescribed by the constitution; but the dominant party considered it as hazardous to convene a new assembly, possessing only limited powers, in the present distracted state of the country; and in fact it was obvious that France at this time required a dictatorship, or a government possessed of more absolute authority than can ever be enjoyed by one which acts, or pretends to act, upon constitutional principles. It was therefore determined that the Convention should remain undissolved until the end of the war; and that a Revolutionary Government should be established, and invested with uncontrolled powers. Committees of its own body were therefore elected for the purpose of conducting every department of business. The principal of these was called the Committee of Public Safety, whose duty it was to superintend all the others, and to give to the administration all the secrecy and dispatch which have been accounted peculiar to a military government, together with a combination of skill and energy hitherto unknown among mankind. A correspondence was maintained with all the Jacobin Clubs throughout the kingdom; and commissioners appointed by the Convention were sent into all parts of the country, with unlimited authority over every description of persons. In this way a government was established, possessed of infinite vigilance, and more absolute and uncontrolled power than was ever enjoyed by any single despot; and the whole transactions and resources of the country were known to its rulers. On the 23d of August, Barrère, in name of the Committee of Public Safety, proposed the celebrated decree for placing the whole French nation in a state of requisition for the public service. "From this moment," says the decree, "till that when every enemy shall have been driven from the territory of the Republic, all Frenchmen shall be in permanent readiness for the service of the army. The young men shall march to the combat; the married men shall forge arms, and transport the provisions; the women shall make tents and clothes, and attend in the hospitals; the children shall make lint of old linen; the old men shall cause themselves to be carried to the public squares, to excite the courage of the warriors, and to preach hatred against the enemies of the Republic; the cellars shall be washed to procure saltpetre; the saddle-horses shall be given up to complete the cavalry; the unmarried citizens, from the age of eighteen to twenty-five, shall march first, and none shall send a substitute; and every battalion shall have a banner with this inscription, *The French nation risen against tyrants.* The Republic is only a great city besieged, and France must therefore be converted into a vast camp." The measures proposed by Barrère were immediately decreed. All Frenchmen from the age of eighteen to twenty-five took the field; the armies, recruited with requisitions of men, were supported with requisitions of provisions; and the Republic had soon fourteen armies, and twelve hundred thousand soldiers. France was thus transformed at once into a camp and arsenal for the supply of the armies, and terror enforced all the provisions of this celebrated decree. The bayonets of the allies appeared less formidable than the guillotine of the Convention; and safety, despaired of everywhere else, was found only in the armies on the frontier.

In the centre the dictatorial government struck down all the parties, however elevated, with whom it had been at war. The condemnation of the queen, Marie-Antoinette, was directed against Europe generally; that of the Twenty-one against the Girondists; that of the virtuous Bailly against the old constitutionalists; and that of the Duke of Orleans against certain members of the Mountain, who were supposed to have plotted his elevation to the throne. The widow of the unfortunate Louis XVI. was sent to the guillotine on the 16th of October, after a mock trial, in which justice and humanity were equally disregarded. Her conduct, both during her trial and at the place of execution, was distinguished for calmness and dignity, and she died, amidst the savage shouts of the infuriated multitude, with a firmness that did honour to her race. The deputies of the Gironde party, who had been proscribed on the 2d of June, soon followed her to the scaffold, where they ended their career on the 31st of the same month. They were in number twenty-one; Brissot, Vergniaud, Gensonné, Fonfrède, Ducos, Valazé, Lasource, Sillery, Gardien, Carra, Duprat, Beauvais, Duchâtel, Mainvielle, Lacaze, Boileau, Lehardy, Antiboul, Vigée, Dufriche, and Duperret. Sixty-three of their colleagues, who had protested against their arrest, were also imprisoned, but the terrorists did not venture to send these also to the guillotine. During their sham trial before the Revolutionary Tribunal, which lasted nine days, they displayed the most sustained and serene courage. For an instant Vergniaud made his eloquent voice be heard, but in vain. The vehemence of Brissot was equally unavailing. Their destruction had become necessary to the ruling party, and they were condemned without being heard in their own defence. When the sentence was pronounced, Valazé stabbed himself with a poniard, and expired in presence of the court; whilst Lasource, addressing his judges, exclaimed, "I die at a moment when the people have lost their reason; you, you also will perish on the day when they recover it." Vergniaud had been provided by his friends with a certain and speedy poison; but he refused to make use of it, that he might accompany his friends to the scaffold. The condemned deputies marched to punishment with all the stoicism of the time, singing as they went the *Marseillaise* hymn, which, by a slight change, they applied to their own situation:

Allons, enfants de la patrie,
Le jour de glorie est arrivé;
Contre nous de la tyrannie
Le couteau sanglant est levé.

When they arrived at the place of execution they mutually embraced, exclaiming, *Vive la République*, and died, like Romans, protesting with their last breath their attachment to freedom and the Republic.[1]

Of the other chiefs of this party, almost all met with an untimely end. Salles, Guadet, Barbaroux, were discovered in the caves of Saint-Emilion, near Bordeaux, and perished on the popular scaffold. Pétion and Buzat, after having wandered about for some time, committed suicide, and were found dead in a field, with their bodies half devoured by the wolves. Rabaud Saint-Etienne was betrayed by a wretch in whom he confided. Madame Roland was also condemned, and died with the courage of a Roman matron; her husband, on learning her death, quitted his asylum, and stabbed himself on the high road between Paris and Rouen, that he might not betray the generous friends who had sheltered him in his misfortunes. Condorcet, who had been put beyond the protection of the law since the 2d of June, was discovered when in the act of concealing himself from his pursuers, and escaped punishment by taking poison. Louvet, Kervelegan, Lanjuinais, Henri-la-Rivière, Le Sage, and La Reveillère-Lepeaux, were the only Girondists who, in secure asylums, waited for the cessation of this furious tempest. And thus perished this celebrated party, blameable for its rashness, but estimable for its intentions, illustrious for its talents, and glorious in its fall; a party which, embracing all men who were philanthropists from feeling, or republicans from principle, the brave, the humane, and the benevolent, fell the victim of a base and despicable faction, composed of men sprung from the dregs of the populace, and impelled by coarse and vulgar ambition; a party, in short, which, though adorned by the most splendid talents, supported by the most powerful eloquence, and actuated by the most generous intentions, was destroyed, because its members refused to countenance the sanguinary violence which alone commands success in revolutions.

Execution of Egalité.

The Duke of Orleans was soon afterwards condemned, on a charge of having, from the commencement of the Revolution, aspired to the sovereignty. The execution of Egalité gave satisfaction to all parties. His vote for the death of the king had done him little honour, even in the opinion of the Mountainists, and had rendered him odious to the rest of mankind. It was, in fact, an unparalleled outrage on humanity.

The Committee of Public Safety was now remodelled, conformably to the views of the dictators. Until the 31st of May, when the decree for the arrest of the Girondists had passed, it consisted of neutral members of the Convention; now it was composed of the most furious partisans of the Mountain. Barrère remained, but Robespierre was elected a member, and, by means of Saint-Just, Couthon, Collot-d'Herbois, and Billaud-Varennes, his party had a complete ascendency. He struck off some Dantonists, such as Hérault de Séchelles and Robert Lindet, who still remained; gained Barrère; and took under his own management the departments of the police and public opinion. His associates also cast their parts. Saint-Just undertook the surveillance and denunciation of persons suspected; Couthon, that of violent propositions, which required to be softened in the form of expression: Billaud-Varennes and Collot-d'Herbois directed the proconsulates in the departments; Carnot the war; Cambon that of the finances department; Prieur de la Côte d'Or, Prieur de la Marne, and others, the administration of the interior; and Barrère was the daily orator and ever-ready panegyrist of the dictatorial committee. Below this was placed as an auxiliary in the details of revolutionary administration and inferior measures the Committee of General Safety, constituted in the same spirit as the great committee, and, like it, consisting of twelve members, re-eligible every three months, and always continued in their functions. In such hands was the whole revolutionary force now placed. "Vous n'avez plus rien à ménager contre les ennemis du nouvel ordre des choses," said Saint-Just; "et la liberté doit vaincre à tel prix que ce soit. Dans les circonstances où se trouve la République, la constitution ne peut être établie; elle deviendrait la garantie des attentats contre la liberté, parce qu'elle manquerait de la violence nécessaire pour les reprimer. Le gouvernement présent est aussi trop embarrassé. Vous êtes trop loin de tous les attentats; il faut que le glaive des lois se promène partout avec rapidité, et que votre bras soit présent partout." And thus was created that terrible power which first devoured the enemies of the Mountain, then devoured both the Mountain and the Commune, and at length ended by devouring itself. The committee disposed of every thing in name of the Convention, which was merely its tool. It was this body which appointed and dismissed generals, ministers, representative commissioners, judges, and juries; which struck down opposing factions; which possessed the initiative of all measures. By means of its commissioners the armies and the generals were kept under its control; it exercised sovereign power in the departments; by the law in regard to suspected persons, it disposed of the liberty, and by the Revolutionary Tribunal, of the life, of every one; by *requisitions* and the *maximum*, it had the unlimited disposal of all fortunes; and by the terrified Convention, it could command decrees of accusation against any member of that body. Every thing, in short, was at its feet, and, supported by the multitude, its despotism was for the time as complete as it was terrible.

Weights and Measures.

When the human mind is once roused, its activity extends to every object. At this time a new system of weights and measures, in which the decimal arithmetic alone is employed, was established by the Convention. The court of Spain, notwithstanding the war, had the liberality to permit Mechain to proceed with his operations for measuring a degree of the meridian in that country; and he accordingly carried on his system of triangulation from Barcelona to Perpignan, whence the mensuration was continued to Paris. Delambre and his pupil La François also measured a degree of latitude in the vicinity of the metropolis. In all, twelve degrees of the meridian were measured, the mean of which is 57,027 toises; and by this the universal standard of measure was calculated. MM. Borda and Cassini also determined the length of a pendulum which vibrates seconds *in vacuo*, and in a mean temperature at Paris, to be three feet eight hundred and six lines; and MM. Lavoisier and Haüy found that a cubic foot of distilled water at the freezing point weighs *in vacuo* seventy pounds and sixty gros French weight. From these data the new table of weights and measures was constructed. The astronomical circles with which MM. Borda and Cassini had made their observations were also divided according to the centesimal plan; so that the quadrant contains a hundred degrees, and each degree a hundred minutes. Hence the minute of a great circle of the sphere is equal to a *milliare* or new French mile; and if, for the reduction of this measure, we estimate the Paris toise, according to the comparison made with the standard kept in the Royal Society of London, at 6·3925 English feet, the *milliare* or minute will be equal to 1093·633 yards, and the *mètre* to 3·280899 feet.

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[1] Lacretelle, ii. 100; Thiers, v. 392; Mignet, ii. 294; Toulangeon, iv. 115. A young man, named Girey Dufocé, was brought to the bar of the Revolutionary Tribunal. "You have been a friend of Brissot," said the president. "I had that happiness." "What is your opinion of him?" That he lived like Aristides, and died like Sidney," was the answer. Dufocé was sent to the scaffold, where, by his heroic firmness, he vindicated the friendship of Brissot.

New kalendar.

Separated by the war and by their own laws from all states and forms of government, the innovators sought to isolate themselves still more. For an unparalleled revolution they established an entirely new era; they changed the divisions of the year, and the names of the months and days; they replaced the Christian kalendar by the republican, the week by the decade, and fixed the day of rest, not on the Sabbath, but on the tenth day. The new era dated from the 22d September, or autumnal equinox, the epoch of the foundation of the Republic. The year was divided into twelve equal months of thirty days each, which commenced on the 22d September, and were arranged in the order following, viz. *Vendémiaire, Brumaire, Frimaire*, for autumn; *Nivose, Pluviose, Ventose*, for winter; *Germinal, Floréal, Prairial*, for spring; and *Messidor, Thermidor, Fructidor*, for summer. Each month had three decades, each decade ten days, and each day received its name from its place in the decade; thus, *primidi, duodi, tridi, quartidi, quintidi, sextidi, septidi, octidi, nonidi, decadi*. Five complementary days were thrown to the end of the year, or added after the 30th Fructidor, in order to complete it; these received the name of *Sans-culotides*, and were consecrated, the first to the festival of *Genius*, the second to that of *Labour*, the third to that of *Actions*, the fourth to that of *Recompenses*, and the fifth to that of *Opinion*. The constitution of 1793 naturally led to the republican kalendar, and the republican kalendar to the abolition of the Christian worship. Accordingly, the Commune and the Committee of Public Safety proposed each a new kind of religion; the Commune the worship of Reason, and the Committee that of the Supreme Being.

Decay of religion.

The religion of France had for some time been gradually losing ground; and on the 7th of November, Gobet, bishop of Paris, along with a great multitude of other ecclesiastics, came into the hall of the Convention, and at once resigned their functions and renounced the Christian religion. All the clergymen, whether Protestant or Catholic, who were members of the Convention, followed this example, excepting only Grégoire, whom we formerly mentioned as having been one of the first of his order to join the *tiers état* after the meeting of the States General, and who had now the courage to profess himself a Christian, although the emoluments of his bishopric were, he said, at the service of the Republic. Amidst the acclamations of the Convention, it was decreed that hereafter the only French deities should be Liberty, Equality, and Reason; and they would seem to have consecrated these abstractions as the only objects of worship. What political purpose the leaders of the Convention intended to serve by this proceeding does not clearly appear; unless, perhaps, their object was to change so completely the French manners and habits of thinking, that it should never be in their power to return to the state from which they had just emerged, or to unite in intercourse with the other nations of Europe. The populace, however, could not at once relinquish the religion of their fathers. The municipality of Paris ordered the churches to be shut up, but the Convention found it necessary to annul this order; and Robespierre gained no small degree of popularity by supporting the liberty of religious worship on this occasion. Hebert and Fabre d'Eglantine, who led the opposite party, hastened their own fall by an ill-judged contempt of popular opinion on the subject of religion.

To the abjuration of Christianity by Gobet, followed as it was by the apostacy of many of the constitutional bishops and clergy in the Convention, who joined in the declaration, that no other national religion was now required but that of liberty, equality, and morality, the wildest excesses of profanity and irreligion succeeded. Drunken artisans and shameless harlots crowded to the bar of the Convention, and there trampled under their feet the sacred vases consecrated for ages to the holiest purposes of religion; the churches were despoiled of their plate and ornaments; busts of Marat and Lepelletier replaced the images of Christ and the Virgin, which were trodden in the mire; and parodies on the Hallelujah were sung as an accompaniment to the Carmagnole dance. Hebert, Chaumette, and their associates, appeared at the bar of the Convention, and there declared that there was no God, and that the worship of Reason ought to be substituted instead of his; whilst an opera singer, known in more than one character to most of the Convention, was introduced as the personification of the new divinity. The services of the Christian religion were universally abandoned, and the pulpits deserted throughout the revolutionized districts; the church bells were everywhere silent; Sabbath was entirely obliterated; baptisms ceased; the burial service was no longer heard; the sick received no consolation, the dying no communion; and the rites of heathenism, blended with the profanities of the most fanatical infidelity, desecrated the unhappy land. On every tenth day atheism was publicly preached to the bewildered people by some revolutionary leader; and on all the public seminaries was placed the inscription, "Death is an Eternal Sleep." Marat was deified; God was insulted and defied. Such is the wild reaction which follows the overthrow of systems which exclude all reformation, and cherish the abuses engendered by time as their most valuable prerogatives and distinctions. For seven years did the reign of impiety continue in France; and when at length the worship of Christianity was restored by Napoleon, its ruinous effects were generally felt; it had demoralized the old, and left the young without any impressions of religion.

Dissensions between the Mountainists and Jacobins.

But now when the Republic saw itself successful in all quarters, when the Mountain party and the Jacobins had no rivals at home, and accounted themselves in little immediate danger from abroad, they began to split into factions, and to entertain the fiercest jealousies. The Jacobin Club was the usual place in which their contests were carried on; but at this time Robespierre acted the part of a mediator between all parties, and attempted to turn their attention from private animosities to public affairs. Having spread a report that Great Britain intended speedily to invade France, he proposed that the Jacobin Club should endeavour to discover the vulnerable parts of the British constitution and government. They caught at the bait which had thus been thrown out to them; made speeches and wrote essays without number; and were in this way occupied and amused for a considerable time.

Vigour of the Revolutionary Government.

The winter passed in tolerable tranquillity, and no military enterprise was undertaken either by the allies or by the French. On the first of February Barrère asserted in the Convention that the confederate powers were willing provisionally to acknowledge the French Republic, to consent to a cessation of hostilities for two years, and at the end of that time to conclude a lasting peace with the French people. But this assertion met with no credit, and the Convention declared itself determined to reject any proposition founded on it, as affording to the other nations of Europe the means of undermining the new government. In the mean time the Revolutionary Government was gradually becoming more vigorous. Thirty committees of the Convention managed the whole business of the state, without sharing much of the direct executive government, which remained in the hands of the Committee of Public Safety; and these different committees were engaged in a great variety of matters. The ruling party had no competitors for power. The most extensive plans were therefore carried into effect, without confusion or opposition. The Convention was little more than a court in which every project was formally registered. At a single sitting thirty decrees were passed, relating to subjects the most widely different, and some of them of the greatest importance. The finances were under a committee, at the head of which was Cambon, and which found resources for the most lavish expenditure. The assignats were received as money throughout the state; so that a paper mill had become more valuable than a mine of gold. The credit of this paper was supported by an arbitrary law regulating the *maximum* or highest price of all provisions, and by the immense mass of wealth which had come into the hands of the Convention by the seizure of the church-lands, and by the confiscation of the property of royalists, emigrants, and other persons condemned by the Revolutionary Tribunal. So unequally, indeed, had property been divided under the ancient government, that, by means of these confiscations, about seven tenths of the national territory was supposed to have been transferred to the state. To this was added the plunder of the churches, consisting of gold and silver images, and vessels employed in divine worship, along with other articles of less value, amongst which may be mentioned the church bells, which were considered as sufficient for the manufacture of fifteen thousand pieces of cannon. These resources formed altogether a mass of property such as was never perhaps possessed by any other government.

Other committees were engaged in very different occupations. Highways were constructed, and canals planned. Immense manufactories of arms were everywhere established. At Paris alone eleven hundred muskets were fabricated daily, and a hundred pieces of cannon cast every month. Public schools were instituted, and the French language taught in its purity from the Pyrenees to the Rhine. The Convention possessed immense resources, and they did not hesitate to lavish them upon their schemes. Every science and every art was called upon for aid; and the most accomplished men in every profession were employed in giving splendour to their country. The chemists, in particular, gave essential aid by the facility with which they supplied materials for the manufacture of gunpowder; and in return for their services, Lavoisier, the greatest of them all, suffered death by a most iniquitous sentence. Not fewer than two hundred new dramatic performances, the object of which was to attach the people to the existing order of things, were produced in less than two years. The vigour with which the committees of subsistence exerted themselves is particularly remarkable. All Europe was at war with France; and as England, Holland, and Spain, the three maritime powers, were engaged in the contest, it had been thought practicable to reduce France to great distress by famine, especially as it was imagined that the country had not resources to supply its immense population. But the rulers of that country acted with the policy of a besieged garrison. They seized upon the whole provisions of the country, and carried them to public granaries; they registered the cattle, and made their owners responsible for them; they provided the armies abundantly; and, as the people were accurately numbered, they dealt out in every district, on stated occasions, what was absolutely necessary for subsistence, and no more. To all this the people submitted; and, indeed, throughout the whole of the mixed scenes of the Revolution, the calm judgment of the historian is not a little perplexed. It is impossible not to admire the patience with which they endured every hardship which was represented as necessary to the common cause; and equally so not to honour the enthusiastic energy with which they lavished their blood in defence of the independence of their country. On the other hand, no one can regard without indignation and horror the sanguinary proceedings of the factions in the Convention and the capital, or reconcile with our ordinary knowledge of humanity the spirit of mutual extermination by which all of them were in turn actuated.

Increased dissensions of the Jacobins.

During the winter the dissensions of the Jacobins increased. They were divided into two clubs, one of which (that recently instituted) assembled in a hall which once belonged to the Cordeliers. The leaders of this club were Hebert, Ronsin, Vincent, and others; but that of the Jacobins still retained its ascendency, and Robespierre had now become decidedly its leader. This extraordinary man had gradually combined in his own person the confidence of the people and the direction of the government. But as the committees were above the Convention, which had become little more than a court of record, so that of Public Safety was above the other committees; and Robespierre was the leader of this dominant committee, Barrère, Saint-Just, Couthon, and others of its members, only acting a secondary part. These persons laboured in the business of the state, but the supreme power was in Robespierre. He surrounded the members of the Convention with spies, and being equally jealous and implacable, set no bounds to the shedding of blood. On the 25th of March he brought to trial the following active Jacobins, who were condemned and executed the day after, viz. Hebert, Ronsin, Momoro, Vincent, Du Croquet, Koch, Laumur, Bourgeois, Mazuel, Laboureau, Ancard, Leclerc, Proly, Dessieux, Anacharsis Clootz, Pereira, Florent, Armand, Descombles, and Dubuisson. And not satisfied with this, on the 2d of April he brought to trial nine of those who had once been his most vigorous associates; Danton, Fabre d'Eglantine, Bazire, Chabot, Philipeaux, Camille Desmoulins, Lacroix, Delamay d'Angers, and Hérault de Sechelles, all of whom were executed, along with Westermann, on the evening of the 5th.

The Hebertists.

The fall of the Hebertists was regarded with satisfaction by every one beyond the pale of the municipality of Paris. This faction, which had laboured in the *Père Duchêne* to popularise obscenity of language, with grovelling and cruel sentiments, and whose characteristic it was to blend derision with ferocity, had for some time made redoubtable progress; and Robespierre, finding it untractable for his purposes, resolved on its destruction, upon the pretence that, whilst it corrupted the people, it served the purposes of foreigners by promoting anarchy. This he effected by a compromise. His object was to sacrifice both the commune and the anarchists; whilst the committees desired to sacrifice the Mountain and the moderate party. The parties came to a mutual understanding, in consequence of which Robespierre gave up Danton, Camille Desmoulins, and their friends to the members of the committee, and the members of the committee in return gave up Hebert, Clootz, Chaumette, Ronsin, and their accomplices. In at first favouring the moderate party in the Convention, he prepared the destruction of the anarchists, and thus attained two objects advantageous to his power; he ruined a redoubtable faction, and he disencumbered himself of a revolutionary reputation which rivalled his own.

But the latter object was, after all, that which he had probably most at heart, because the party of Danton stood most in his way. Their principles were, that terror was to be used only for the establishment of freedom, not made an instrument of destruction in the hands of those who had obtained it; they wished above all things that the Republic should be consolidated by victory, but that success should be used with moderation. Hence, whilst they vehemently reprobated the proceedings of the dictators after the 31st of May had ensured the triumph of the populace, they desired to humble the anarchists of the municipality, to put down the Revolutionary Tribunal, to discharge from confinement those imprisoned as suspected persons, and to dissolve the despotic committees of government. But these objects were manifestly opposed to that supreme and undisputed domination which Robespierre was now labouring to secure for himself by means of the revolutionary machinery; and, accordingly, after the understanding already mentioned had been come to, it was not long ere he commenced hostilities, by attacking the Jacobin Club, the *Vieux Cordelier* of Camille Desmoulins,[1] and indirectly denouncing Danton himself.

Danton, who had not yet discontinued his relations with Robespierre, demanded an interview, which took place at the residence of the latter. Both parties were cold and bitter. Danton complained violently; Robespierre was haughty and reserved. "I know," said Danton, "all the hatred which the committee bear me, but I do not fear it." "You are wrong," replied Robespierre; "there are no bad intentions towards you, but it is well to be explicit." "To be explicit," rejoined Danton, "good faith is necessary." But observing Robespierre assume a lowering look, "It is doubtless necessary," he added, "to coerce the royalists; but we ought to strike blows which are useful to the Republic, and should not confound the innocent with the guilty." "Eh! who has told you," replied Robespierre sharply, "that one innocent person has suffered?" Danton turned to the friend who had accompanied him, and with a bitter smile, "What say you? Not one innocent man has perished!" At these words they parted; all hope of reconciliation was at end.

The fall of the anarchists ensued. They were brought before the Revolutionary Tribunal, upon a charge of being agents of foreigners, and of having conspired to give a tyrant to the state. From the time of their arrest, their audacity abandoned them; and as they had neither talents nor enthusiasm, they defended themselves without ability, and died without courage.

Fall of Danton.

It was now time for Danton to look to his own safety; the proscription had reached the commune, and was fast approaching him also. His friends urged him to act; but having failed to shake the dictatorial power by exciting public opinion and rousing the Convention, where could he look for support? The Convention was well disposed towards him and his cause; but it was in complete subjection to the revolutionary power of the committees. Having neither the government, nor the assembly, nor the commune, nor the clubs, Danton therefore awaited the proscription without taking any step to ensure his safety. Still his friends pressed him to act. "I would rather," said he, "be guillotined than become guillotiner; besides, my life is not worth the trouble of preserving; I am weary of existence." "The members of the committee seek your death." "What!" exclaimed he, in anger; "if ever—if Billaud—if Robespierre... They will be execrated as tyrants; the house of Robespierre will be razed; salt will be scattered on its foundations, and a stake of infamy planted to avenge the crimes...But my friends will say of me that I have been a good father, a good friend, a good citizen; they will not forget me." "But you may escape." "I would rather be guillotined than become guillotiner." "Still it is necessary to fly." "To fly!" exclaimed he with a mixture of anger and disdain; "do you suppose that a man carries his country in the soles of his shoes?" Danton had only one resource; to lift up his well-known and powerful voice, denounce Robespierre and the committees, and rouse the Convention against their tyranny. He was warmly pressed to adopt this course; but, not to mention the difficulty of overturning an established domination, however atrocious, he knew too well the subjugation and terror of that assembly to trust to the efficacy of such an attempt. He therefore awaited his fate, in the belief however that his enemies would shrink from the proscription of one who had dared so much. He was mistaken. On the 10th Germinal he received notice that the question of his arrest was under the consideration of the Committee of Public Safety, and he was once more urged to fly; but, after a moment's consideration, he answered, "They dare not." In the night his house was surrounded, and he was conducted to the

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[1] In this production Desmoulins discoursed of liberty with the profound sense of Machiavel, and of men with the wit of Voltaire. His picture of the horrors of this gloomy period is drawn with a powerful hand. "At the present epoch," said he, "words became state-crimes; and from this the transition is easy to simple looks, which, with sadness, compassion, sighs, nay even absolute silence itself, are made the ground-work of suspicion. Is a citizen popular? He is a rival of the dictator, and might excite commotions. Does he, on the other hand, avoid society, and live retired in the bosom of his family? This secluded life makes him remarked, and excites the suspicion that he is meditating sinister designs. Are you rich? There is imminent peril that the people may be corrupted by your largesses. Are you poor? You must be the more closely watched, because there is none so enterprising as those who have nothing to lose. Are you of a thoughtful and melancholy character, with a neglected exterior? You are afflicted because in your opinion public affairs are not well conducted. Does a citizen indulge in dissipation and bring on indigestion? He is concealing ambition under the mask of pleasure. Is he virtuous and austere in his morals? He has constituted himself the censor of the government. Is he a philosopher, an orator, a poet? He will soon acquire more consideration than the rulers of the state. Has he acquired reputation in war? His talents only make him the more dangerous, and render it indispensable to remove him from the army, perhaps to send him to the scaffold. The natural death of a distinguished person, particularly if in place, has become so rare, that historians transmit it as an event worthy of record to future ages. Even the death of so many innocent and estimable citizens seems a less calamity than the insolence and scandalous fortunes of those who have denounced and murdered them. Every day the accuser makes his triumphal entry into the palace of death, to reap the harvest of some rich succession; and the tribunals which were once the protectors of life and property have become mere slaughter-houses, where that which bears the name of punishment and confiscation is nothing but robbery and murder." In Camille Desmoulins the anarchists had an able, active, and redoubted antagonist. This atrocious faction he attacked with unsparing severity, and in an especial manner fastened on its head the infamous Hebert, whom he described as "a miserable intriguer, a caterer for the guillotine, a traitor paid by Pitt; a wretch who had at different times received two hundred thousand francs from the factions of the Republic to calumniate their adversaries; a thief and robber, who had been expelled from his situation as lacquey in the theatre for common stealing, and now pretended to drench France in blood by his prostituted journal." Such is Desmoulins' description of the man on whose testimony Marie-Antoinette was condemned, and whose evidence was also held sufficient to send the Revolutionists themselves to the scaffold.

Luxembourg, with Camille Desmoulins, Philipeaux, Lacroix, Hérault de Sechelles, and Westermann. On entering the prison he cordially greeted the captives who pressed around him. "Gentlemen," said he, "I had hoped to have been the means of releasing all of you from this place; but here I am among you, and I know where all this will end." An hour afterwards he was shut up in a solitary cell, which Hebert had recently before occupied, and which was soon to be tenanted by Robespierre himself. The past now rose up to the review of his mind, and, giving way to reflection and regret, he observed, "It is just a year since I caused the Revolutionary Tribunal to be instituted. I ask pardon of God and man for doing so; but I never imagined that it would become the scourge of humanity."

The arrest of Danton and his friends produced a violent agitation in Paris; the Convention also was stricken with dismay. Legendre made a powerful appeal in behalf of his friend, and demanded that, before the report of the committee was received, Danton should be examined in their presence. The proposition was favourably received, and for a moment the assembly seemed disposed to cast off its fetters. But the spell of the dictatorship of terror was still strong on that body. Robespierre ascended the tribune, and having by menace reduced the Convention to silence, proceeded to mark out for vengeance the intrepid Legendre. "You affect to be afraid," said he, in conclusion; "but I say, whoever trembles at this moment is guilty; for never did innocence fear the vigilance of the public authorities." None dared to incur the fatal imputation; terror had frozen every heart. The assembly crouched beneath their tyrants, and unanimously sent the accused to the Revolutionary Tribunal. When brought before this Rhadamanthine judgment-seat, they assumed an attitude of haughty defiance, evincing at once an audacity of purpose, and a contempt for their judges, altogether extraordinary. Danton, in answer to the usual interrogatories as to his name, age, and residence, put by the president Dumas, replied, "I am Danton, well known in the Revolution; I am thirty-five years of age; my abode will soon be in nothingness; and my name will live in the Pantheon of history." The disdainful and vehement responses of Danton, the cool and measured discussion of Lacroix, the austerity of Philipeaux, and the nervous vigour of Desmoulins, began to make an impression on the people. The accused were therefore put *hors de débats*, on the pretence that they had been wanting in respect to the court, and they were immediately condemned without any further hearing. "We are immolated," cried Danton, "to the ambition of a few cowardly brigands; but they will not long enjoy the fruit of their criminal victory. I pull down Robespierre; Robespierre follows me." They were conducted to the Conciergerie, and thence to the scaffold. On their way to the place of execution, they displayed the stoical courage common at that period. A body of troops had been assembled, and their escort was numerous; but the people, who, on such occasions, are usually clamorous and approving, maintained a profound silence. Camille Desmoulins, even when on the fatal cart, was still astonished at his condemnation, and could not comprehend it. "This, then," said he, "is the recompense destined to the first apostle of liberty." Danton held his head erect, and cast a calm and intrepid look around him. At the foot of the scaffold, however, his feelings for a moment overmastered him: "Oh, my well-beloved," cried he; "oh, my wife, shall I then never see thee more!" But immediately checking himself, "Danton, no weakness," said he. He ascended the scaffold with a firm step, and received the blow of the fatal axe with unshaken courage. And thus perished the tardy but last defenders of humanity and moderation; men who had desired to establish peace amongst the conquerors in the revolutionary struggle, and to extend mercy to the vanquished. After their fall no voice was for some time raised against the dictatorship of terror, which, from one end of France to the other, now struck down its victims in silence.

Campaign of 1794; plan of the allies.

Still, however, the preparations for the ensuing campaign were pursued with unabated vigour. The committee for military affairs, at the head of which stood Carnot and others, were busily occupied in arranging along the frontiers the immense force which the requisition had called forth. Plans of operations were drawn out by this committee, and, when approved by the Committee of Public Safety, were sent to the generals to be executed. On the other hand, the allies were making powerful preparations for another attempt to subjugate France; and the emperor himself took the field at the head of the armies in the Netherlands. The plan of the campaign is said to have been framed by Colonel Mack, who afterwards acquired so much negative celebrity. West Flanders was to be protected by a strong body of men; whilst the main army was to penetrate to Landrecies, get within the line of French frontier towns, and cut off the armies from the interior by covering the country from Maubeuge to the sea. This plan was bold; but it belongs to military men to judge whether boldness was not its only merit. In fact, the allies seem to have had no correct information of the immense force which the French were collecting against them. Even the town of Lisle alone, which was capable of containing a numerous army within its walls, and which was to be left in their rear, should have seemed an insurmountable obstacle to the execution of this plan.

State of the allied armies.

On the 16th of April, the Austrian, British, and Dutch armies assembled on the heights above Cateau, where they were reviewed by the emperor; and on the following day they advanced in eight columns against the French, drove in their posts, and penetrated beyond Landrecies. The allied army now amounted in all to a hundred and eighty-seven thousand men, who were disposed in the following manner: Fifteen thousand Dutch and fifteen thousand Austrians, under the Prince of Orange and General Latour, formed the siege of Landrecies; fifteen thousand British and fifteen thousand Austrians, commanded by the Duke of York and General Otto, encamped towards Cambray; the emperor and the Prince of Saxe-Cobourg, at the head of sixty thousand Austrians, advanced as far as Guise; twelve thousand Hessians and Austrians, under General Worms, were stationed near Douai and Bouchain; Count Kaunitz, with fifteen thousand Austrians, defended the Sambre and the country near Maubeuge; and General Clairfayt, with forty thousand Austrians and Hanoverians, protected Flanders from Tournay to the sea; whilst sixty thousand Prussians, for whom a subsidy had been paid by Great Britain, were expected to take the field, but in fact never arrived.

Fall of Landrecies; successes of Pichegru.

The French now commenced active operations. On the morning of the 26th of April they attacked, in great force, the Duke of York near Cateau; but after a severe conflict they were repulsed, and General Chapuy was taken prisoner. At the same time they attacked the troops under his imperial majesty, but were again repulsed with the loss of fifty-seven pieces of cannon. On the same day, however, Pichegru advanced from Lisle, attacked and defeated Clairfayt, took thirty-two pieces of cannon, and, in the course of a few days, made himself master of Vervic, Menin, and Courtray. On the 29th of April the garrison of Landrecies surrendered to the allies. When this event was known in the Convention, it excited a considerable degree of alarm. But it was the last decided success obtained by the allies during this disastrous campaign. Clairfayt was again completely defeated by Pichegru in a general engagement, and it was found necessary to send the Duke of York to his assistance. This movement no doubt seems to have been unavoidable; but its effect was to divide the allied army into a number of detachments, capable indeed of carrying on a desultory warfare, but unfit for the prosecution of vigorous measures. On the 10th of May the Duke of York was attacked near Tournay by a body of the enemy, whom he repulsed; but he was unable to effect a junction with Clairfayt, upon the destruction of whom the French were chiefly bent; for whilst the Duke of York was occupied with the attack made on himself, Pichegru fell upon Clairfayt with such irresistible impetuosity, that the latter was compelled to retreat in confusion, and part of his army fled to the neighbourhood of Bruges. Whilst Pichegru was thus advancing successfully in West Flanders, Jourdan in East Flanders advanced from Maubeuge, crossed the Sambre, and forced Kaunitz to retreat. On the 18th, however, Kaunitz succeeded in repulsing the enemy in his turn, and in forcing them to re-cross the Sambre with considerable loss.

The allies now found that no progress could be made in France whilst General Pichegru was advancing successfully and occupying West Flanders in their rear. The emperor, therefore, withdrew the greater part of his army to the neighbourhood of Tournay, and resolved to make a grand effort to intersect the communications between Courtray and Lisle, and thus to cut off the retreat of Pichegru. With this view, the army, on the night of the 16th, moved forward in five columns; and Clairfayt was at the same time directed to cross the Lys, and if possible to effect a junction, and complete the plan. The attempt seemed at first to promise success; but, in the course of the 17th, the division under the Duke of York was overpowered by numbers and defeated. The advance of the other columns was thus checked, and Clairfayt sustained another repulse. The plan of the allies had been completely frustrated, and their army in consequence withdrew to the neighbourhood of Tournay.

Pichegru speedily attempted to retaliate. On the 22d of May, at day-break, he directed his whole force against the enemy. The attack commenced with a heavy fire of artillery, and all the advanced posts were driven in, upon which the action became general; the attacks were repeatedly renewed on both sides, and the day was spent in a succession of obstinate battles. All that military skill could effect was performed on both sides; the French and the allied soldiers fought with equal courage and obstinacy; but at nine o'clock in the evening the assailants reluctantly withdrew from the attack. The day, however, on which a vanquished enemy quits the field is not always that upon which the victory is won. In this engagement the French were unsuccessful in their immediate object; but the weight of their fire, their steady discipline, and the determined obstinacy of their attacks, raised their military character in the estimation of the officers and soldiers of the allied army. And it was soon perceived that, in addition to these, they possessed other advantages. Their numbers were immense; they implicitly obeyed their generals; and the generals as implicitly submitted to the directions of the Committee of Public Safety. A combination of efforts was thus produced, and the effect was not impaired by divided counsels. On the other hand, the numbers of the allies were daily declining, and their leaders were independent princes or powerful men, whose sentiments and interests were often at variance, and whose exertions were consequently disunited.

On the 24th the French again crossed the Sambre, but were driven back with considerable loss. On the 27th an attempt was made to besiege Charleroi, but on the 3d of June the Prince of Orange compelled the enemy to raise the siege. On the 12th the attempt was renewed, but with no better success. In West Flanders, however, Pichegru was sufficiently strong to commence the siege of Ypres, which was garrisoned by seven thousand men. General Clairfayt made an attempt to raise it, but without success. Reinforcements were sent to Clairfayt from the grand army, to enable him to renew his efforts for the relief of the place, and a series of sanguinary contests ensued, in which that unfortunate general was almost uniformly unsuccessful. Ypres held out till the 17th of June, when it capitulated. In consequence of this and of other events, the Duke of York found it necessary to retreat to Oudenarde; for Jourdan, after storming the Austrian camp of Wattignies, now advanced in such strength upon Charleroi, that its immediate fall was anticipated. But as this would have enabled the two French armies to encircle the whole of Flanders, the Prince of Cobourg advanced to its relief; nevertheless Charleroi surrendered at discretion on the 25th. This circumstance was not known to the Prince of Cobourg when he advanced on the 26th to attack the covering army in their intrenchments near Fleurus; but the latter having by this time been reinforced by the accession of the besieging force, repulsed the assailants without difficulty. Jourdan then drew his men out of their intrenchments, attacked the Austrians in his turn, and, though three times repulsed, was at last successful.

Further successes of the French.

The allies were now obliged to retreat at all points. Nieuport, Ostend, and Bruges, were taken; and Tournay, Mons, Oudenarde, and Brussels, at which place the French armies of East and West Flanders formed a junction, opened their gates. The allied troops having evacuated Namur, formed a line from Antwerp to Liège, in order to protect the country behind. But the French having advanced in force, attacked General Clairfayt, cut to pieces half the troops which now remained under his orders, and broke the line, upon which the allies retreated before them. The Duke of York was joined by some reinforcements under the Earl of Moira, which had with much difficulty made their way from Ostend; and with these and the Dutch troops he retired to the neighbourhood of Bergen-op-Zoom and Breda for the protection of Holland. The Prince of Cobourg evacuated Liège, crossed the Maese, and threw a garrison into Maestricht; but he soon found it necessary to send back part of his troops to the neighbourhood of Tongres. Here the French armies, to the astonishment of all Europe, made a voluntary pause in their career of victory, and ceased to pursue their retiring foes. The war on the Rhine was equally successful on the part of the French. On the 12th, 13th, and 14th of July, repeated battles were fought, in which the French obtained their usual success. As their armies were numerous, their practice was to fight in great bodies day after day till their object was accomplished. The Palatinate was next overrun, and Treves taken, by General Michaud. Flanders and the Palatinate have always been accounted the granaries of Germany, and both of them, at the commencement of the harvest, now fell into the hands of the French.

Executions increased; terrorism at its height.

During the four months which succeeded the fall of Danton, the power of the committees was exercised without opposition and without reserve. Death became the only instrument of government, and the Republic was abandoned to daily and systematic executions. Then were invented the conspiracies of the prisons, which had been crowded by the operation of the law in regard to suspected persons, and which were emptied by that of the 22d Prairial, which might be called the law of the condemned: it was then that the emissaries of the Committee of Public Safety suddenly replaced those of the Mountain; that Carrier, the creature of Billaud, appeared in the west; Maignet, the creature of Couthon, in the south; and Joseph Lebon, the creature of Robespierre, in the north. The extermination *en masse* of the enemies of the democratic dictatorship, which had been practised at

Lyons and Toulon by means of the mitraillades, became still more horrible when effected by means of the noyades of Nantes and the scaffolds of Paris, Arras, and Orange. The terrorists were now so completely united, that they seemed to have but one body and one soul, in which all feelings, sentiments, and desires, had merged in a craving and insatiable appetite for blood. Posterity will find it difficult to credit the extent to which this appetite had grown by what it fed on. "The more the social body perspires, the sounder it becomes," said Collot-d'Herbois. "It is the dead only who never return," said Barrère. "The vessel of the Revolution can only arrive in port on a sea reddened with torrents of blood," said Saint-Just. "A nation is only regenerated on heaps of dead bodies," rejoined Robespierre. Nor were their actions at variance with the creed they professed. For months together these principles were daily carried into practice in every town in France. Alone and unopposed, the Committee of Public Safety struck numberless blows from one end of the kingdom to the other. The mandates of death issued from the capital, and the guillotine was immediately set to work in almost every town and village of France. Amidst the roaring of cannon, the roll of drums, and the sound of the tocsin, the suspected were everywhere arrested, whilst the young and active were marched off to the frontiers; fifteen hundred bastilles, spread throughout the departments, were found insufficient to contain the multitude of captives; and the monasteries, the palaces, the chateaux, were in consequence converted into prisons. Rapidly as the guillotine did its work, however, it reaped not the harvest of death which everywhere presented itself. But disease came to its assistance, and contagious fevers, produced by the crowded state of the prisons, swept off thousands who had been destined to perish by the revolutionary axe. Over the portals of these dread abodes might have been written the inscription which Dante has placed over the entrançe of the infernal regions; hope never crossed their thresholds, and despair of life produced its usual diversified effects on the minds of the unhappy captives. Some sunk into sullen indifference; others indulged in immoderate gaiety; many became frantic with horror; not a few sought to amuse life even at the foot of the scaffold. Rising in one wild and heart-rending chorus might be heard raving, blasphemy, lamentation, commingled with the loud shouts of obstreperous laughter; in short, all the varied sounds which intimate the absence of hope, and a desperate recklessness of the future. Terror was now in its zenith, and death at every door.

On the 10th of May, Madame Elizabeth, sister of the late king, was sacrificed by the Revolutionary Tribunal; and multitudes of every rank and both sexes daily shared the same fate. The rich were naturally the great objects of persecution, because the confiscation of their property added to the strength of the ruling powers; but neither were the poor safe in their poverty from the vengeance of this ferocious and sanguinary government. No security was to be found in any station of life, however humble or mean; a word, a look, a gesture, might excite suspicion, and suspicion was death. By the instrumentality of the guillotine Robespierre had contrived to destroy every avowed rival. The constituted authorities consisted of persons nominated by him, or with his approbation; the committees which conducted the business of the state were at his disposal, and his will was irresistible throughout the Republic. In the Convention he met with no opposition; for that body had ceased to be the turbulent popular assembly which it once appeared, and had become little more than a name employed to give a sort of sanction to such schemes as were proposed to it. But notwithstanding all this, the dictator was fast approaching the crisis of his fate, and at the very culminating point of his power destruction awaited both his system and himself. All hope would indeed have been lost if the issue had depended on the efforts of the virtuous classes; these were completely subdued by terror; but as it is the natural effect of suffering to induce a remedy, so it was in the shock of the wicked among themselves that the only hope of salvation remained. From the beginning of 1794, indeed, men gifted with foresight had entertained the conviction that, in pity to an afflicted land, heaven would throw the apple of discord among the tyrants themselves, and strike them with that judicial blindness which is the instrument it makes use of to punish men and nations. Nor was this expectation disappointed. The Girondist party, it is true, was indeed subdued and silent; its illustrious leaders were no more; but many members of the Convention still remained attached to its principles, and deeply repented having ever deserted them. The party of the Mountain, too, by means of which Robespierre had risen to power, now found itself not only disregarded, but ready at every instant to fall a sacrifice to that system of terror which they had contributed to erect. And even the Jacobins themselves, though neither timid nor scrupulous in the shedding of blood, began to murmur when they saw that fearful privilege confined to a few, or rather monopolized by one man.

For a time things remained in this state, during which it was seen how possible it is for an individual to govern a great nation, even when that nation is hostile to his authority. It is far easier, indeed, to uphold the worst form of government, than to establish the best which human genius or patriotism ever devised. But still the power of Robespierre rested upon no solid foundation, and his fall was therefore inevitable. He had no organized force; his partisans, though numerous, were not organized; he was sustained only by terror and a great force of opinion; and hence, not being able to overpower his enemies by an act of violence, he sought to strike them with dismay. And for a time he succeeded. But such a system soon attains the utmost limit to which it can be urged, and when the tension becomes extreme, the recoil is near at hand. On the day after the festival of the Supreme Being, when the power of the tyrant had reached its apex, his sanguinary intentions were fully disclosed. By the decree of the 22d Prairial, passed on the motion of Couthon, every form, delay, or usage, calculated to protect the accused, was at one fell swoop annihilated. "Every delay," said Couthon, "is a crime; every formality indulgent to the accused is a crime; the delay in punishing the enemies of the country should not be greater than the time requisite for identifying them." Accustomed as the Convention had been to blind obedience, a project calculated to place every member of that body at the mercy of the dictator startled its apathy. "If this law passes," said Ruamps, "nothing remains but to blow out our brains." But the hour of deliverance had not yet arrived. Robespierre mounted the tribune, and demanded, that instead of pausing on the proposal of adjournment, the assembly should sit until the project of the law was discussed. The assembly felt its weakness, and in thirty minutes the decree was unanimously adopted. From this moment, however, may be dated the commencement of the re-action. Proscriptions increased with fearful rapidity, and the cruelties committed in the provinces equalled, if not exceeded, those perpetrated in the capital. Lebon at Arras, and Carrier at Nantes, revelled in horrors such as the world had never before witnessed. Since the law of the 22d Prairial, heads fell at the rate of fifty or sixty a day; yet the Committee of Public Safety, not satisfied with this dreadful amount of carnage, incessantly urged the public accuser, Fouquier Tinville, to accelerate the executions. But whilst the apprehensions of the terrorists themselves inflamed and maddened their ferocity, discord arose in their conclave; the active members of the committees were divided; on one side were Robespierre, Saint-Just, and Couthon; on the other Billaud-Varennes, Collot-d'Herbois, Barrère, and the members of the Committee of General Safety. After several fruitless attempts to regain his ascendency, Robespierre absented himself from the committees, and threw himself on the Jacobins and the commune, where his influence was still paramount. Meanwhile his more furious partisans urged the immediate adoption of the most vigorous measures. Henriot and the mayor of Paris were ready to commence a new massacre, and three thousand young assassins were provided for the purpose. "Strike soon and strongly," said Saint-Just. "*Dare;* that is the sole secret of revolutions." Tallien, Bourdon de l'Oise, Thuriot, Rovère, Lecombre, Panis, Monestier, Legendre, Fréron, Barras, Cambon, were marked out as the first victims. But as the conspirators had no armed force at their command, as the Jacobin Club was only powerful from its influence on public opinion, and as the committees of government were all arrayed upon the other side, Robespierre was compelled to commence the attack in the Convention, which he hoped to sway by the terror of his voice, or at all events to overwhelm by a popular insurrection similar to that which had proved so successful on the 31st of May. Nor were the leaders of the Convention and the committees idle on their side. The immediate pressure of danger united all parties against the tyrant, who, in the popular society, had made no secret of his resolution to decimate the assembly.

At length, on the 8th Thermidor (26th July), the contest commenced in the National Convention. The discourse of Robespierre was dark and enigmatical, but its real object was not doubtful. The dictator was listened to with breathless attention; not a sound interrupted the delivery of his speech; not a whisper of applause followed its close. On the proposal that it should be printed, the first symptoms of resistance showed themselves. Bourdon de l'Oise opposed its publication; but Barrère supported it, and the assembly, fearful of prematurely committing itself, agreed to the proposal. Seeing the majority wavering, the Committee of General Safety now deemed it necessary to take decisive steps. The time for dissembling had passed. "One man paralyses the assembly, and that man is Robespierre," said Cambon. "I would rather that my carcass served for a throne to the tyrant," said Billaud-Varennes, "than render myself by my silence the accomplice of his crimes." Fréron proposed to throw off the hated yoke of the committees, and to reverse the decree which permitted the arrest of the representatives of the people; but as Robespierre was still too powerful to be overthrown by the Convention unaided by the committees, this proposal was rejected, and the assembly contented itself with reversing the decree for the publication of his address, which was sent to the committees for examination. In the evening the tyrant, attended by Henriot, Dumas, Coffinhal, and his other satellites, repaired to the popular society, where he was received with enthusiasm; and during the night he made arrangements for disposing his partisans on the following day. The two committees, on their side, were not idle. They sat in deliberation during the whole night; and it was felt by every one that a combination of all parties was requisite to shake the power of the tyrant. To this object, accordingly, all their efforts were directed; and, by unremitting exertions, the Jacobins of the Mountain succeeded in forming a coalition with the leaders of the centre and the right. "Do not flatter yourselves," said Tallien to the Girondists, "that he will ever spare you; you have committed an unpardonable offence in being freemen. Let us bury our ruinous divisions in oblivion. You weep for Vergniaud; we weep for Danton. Let us unite their shades by striking Robespierre." Before daybreak all the assembly had united for the overthrow of the tyrant.

At an early hour on the morning of the 9th Thermidor (27th July), the benches of the Convention were crowded with members, and the leaders walked about in the passages confirming one another in their generous resolution. At noon Saint-Just ascended the tribune, and Robespierre took his seat on a bench directly opposite, to intimidate his adversaries by that look which had so often stricken them with terror. But its spell was powerless; fear had now changed sides. As he proceeded to take his seat his knees trembled, and the colour fled from his lips; the hostile appearance of the assembly already gave him an anticipation of his fate. Saint-Just began by declaring that he belonged to no party, and would combat them all. "The course of events has possibly determined," said he, "that this tribune shall become the Tarpeian rock for him who now tells you that the members of the committees have strayed from the path of wisdom." Here he was vehemently interrupted by Tallien, the intrepid leader of the revolt. "Shall the speaker," said he, "for ever arrogate to himself, with the tyrant of whom he is the satellite, the privilege of denouncing, accusing, and proscribing the members of the assembly? Shall he for ever go on amusing us with imaginary perils, when real and pressing dangers are before our eyes? After the enigmatical expressions which fell from the tyrant yesterday, can we doubt what Saint-Just is about to propose? You are about," added he, "to raise the veil; I will rend it asunder. Yes, I will exhibit the danger in its full extent; the tyrant in his true colours. It is the whole Convention which he now proposes to destroy; he knows well, since his overthrow yesterday, that however much he may mutilate that great body, he will no longer find it the instrument of his tyrannical designs." Loud applauses followed this intrepid declaration. "Two thousand assassins," he proceeded, "are sworn to execute his designs; I myself last night heard their oaths, and fifty of my colleagues heard them with me. The massacre was to have commenced in the night, with the Committees of Public Safety and General Security, all of whom were to have been sacrificed, excepting a few creatures of the tyrant. Let us instantly take measures commensurate with the magnitude of the danger; let us declare our sittings permanent, until the conspiracy is broken and its chiefs arrested." Billaud-Varennes gave fuller details of the conspiracy which had been matured in the society of the Jacobins, and denounced Robespierre as its chief; at the same time declaring that the assembly would perish if it showed the least symptom of weakness. "We will never perish," exclaimed the members, rising in a transport of enthusiasm. Tallien then resumed, and in impassioned language called upon the assembly to pass the decree of accusation. During this agitating scene Robespierre sat motionless from terror. The Convention, amidst violent uproar, decreed the arrest of Dumas, president of the Revolutionary Tribunal, Henriot, commander of the national guard, and their associate conspirators; it also declared its sittings permanent, and numerous measures of precaution were suggested. But as the main object of destroying Robespierre was in danger of being lost sight of amidst these multifarious proposals, Tallien again ascended the tribune, and, in the most emphatic terms, demanded that the dictator should be declared *hors la loi.* "Let there be no formalities with the accused," said he; "you cannot too much abridge his punishment, he has told you so himself a hundred times." Robespierre now attempted to obtain a hearing, but in vain. His voice was drowned by the incessant ringing of the president's bell, and by shouts of "Down with the tyrant," which resounded throughout the halls. A moment of silence ensued, during which he made a last effort to be heard. "For the last time, president of assassins," exclaimed he, turning to the chair, "will you allow me to speak?" But Thuriot recommenced ringing his bell; and, amidst renewed cries of "Down with the tyrant," he sunk on his seat exhausted with fatigue and rage. The foam now issued from his mouth, and his speech failed. "Wretch," exclaimed a voice from the Mountain, "the blood of Danton chokes thee!" The act of accusation was then passed amidst the most violent agitation; the two Robespierres, Lebas, Couthon, Saint-Just, Dumas, and some others, were unanimously put under arrest, and sent to prison; and, after a scene perhaps unexampled in history, the assembly broke up at five o'clock.

The Jacobins, who had fully expected that Robespierre would be victorious in the Convention, no sooner heard of his arrest than they instantly gave orders to sound the tocsin, to close the barriers, to convoke the council-general, and assemble the sections; they also declared their sittings permanent, and established the most rapid means of communication between the two centres of insurrection. Meanwhile Henriot endeavoured to excite the people to revolt, by parading the streets, at the head of his staff, with a sabre in his hand, exclaiming, "To arms to save the country." But having been met by two deputies who prevailed upon some horsemen to obey the orders of the Convention, he was seized, handcuffed, and sent to the Committee of General Safety. Peyan, the national agent, was about the same time arrested; and the Convention seemed triumphant. But between six and seven o'clock the insurgents regained the advantage, chiefly in consequence of the energetic measures of the municipality. Robespierre having been sent to the Conciergerie, and the rest of the conspirators to the other prisons of Paris, the commune sent detachments to deliver them; and Robespierre was speedily brought in triumph to the Hôtel de Ville, where he was joined by his brother and Saint-Just; whilst Coffinhal, at the head of two hundred cannoniers, forced the guard of the Convention, penetrated to the rooms of the Committee of General Safety, and delivered Henriot. The assembly met again at seven o'clock, when it received intelligence of the success of the insurgents, the liberation of the terrorists, the assemblage at the Hôtel de Ville, and the convocation of revolutionary committees, and of the sections. In a short time the delivery of Henriot, and the presence of an armed force around the Convention, were also communicated; and when the agitation was at its height, Amar entered and announced that the cannoniers had pointed their guns against the hall of the assembly. The moment was truly terrible. But in this extremity Tallien and his friends acted with that dauntless intrepidity which so often proves successful in revolutions. Henriot was declared *hors la loi*, and Barras appointed to the command of the military, whilst Fréron, Bourdon de l'Oise, and other determined men, were associated with him in this perilous duty; the Committee of Public Safety was fixed on as the centre of operations; and emissaries were instantly dispatched to all the sections to summon them to the defence of the Convention. Fortunately for this body, Henriot in vain attempted to induce the cannoniers to fire. They had obeyed his orders in marching from the Hôtel de Ville, and to this they limited their obedience. The refusal of the cannoniers decided the fortune of this day. Dispirited and alarmed, Henriot withdrew to the Hôtel de Ville; the armed forced followed his example; and the Convention, which had just been besieged in its hall, became the assailing party.

The battalions of the sections, who had been convoked by the emissaries of the Convention, now began to arrive at the Tuileries; and in a short time a considerable force assembled. The night was dark, the moon being in the first quarter; but the public anxiety had supplied this defect by a general illumination. The defenders of the National Convention took the line of the quay, carrying with them several pieces of cannon; they marched in silence, sustaining their courage without the aid of those vociferations and exclamations which are the resource of men who march to pillage and disorder. The space in front of the Hôtel de Ville was filled with detachments of the national guard, who had obeyed the summons of the municipality, companies of cannoniers, squadrons of gendarmerie, and a multitude of individuals, some armed, and others not, but all apparently inflamed with the most violent spirit of Jacobinism, though perhaps in secret actuated by fear alone. At midnight a rumour began to circulate through the ranks of the insurgents that the municipality had been declared *hors la loi;* that the sections had joined the Convention; and that their forces were advancing to attack the Hôtel de Ville. In the Place de Grève there were stationed about two thousand insurgents, with a powerful train of artillery; but their firmness was much shaken when the light of the torches showed the heads of the columns of the national guards appearing in all the avenues which lead into the square, and thus made obvious the defection of their fellow-citizens. Still it was a fearful moment. Ten pieces of artillery had been placed in battery by the troops of the Convention; and the cannoniers of the municipality, with burning matches in their hands, stood beside their guns on the opposite side. But happily the authority of the legislature prevailed; its decree which declared the commune *hors la loi* was read by torch-light, and in an instant the Place de Grève was deserted. A few moments afterwards, Henriot descended the stair of the Hôtel de Ville, with a sabre in his hand, and finding no one, "How!" exclaimed he, "is it possible? These scoundrels of cannoniers who saved my life five hours ago, thus abandon me now!"

With terror in his looks and imprecations in his mouth, Henriot re-ascended the stair, and announced the total defection of the troops. Instantly despair took possession of that band of assassins; every one turned his fury on his neighbour; nothing but mutual execrations could be heard. In a transport of rage Coffinhal seized Henriot in his arms, and exclaiming, "Vile wretch, your cowardice has undone us all," hurled him headlong down the stair. Saint-Just implored Lebas to put an end to his life. "Coward, follow my example," exclaimed the latter, and blew out his brains. Robespierre tried to imitate him; but his hand trembled, and he only broke his under jaw, which disfigured him in a frightful manner. Couthon was found under a table, feebly attempting to strike with a knife, which he wanted courage to plunge into his heart; Coffinhal and the younger Robespierre threw themselves from the windows, and were seized in the inner court of the building; Henriot, bruised and mutilated, had contrived to crawl into the entrance of a sewer, out of which he was dragged by the troops of the Convention. Robespierre and Couthon, being thought dead, were dragged by the heels to the Quai Pelletier, where it was proposed to throw them into the river; but when daylight appeared, and it was found that they still breathed, they were stretched on a board and carried to the Committee of General Safety. There, extended on a table, with his visage disfigured and bloody, the fallen tyrant lay for some hours exposed to invectives and execrations, saw men of every party rejoicing in his overthrow, and heard himself charged with all the crimes which had been committed. "Il montra," says Mignet, "beaucoup d'insensibilité pendant son agonie." He was then conveyed to the Conciergerie, where for a brief space he occupied the same cell in which Danton, Hebert, and Chaumette had been confined. When brought with his associates before the Revolutionary Tribunal, the process was short; as soon as the identity of their persons had been established, they were ordered for execution. About five in the morning of the 29th July, he was placed on the death-cart, between Henriot and Couthon, who were as mutilated as himself. A linen bandage soaked in blood supported his broken jaw; his countenance was livid, and his eye almost extinct. An immense multitude crowded around the cart, testifying their feelings in loud and reiterated shouts of exultation; some shed tears of joy, others embraced, and others again poured forth execrations against the tyrant, whom, from time to time, the gendarmes pointed out to the people with their sabres. Saint-Just was the only one who evinced any firmness or self-possession; the others, to the number of twenty-two, were excessively dejected. Robespierre was executed the last; when the fatal axe descended, an exulting shout arose, which was prolonged for several minutes after the tyrant was no more.

With the fall of Robespierre ended the system of terror, of which however he was not the most zealous partisan of his party. Aspiring to supreme power, moderation would have become necessary to him had he succeeded, and terror, which ceased by his fall, would have equally ceased by his triumph. But his destruction was inevitable. He had no organized force; his partisans, though numerous, were not embodied and disciplined; he had only the force of opinion and terror; and being thus unable to surprise his enemies by a sudden act of violence, he sought to strike them with dismay. When fear did not succeed he attempted insurrection; but as the Convention, when supported by the committees, had become courageous, so the sections, reckoning on the courage of the Convention, declared against the insurgents. In attacking the government, he roused the assembly; in rousing the assembly, he let loose the people; and this coalition proved his ruin. The Convention, on the 9th Thermidor, was no longer what it had been on the 31st May; divided and undecided, in the presence of a compact, numerous, and daring faction. All parties were united by defeat, misfortune, and an ever-menacing proscription, and under the pressure of common danger they were prepared to combat together. The overthrow of Robespierre was therefore inevitable. He could not avoid separating himself from the committees. "Au point où il était arrivé, on veut être seul, on est dévoré par ses passions, trompé par ses espérances et par sa fortune jusque-là heureuse; et, la guerre une fois déclarée, la paix, le repos, le partage du pouvoir ne sont pas plus possibles que la justice et la clémence lorsque les échafauds ont été une fois dressés."[1] A man so circumstanced must ultimately fall by the means which have contributed to his elevation; and as conquerors are at length destroyed by war, so the leaders of factions naturally terminate their career on the scaffolds, by which they had sought to establish their power. We may add, that the 9th Thermidor was the first day of the Revolution in which those who attacked had failed. The ascending revolutionary movement had reached its term, and the contrary movement now commenced.[2]

Terror gives place to that of moderatism.

After the fall of Robespierre the Convention exhibited a remarkable change of appearance. Instead of the silence which had formerly prevailed, all was now bustle and activity. The success of the general rising of all the parties against one man destroyed the compression under which they had laboured; but the momentary union which had ensured the victory was soon at an end, and the conquerors speedily arranged themselves into two parties, namely, that of the committees, and that consisting of partisans of the Mountain, which received the name of *parti Thermidorien.* But the committees were vanquished with Robespierre, and their government lost the *prestige* of terror which constituted its whole force. Besides the loss of their chief, they had no longer the commune, whose insurgent members, to the number of seventy-two, were sent to the scaffold, and which, after its double defeat under Hebert and under Robespierre, was not re-organized, and lost in consequence all its influence. The democratic power of the committees accordingly declined, and the Thermidorian party, including a great majority of the Convention, prevailed; whilst a new character was given to that assembly by the coalition of the moderates, Boissy-d'Anglas, Sièyes, Cambacérès, Chénier, Thibaudeau, with the Dantonists Tallien, Fréron, Legendre, Barras, Bourdon de l'Oise, Rovère, Bentabold, Dumont, and the two Merlins. The former

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[1] Mignet, *Histoire de la Révolution Française*, ii. 479, 480.

[2] The quantity of blood which was shed in France during the regime of terror will hardly be credited in future ages. Prudhomme, who, as a republican, could scarcely be disposed to exaggerate the crimes committed by the popular party, gives the following appalling enumeration of the victims of the Revolution:

There were guillotined by sentences of the Revolutionary Tribunals,

Nobility of both sexes	2,028	
Wives of labourers and artisans	1,467	
Priests	1,135	
Religieuses	350	
Common persons	13,623	
		18,603
Women died in premature childbirth, and from grief		3,748
Women killed in La Vendée		15,000
Children killed in La Vendée		22,000
Men slain in La Vendée		900,000
Victims of Carrier at Nantes		32,000
Killed at Lyons		31,000
Total		1,022,351

Of the victims sacrificed by Carrier, 500 children were shot, and 1500 drowned; 264 women were shot, and 500 drowned; 300 priests were shot, and 460 drowned; 1400 nobles were drowned; and 5300 artisans were drowned.

The general results of this enumeration are strikingly curious. The nobles and priests guillotined are only 2413, whilst the persons of plebeian origin put to death in this manner exceed 13,000. The nobles and priests exterminated at Nantes do not much exceed 2000, the infants drowned and shot amount exactly to this number, and the artisans drowned exceed 5000. It thus appears that the middling and lower ranks were the greatest sufferers by the Revolution, which professed to have been undertaken and carried on exclusively in their interest. Finally, the total number of persons destroyed at Nantes and Lyons alone exceeded the total number guillotined in virtue of the judgments pronounced by the Revolutionary Tribunals, by no less than 42,397.

In this enumeration are not included the massacres at Versailles, the Abbaye, the Carmes, and other prisons, on the 2d of September; the victims of the Glacière of Avignon; those shot at Toulon and Marseilles; nor the persons slain in the little town of Bedoin, which was almost entirely depopulated. (Prudhomme, *Victimes de la Révolution;* Chauteaubriand, *Etudes Historiques.*)

system of terror was consequently declared to be at an end, and a new system of moderatism succeeded, which was carried to as great a height as that of terror had formerly been; and all means were taken to render popular the fall of the tyrant. The committees were organized anew, and their members ordered to be frequently changed. The correspondence between the affiliated Jacobin Clubs was prohibited, and the Jacobin Club itself was at length abolished. This last event was accomplished without difficulty, and that society which had been the great engine of the Revolution was overturned almost without resistance. Seventy-one deputies of the Girondist party, who had been imprisoned since the 31st of May 1793, were set at liberty. The name of Lyons was restored. Some of the agents of Robespierre, particularly Lebon and Carrier, the former of whom had signalized himself by unheard-of cruelties at Arras and Cambray, and the latter at Nantes, were brought before the Revolutionary Tribunal, condemned, and executed, with the greater part of their accomplices.[1] Still, however, the Convention appeared so little decided with regard to objects of the first importance, that in all probability they would not have conducted the important struggle against the nations of Europe with more success than the Girondist party had formerly done, if the revolutionary government and the late system of terror had not already accumulated in their hands vast resources, and traced out a plan of procedure, which rendered it comparatively an easy matter to preserve their numerous armies in the train of success to which they were now habituated.

The French towns surrender without resistance.

The allies in their retreat having left strong garrisons in the French towns Condé, Valenciennes, Quesnoi, and Landrecies, which had surrendered to them, these now surrendered to the republican armies with so little resistance, that the conduct of the emperor began to be considered as ambiguous, and he was even suspected of having entered into some kind of compromise with the French. But this suspicion proved groundless; and as soon as the army which had besieged these towns was able to join the grand army under Pichegru and Jourdan, the operations of the campaign were resumed after a suspension of almost two months. The French army divided itself into two bodies. One of these under Jourdan advanced against General Clairfayt, who had succeeded the Prince of Cobourg in the command in the neighbourhood of Maestricht. On the 15th of September the French attacked the whole Austrian posts, extending along a line of five leagues from Liège to Maestricht; and on the following day the attack was renewed with nearly an equal loss on both sides. On the 17th the French, with fifty pieces of cannon, attacked General Kray in his intrenched camp before Maestricht; and the latter was already retiring when General Clairfayt arrived with a strong reinforcement, and, after a severe combat, compelled the French once more to fall back. On the 18th the French having renewed the attack with increased fury upon every part of the Austrian line, obliged the whole to fall back to the neighbourhood of Aix-la-Chapelle. General Clairfayt now took up a strong position on the banks of the Roer, where he declared it to be his wish that he might be attacked; but by this time the spirit of his army had been humbled, desertions were numerous, and discipline became extremely relaxed. On the first of October the French crossed the Maese and the Roer, attacked the whole Austrian positions from Ruremond to Juliers, and, after a bloody engagement, compelled the brave and active though unfortunate Clairfayt hastily to repass the Rhine with the loss of ten or twelve thousand men. The French general did not attempt to cross that river; but one detachment of his army took possession of Coblentz, whilst others laid siege to Venlo and Maestricht, which soon afterwards surrendered.

Progress of the French in the conquest of Holland.

In the mean time the French army under Pichegru entered Holland, and having attacked the allied army under the Duke of York between Bois-le-Duc and Grave, forced the advanced post of Boxtel. Lieutenant-general Abercromby was sent to attempt to recover this post, on the 15th of September; but he found the French in such force that he was obliged to retreat. They were in fact discovered to be nearly eighty thousand strong; and the Duke of York, unable to contend against a force so greatly superior, retired across the Maese with the loss of about fifteen hundred men. Pichegru immediately laid siege to Bois-le-Duc. On the 30th of September, Crevecœur was taken, and Bois-le-Duc surrendered in ten days thereafter.

The French now followed the Duke of York across the Maese; whereupon the greater part of the allied army under his royal highness crossed the Rhine and took post at Arnheim, whither the remainder followed soon afterwards. Nimeguen was occupied by the French on the 7th of November. At this time the Duke of Brunswick was requested to assume the command of the allied army, and if possible to protect Holland; and with that view he proceeded to Arnheim; but after attentively examining the state of affairs, he declined undertaking the heavy responsibility which such a command would involve. The allied troops had now so often fled before their victorious enemies, they had so long been in want of almost every necessary, and had been received so ill by the inhabitants of the countries through which they passed, amongst whom the French cause was extremely popular, that they had lost that regularity of conduct and discipline which alone can afford a reasonable prospect of success in military affairs. The French, on the contrary, well received, abundantly supplied with every thing, and proud of fighting in a popular cause, now conducted themselves with much order, and submitted to the strictest discipline; and, in addition to all these advantages, their leaders had the dexterity to persuade the world that new and unknown arts were employed to give aid to their cause.[2] In human affairs, and more especially in military transactions, opinion or moral force is all-powerful. The French soldiers confided in their officers as men possessed of a kind of omniscience, whilst the allied troops attributed their misfortunes to the incapacity of those in command, and beheld with anxiety new contrivances employed against them, the importance of which was magnified by ignorance, or exaggerated by fear.

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[1] Lebon was a young man of a feeble constitution, and apparently mild in his disposition. In his first mission he had been humane; but he was reproached by the committee for his lenity, and sent to Arras with orders to show himself a little more revolutionary. Determined not to disappoint the inexorable policy of the committee, he now abandoned himself to the most unheard-of excess; combined debauchery with extermination; had the guillotine, which he called *holy*, always in his presence; and made an habitual companion of the executioner, whom he admitted to his table. But Carrier having more victims to destroy, surpassed Lebon in the art of extermination. Bilious, fanatical, and naturally sanguinary, he wanted only an opportunity to execute all which the imagination of Marat would have dared to conceive. Sent to the borders of an insurgent country, he condemned to death the whole hostile population, priests, women, children, old men, and young girls. As the scaffolds were not sufficient for his purpose, he had replaced the Revolutionary Tribunal by a company of assassins, called the company of Marat, and the guillotine by scuttled boats, in which he drowned his victims in the Loire. Immediately after the 9th Thermidor, loud cries of vengeance and of justice for these crimes were raised in the Convention. Lebon was first attacked, as he had been more particularly the agent of Robespierre; the proceedings against Carrier, who had been the agent of the Committee of Public Safety, and whose conduct had been disapproved by Robespierre, were not instituted until some time thereafter; but both happily met the fate which their unparalleled crimes so richly merited.

[2] At this period the telegraph was first used for conveying intelligence from the frontiers to the capital, and from the capital to the frontiers. Balloons were also employed by the French during this campaign, to procure knowledge of the position of the ene-

Successes in Spain.

Whilst these events were occurring in the north, the French arms were scarcely less successful on the side of Spain. Bellegarde was taken, Fontarabia and St Sebastian surrendered, and the whole kingdom of Spain seemed panic-stricken. That feeble government, with an almost impregnable frontier and the most powerful fortresses, made but little resistance; and the difficult nature of their country seemed now their only protection. The history of this war is merely a list of victories gained by the French. On the 17th of November the French general Dugommier was killed in an engagement fought in the Eastern Pyrenees, where, however, his army was successful. On the 20th of the same month the French again attacked the Spaniards, and routed them with the bayonet, without firing a single shot. Tents, baggage, and cannon, for an army of fifty thousand men, fell into the hands of the conquerors, along with the greater part of the province of Navarre. Towards the end of the year an army of forty thousand Spaniards, intrenched behind eighty redoubts, the work of six months, suffered themselves to be completely defeated; their general was found dead upon the field of battle, and the whole Spanish artillery was taken. Three days afterwards, Figueiras, containing a garrison of above nine thousand men, surrendered, although it mounted a hundred and seventy-one pieces of cannon, and possessed abundance of provisions. The French continued their conquests; Rosas surrendered, and the whole province of Catalonia was left at the mercy of the invaders.

The conquest of Holland completed.

But the successes of this wonderful campaign were not yet terminated; the last, and perhaps the most important, although no great effort was necessary to its execution, yet remains to be noticed. The winter had now set in with uncommon severity. For some years past the seasons of Europe had been uncommonly mild; there had been little frost in winter, and no intense heat in summer. But during the preceding season the weather had been remarkably dry until the latter part of the harvest, when there fell a considerable, though by no means an unusual, quantity of rain. Towards the end of December a severe frost bound up the whole of the rivers and lakes of Holland, and in the beginning of January the Waal was frozen over, which had not occurred for fourteen years past. Taking advantage of this circumstance, the French crossed that river on the ice, and seized with little opposition the important pass of Bommell, which at other seasons is so strong by reason of its inundations. The allied army, having been joined by seventeen thousand Austrians, had received orders to defend Holland to the last extremity. They did so, and were successful in repulsing the French for some days between the Waal and the Leck; but the republican army, amounting to seventy thousand men, having at last advanced in full force, the allied troops were compelled to retire across the Yssel into Westphalia. In the course of their march through this desert country, in the midst of severe frost and deep snow, they suffered incredible hardships, and lost a great number of men. The French, in the mean time, advanced rapidly across the country to the Zuyder-Zee, to prevent the inhabitants from flying and carrying off their property. On the 16th of January 1795 a party of horse, without resistance, took possession of Amsterdam. The other towns surrendered at discretion; and in consequence of an order from the States-General, Bergen-op-Zoom, Williamstadt, Breda, and other strong places, opened their gates to the French. By the intense frost, the fleet and the shipping were fixed in their stations, and became a prey to the enemy, who thus, with little effort, made a complete conquest of this rich and highly-defensible country. The people were almost everywhere favourable to their cause; and in fact the power of the stadtholder had been supported solely by the influence of Prussia and England. Through hatred of this office, which had now become odious chiefly to the mercantile aristocracy of Holland, the people were unfriendly to the allies, and, during the war, gave them as little support as possible. The stadtholder and his family now fled to England. And thus terminated a campaign, in the course of which, even before the conquest of Holland, the French had taken two thousand pieces of cannon and sixty thousand prisoners; whilst after that event the conquered territories added a population of nearly fourteen millions to the Republic. Luxembourg and Mayence were the only places on the Rhine which resisted them. But the former was closely blockaded; and the latter, though several times assaulted, successfully held out.

A new constitution.

As the constitution which had been framed in the year 1793 was justly deemed impracticable, a committee was appointed to frame a new one. It was composed of Sièyes, Cambacérès, Merlin de Douai, Thibaudeau, Mathieu, Lesage de l'Eure, and Latouche. On the 19th of April Cambacérès reported that, in the opinion of the committee, a commission should be appointed for this important purpose; and a number of qualified persons were accordingly chosen, whilst all citizens were invited to communicate their sentiments upon the subject, and the committee was instructed to order the best plans to be published. The feelings of the nation at large received additional gratification from the conduct of the Convention towards Fouquier-Tinville, the public accuser,[1] and fifteen judges and jurors of the Revolutionary Tribunal. Having been fully convicted on the 8th of May, they were executed on the 9th, amidst the loud execrations of a vast multitude of spectators.

Insurrection of the Jacobins.

But although the Jacobins were defeated on the 1st and 2d of April, they did not consider themselves as entirely subdued. On the contrary, they were now plotting a more extensive insurrection, which was not to be confined to the capital alone, and they had fixed upon the 20th of May as the period of revolt. In truth, the Convention had been borne along too rapidly by the force of the re-action, and, in its desire at once to repair and to punish, it fell into a most imprudent excess of justice. In this way it drove to despair a numerous party, which had ceased to be formidable, and by threatening it with vast and eternal reprisals, left it no resource but in insurrection, to which many were but too well disposed from other causes, including famine. The arrest of Billaud-Varennes, Collot-d'Herbois, Barrère, and Vadier, not to mention other circumstances, convinced the Jacobins that their whole party was doomed to destruction. Accordingly, on the morning of the day fixed on, the tocsin sounded, and the drums beat to arms in the faubourgs of Saint Antoine and Saint Marceau, in which the Jacobins had always enjoyed the greatest influence. The Convention met on the first alarm; but although the insurrection was far from being a

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my. An engineer ascended in the balloon (which was suffered to rise to a great height, but prevented from being carried away by a long line), made plans of the enemy's encampment, and during an attack sent down notice of every hostile movement.

[1] "Je demande," said Fréron, making himself the organ of public indignation; "je demande qu'on purge enfin la terre de ce monstre, et que Fouquier aille cuver, dans les enfers, le sang qu'il a versé."

secret, the Committee of Public Safety did not appear to have taken any measures to prevent it; and it was only at the moment when the insurgents were approaching that General Hoche was appointed to the command of the armed force, and sent to collect the military and citizens for the protection of the Convention. The hall was presently surrounded, the guards were overpowered, and the mob forced their way into the midst of the assembly. The multitudes of women who appeared on this occasion shouted for bread and the constitution of 1793. Vernier, the president, a man far advanced in years, quitted the chair to Boissy-d'Anglas, who kept it with unexampled fortitude during the remainder of the day. The mob had written on their hats with chalk, "Bread, the constitution of 1793, and the liberation of the patriots." One of the party attached to the Convention having imprudently torn off the hat of one of the insurgents, the multitude attacked him with swords; and he was killed by a musket shot as he fled for protection towards the chair of the president. The majority of the members gradually retired from this scene of lawless intrusion, and left the multitude masters of the hall; but several of the members who remained espoused the cause of the insurgents. The triumph of the latter, however, was but of very short continuance. In the evening they were overpowered by a large body of military, aided by the citizens; the powers of the Convention were restored; and the deputies who had espoused the cause of the mob were put under arrest. But this day decided nothing.

It would appear, indeed, that the Convention and the citizens of Paris considered their triumph as complete; at all events no measures were adopted sufficient to prevent the repetition of a similar outrage. The Jacobins, however, were by no means disposed to consider their cause as desperate. Next day they collected their forces in the suburbs, and in the afternoon made a second attempt to regain the ascendency. The Place de Carrousel was taken without opposition, and some pieces of cannon were even pointed against the hall of the Convention. The members, being wholly unprotected, now endeavoured to gain over the mob by flattery; they fraternised with the faubourgs, without however making them any positive promise; and the intruders retired on receiving an assurance that the Convention was solicitously occupied with the means of procuring subsistence, and that it would soon publish the organic laws of the constitution of 1793. On the 23d, the citizens assembled, and proceeded to the Tuileries to defend the Convention from insult and violence. The military also collected in considerable force; and the Convention, at length encouraged to act on the offensive, decreed that if the faubourg of Saint Antoine did not immediately surrender its arms and cannon, together with the assassin of Féraud, who had been murdered in the very hall whilst covering the president with his body, it would be declared in a state of rebellion. The generals of the Convention at the same time received orders to reduce it by force if necessary; and the insurgents, finding themselves unequal to the conflict, were forced to surrender unconditionally, in order to preserve their property from the depredations of the military. All soldiers found amongst the prisoners were put to death. Six members of the Convention who had been concerned in the insurrection were also tried by a military commission, and condemned. These were Goujon, Bourbotte, Romme, Duroy, Duquesnoy, and Soubrany, all democrats of the Mountain party. When they heard the sentence pronounced they all stabbed themselves with the same knife, which they passed from one to another, exclaiming *Vive la République.* Romme, Goujon, and Duquesnoy were fortunate enough to strike home; the other three were conducted to the scaffold in a dying state, but with their countenances still serene.

In the south of France, the Jacobins, equally turbulent with their brethren in Paris, excited an insurrection at Toulon on the 20th of May; seized on the gates, which they planted with cannon; set at liberty such of their associates as had been incarcerated; and detained the fleet which was about to put to sea. From Toulon they proceeded to Marseilles, forming in all a body about three thousand strong, with twelve pieces of cannon; but on their march they were encountered by Generals Charton and Pactod, by whom they were defeated, and three hundred sent as prisoners to Marseilles.

The Mountain party were now much reduced, and exposed in many places to violent persecution; indeed associations were formed for the purpose of avenging the crimes committed by them during the continuance of their power. The character of Robespierre's government, and the amount of suffering which it inflicted on persons of all ranks and parties, renders it truly astonishing that any number of men should hazard their lives in attempting its restoration. The party was of course gradually abandoned on the fall of the tyrant; but there still remained a small number of its adherents, men of superior activity and enterprise, but uncompromising republicans, who fancied they beheld the revival of royalty and aristocracy in every attempt to establish a mild, sober, and regular government. Hence, even amidst the universal odium cast upon them, the Jacobins expected to rise once more into power; and, what is more singular, the revival of their strength may be dated from the unsuccessful insurrection to which we have just adverted. Their unpopularity began to affect even the Convention, for the people remembered how tamely that body had submitted to the tyranny of Robespierre, and how the majority of its members had been the servile instruments of his power. The press being now free, the most hideous picture of their conduct was accordingly held up to the public; and the greater number began to repent of their victory over the Jacobins, which they foresaw might in the end prove fatal to themselves.

New constitution.

On the 23d of June, Boissy-d'Anglas presented the report of the committee relative to the project of a new constitution. Like its predecessors, it was prefaced with a declaration of the rights of man, and, besides, consisted of fourteen chapters on as many different subjects, viz. the extent of the republican territories; the political state of citizens; primary assemblies; electoral assemblies; the legislature; the judicial authority; the public force; public instruction; the finances; foreign treaties; the mode of revising the constitution; with a provision that no rank or superiority should exist amongst citizens except such as might arise from the exercise of public functions. The legislature was composed of two assemblies; the Council of the Ancients, consisting of two hundred and fifty members, into which none but married men and widowers turned of forty could be admitted; and the Council of Five Hundred, consisting of as many members, who enjoyed the exclusive privilege of proposing the laws, whilst the Council of Ancients might reject or oppose, but without having power to alter, the bills or projects of law submitted to them. The executive power was intrusted to five persons, who were required to be forty years of age at least, and denominated the Executive Directory. The two councils had the power of electing its members; the Council of Five Hundred proposing ten times as many candidates as could be chosen, whilst the Council of Ancients selected the five directors from amongst the fifty candidates thus designed. One member of the Directory was to go out of office annually, by which means they would all be changed in the course of five years. In enacting laws the Directory had no vote, being appointed merely to superintend their execution, to regulate the coining of money, and to dispose of the armed force. The treaties made by the Directory with foreign courts were not binding without the sanction of the legislature, and war could not be declared without a decree of the two assemblies. All the articles of the new constitution underwent each a separate discussion, after which they were ordered to be transmitted to the primary assemblies for their approbation. Previously to this event, however, the Convention, in order to avert the danger which now threatened it from the loss of public favour, decreed that at the approaching general election the electors should be bound to return two thirds of the present members; and if this failed, that the Convention might themselves fill up the vacancies. Decrees to this effect accompanied the constitution; but at Paris the idea of re-electing two thirds of the old members was rejected with indignation, and the absurdity of doing so pointed out with every expression of acrimony and contempt.

The Convention, however, did not fail to publish the approbation of the decrees, as well as of the constitution, by the primary assemblies; although it is pretty certain that great numbers had confounded the one with the other, and given their approbation accordingly. Such, indeed, was the rage of many against the Convention, on account of the decrees already mentioned, that it was even proposed to try all the members before a new revolutionary tribunal, and to punish each according to his crimes. The sections remonstrated to the Convention against the decrees, and the more eager they appeared in the matter, the more persuaded was the Convention of its own imminent danger. Every remonstrance was accordingly disregarded, and the contending parties formed the resolution of settling the question by force.

The 13th Vendemiaire.

About a hundred electors of Paris met in the hall of the theatre in the suburb of St Germain, before the day of meeting which had been appointed by the Convention, and having chosen the Duke de Nivernois as their president, began their debates, absurdly concluding that the sovereignty was vested in the hands of the electors after these had been chosen by the primary sections. A body of troops was sent to dissolve them as an illegal assembly, and this was accomplished without any difficulty, because the citizens had not been unanimous in their sentiments respecting it. This, however, did not prevent the sections from presuming that, by steady perseverance, they would finally prove victorious; they had always found that the party favoured by the co-operation of the Parisian populace had carried their point ever since the commencement of the Revolution. The armed force with which the Convention was surrounded gave the people but little concern, as they had persuaded themselves that the military could never be brought to act against the citizens. The members of the Convention also appeared to suspect their fidelity, and therefore applied for assistance to those very Jacobins whom they had humbled on the 24th of May. If the sections of Paris detested the members for their connection with the atrocities of Robespierre, the Jacobins admired them for this very reason; and from fifteen to eighteen hundred of the latter, released from prison, were put in a state of requisition for assisting the legislative body, and regimented under the denomination of "Battalion of the Patriots of Eighty-nine." The sections of Paris beholding the Convention surrounded by men who had justly obtained the appellations of terrorists and men of blood, now exhibited the strongest desire to engage them. Their leaders designed to make the members prisoners till they could be conveniently brought to trial, and in the interval to conduct public affairs by committees of the sections, till a new legislative body could be chosen. General Miranda was to have the command of the armed force after the overthrow of the Convention; but as it was still problematical which party would be triumphant, he retired to the country till the event should declare it, ready to share the reward of a conquest to which he had resolved to contribute nothing. The superior officers of the Convention were not to be depended on; but the subalterns and the soldiers continued firm, to which they were strongly exhorted by their Jacobin auxiliaries. It was also greatly in favour of the Convention, that the first moments of enthusiasm were permitted to pass away; this was a fatal error, which no subsequent vigour could repair.

As the danger, however, was imminent, the Convention had declared its sittings permanent; called around its enceinte the troops in the camp at Sablons; and concentrated its powers in a committee of five persons, instructed to adopt such measures as they should judge necessary for the public safety. These members were Colombel, Barras, Daunou, Letourneur, and Merlin de Douai. In the night of the 11th Vendemiaire the decree which dissolved the college of electors, and armed the battalion of the patriots of 1789, excited the greatest agitation; the générale was beaten; the section Lepelletier thundered against the despotism of the Convention, and the return of terror; and during the whole day of the 12th it was occupied in disposing the other sections to combat. In the evening, the Convention, not less agitated itself, resolved to assume the initiative, surround the disaffected section, and terminate the crisis by disarming it. The general of the interior, Menou, and the representative Laporte, were charged with this mission. The head-quarters of the sectionaries was in the convent of the Filles-Saint-Thomas, before which they were drawn up in order of battle to the number of six or seven hundred. They were surrounded by superior forces, on flank by the boulevards, and in front on the side of the Rue Vivienne. Instead of disarming, however, the chiefs of the expedition parleyed with them; and it was at length agreed that both parties should retire. But scarcely had the troops of the Convention withdrawn when the sectionaries returned in greater force than before. This was to them a real victory, which, being exaggerated in Paris, excited their partisans, augmented their number, and gave them courage to attack the Convention the following day. At eleven o'clock, the latter received information of the issue of this expedition, and the dangerous effect which it had produced. Menou was immediately deprived of the command, which was conferred on Barras; and the latter demanded of the committee of five the appointment, as his second in command, of a young officer who had distinguished himself at the siege of Toulon; "a man," said he, "of head and resolution, and capable of serving the Republic at such a moment of peril." This young officer was Bonaparte, who immediately presented himself before the committee; but nothing in his appearance or demeanour yet indicated his astonishing destinies. Little connected with party, and called for the first time to perform a part on a great scene, his countenance betrayed something of timidity and want of confidence, which, however, he lost in the preparations for action and in the heat of the battle. He caused the artillery to be brought in all haste from the camp of Sablons, and disposed the guns as well as the troops, amounting to five thousand men, on the different points of attack. On the 13th of Vendemiaire (5th October), about mid-day, the enceinte of the Convention had the appearance of a strong place, which could only be taken by assault. The line of defence extended, on the left of the Tuileries, along the river, from the Pont-Neuf to the Pont Louis XV., and on the right occupied all the little streets which debouch into that of Saint-Honoré, from those of Rohan, L'Echelle, and the cul-de-sac Dauphin, to that of the Revolution. In front, the Louvre, the garden of the Infanta, and the Carrousel were planted with cannon; and behind, the

Pont-Tournant and the Place de la Révolution formed a park of reserve.

Thus prepared, the Convention waited for the insurgents, who soon advanced upon several points. They had about forty thousand men under arms, commanded by Generals Danican and Duhoux, and an ex-garde-du-corps named Lafond. The thirty-two sections which formed the majority had furnished their military contingents; but of the sixteen others, several sections of the faubourgs had their troops in the battalion of 1789; some sent reinforcements during the action, others, though well disposed, were unable to do so, and a few remained neutral. About three o'clock General Carteaux, who occupied the Pont-Neuf with four hundred men and two four pounders, was overpowered by several columns of sectionaries, and obliged to fall back as far as the Louvre. This advantage emboldened the insurgents, who were in force upon all points, and General Danican now summoned the Convention to withdraw the troops and to disarm the terrorists. Several members declared for conciliatory measures. Boissy-d'Anglas was for entering into a conference with Danican; Gamon proposed a proclamation, in which, on the citizens engaging to retire, the Convention should promise to disarm the battalion of 1789; and Lanjuinais, after some observations on the imminence of the danger, and the miseries of civil war, supported this proposition. But Chénier having declared that there was now nothing for the National Convention but victory or death, that body, on the motion of Fermoud, passed to the order of the day. Seven hundred muskets were now brought in, and the members of the Convention armed themselves as a corps de reserve. The combat began in the Rue Saint-Honoré, of which the insurgents were masters; the first shots proceeded from the Hôtel de Noailles, and a heavy fire was instantly opened along the whole of that line. On the other flank, two columns of sectionaries, about four thousand strong, commanded by Count de Maulevrier, debouched by the quays a few minutes afterwards, and attacked the Pont-Royal. The battle now became general; but it could not last long, as the place was too formidably defended to be taken by assault. After an hour's hard fighting the sectionaries were driven out of Saint-Roch and the Rue Saint-Honoré, by the cannon of the Convention and the battalion of 1789. The column of the Pont-Royal received three discharges of artillery, directly along the bridge, and obliquely from the quays, by which means it was completely shattered, and driven back in the greatest disorder. At seven o'clock, the troops of the Convention, victorious at all points, assumed the offensive; and at nine they had dislodged the sectionaries from the theatre of the Republic, and the posts which they occupied in the neighbourhood of the Palais-Royal. The latter had prepared to form barricades during the night; but several discharges of round shot fired along the Rue Richelieu prevented them. On the morning of the 14th the Conventional troops disarmed the section Lepelletier, and re-established order in the others. The victory was used with moderation. The assembly had only combated in its own defence, and had no vengeance to gratify.

The victors attributed this insurrection to the influence of the royalists; but whether they were right in this opinion or not, it is certain that the cause of royalty had now become less odious to the people generally than the bloody extravagance of republicanism; though, as to the mob, they seem to have looked no further than the disarming of the Jacobins, and obtaining new representatives. The sittings of the Convention terminated on the 27th of October, and it was succeeded by the new legislature, in terms of the constitution. Amongst its last decrees was one granting a general amnesty for all crimes and proceedings of a revolutionary nature; but the emigrants, transported priests, and every one concerned in the last insurrection, were excluded from the benefit of it.

Measures of the new legislature.

The first step of the new legislature was to divide itself into two councils, and proceed to the election of an Executive Directory. The Council of Five Hundred was bound to present to the other council fifty candidates, and a list was accordingly made out; but it consisted of no more than the five whom the council wished to be chosen, the other forty-five being obscure persons, farmers and peasants, so that the Council of Ancients, deprived of all power of election, were obliged to appoint Sièyes, Barras, Rewbell, Lareveillère-Lepeaux, and Letourneur de la Manche, none of the others being qualified for the office. Sièyes, however, did not deem it prudent to become one of the five republican kings; and on his declining to accept of the new dignity, Carnot was appointed in his stead. The form of government now established did not promise to be productive of much happiness or tranquillity, as the most important offices in the state were filled by men odious to the people. The members of the Executive Directory, excepting only Lareveillère-Lepeaux, had always been connected with the party of the Mountain, and employed the Jacobins in almost every official department; a circumstance which could scarcely fail to render the government peculiarly obnoxious. It was feared that a directory chosen by the Jacobins, and new legislators appointed by the people, might one day be the means of totally subverting the constitution; and the result showed that this apprehension was not groundless.

Treaty of peace with Prussia.

On the 10th of April a treaty of peace with the king of Prussia was presented to the Convention, in order to be ratified. By virtue of this treaty, it was agreed that the republican troops should be immediately withdrawn from the territories of Prussia on the right bank of the Rhine, but that the territories which France then possessed on the left bank of that river should be retained till a general peace. A mutual exchange of prisoners of war was agreed on, and the intercourse between the two countries placed on its former footing. Measures were also adopted to transfer the theatre of hostilities from the northern parts of Germany. The king of Sweden at the same time acknowledged the French Republic, and his ambassador was received at Paris with great solemnity. In the month of May another treaty was concluded with Prussia, which had a special reference to the line of neutrality. The cantons of Switzerland followed the example of the king of Sweden; and on the 22d of July a treaty of peace was also concluded at Basle, between the Republic and the court of Spain, in consequence of which France gave up all the conquests she had made in that country, and the original frontier was restored; whilst, in return, the Republic received all the Spanish part of St Domingo. In this treaty the Dutch Republic was included, and the mediation of the king of Spain, in favour of Portugal and the Italian princes, was accepted by France.

Death of Louis XVII.

On the 9th of June, the dauphin, the heir to the throne of the unfortunate Louis XVI., and also his only son, died in the prison of the Temple, where he had been confined with his sister since the death of his father. His death interested the French nation so deeply in favour of his family, that the Convention found it prudent to liberate the princess. The Committee of Public Safety proposed to the emperor to give her in exchange for the commissioners whom Dumouriez had sent as prisoners to the Austrians, together with Semonville and another person, who had been seized on their way to Turkey as envoys extraordinary from the French Republic. This proposition was agreed to, and the exchange took place in consequence, at Basle in Switzerland.

Expedition to Quiberon.

If Britain was unfortunate upon the Continent, she still retained her superiority on her own element. On the

14th of March a fleet under Admiral Hotham engaged a French fleet, and took two sail of the line, the Ça Ira and Censeur; but this was nearly counterbalanced by the loss of the Berwick and Illustrious. Three French ships of the line were captured by Lord Bridport on the 23d of June, in an attack on the enemy's fleet off Port L'Orient; the rest effected their escape. Britain having thus evinced her usual superiority by sea, advantage was taken of this circumstance to send assistance to the royalists in the western departments; but unfortunately for them it came too late. The Convention had offered them a treaty, which was accepted and signed at Nantes on the 3d of March, by deputies from the Convention on the one part, and, on the other, by Charette, Sapineau, and the rest of the chiefs of La Vendée, and by Cormartin, as representatives of the party called Chouans. Stofflet also submitted to the Republic on the 20th of April. But the countenance given by Britain to the royalists induced them to disregard these treaties. The troops sent to their aid were composed of emigrants in the pay of Great Britain, and a number of prisoners who had agreed to join the royal cause. Puisaye commanded this motley army, and the Count de Sombreuil afterwards joined him with an inconsiderable reinforcement. The expedition arrived in the bay of Quiberon on the 25th of June, and arms were put into the hands of the inhabitants of the country; but it was soon found that the latter could not be of much advantage to regular troops. A resolution was therefore adopted to withdraw the emigrant army within the peninsula of Quiberon; and the fort of the same name, with a garrison consisting of about six hundred men, was taken on the 3d of July, and occupied by the emigrants. But all the posts without the peninsula were carried by an army under General Hoche, the emigrants and Chouans escaping in the boats of the British fleet, or flying for protection under the cannon of the fort. The republicans then began to erect formidable works on the heights of St Barbe, which commanded the entrance of the peninsula. To prevent these operations, a sally was made from the fort on the 7th, but without effect; and another in still greater force had no better success. The whole forces in the peninsula, including Chouans, amounted to about twelve thousand men, five thousand of whom were sent to attack the heights of St Barbe. On this position the republicans were intrenched in three camps, two of which were taken without difficulty; but as the emigrants rushed forward to attack the third, a masked battery was opened upon them with grape shot, which caused a dreadful slaughter, and few of the emigrants would have effected their escape, had not the fire of the British ships compelled the republicans to abandon the pursuit.

Failure of the Quiberon expedition.

It was now evident what would be the fate of this expedition, and desertion amongst the emigrants became very frequent, especially those who had been liberated from prison on condition of serving against the Republic. On the evening of the 20th, the weather was tempestuous, and this induced the emigrants to indulge in a fatal security. The troops of the Republic were conducted in silence along an unguarded part of the shore, and surprised one of the posts, where they found the artillerymen asleep. They extinguished the lanthorn which was intended to give the British fleet the alarm, and seized on their matches. Some of the emigrants threw down their arms and joined the republicans, whilst others maintained an obstinate contest before they surrendered. The Count de Sombreuil was taken and put to death, together with the Bishop of Dol and his clergy; none being spared but such as pretended that their appearing in arms against the republicans was purely owing to compulsion.

Continental affairs.

But it is time to return to the affairs of the Continent. After a protracted siege Luxembourg surrendered on the 7th of June, and put the French in possession of the whole left bank of the Rhine, excepting Mayence, which the Austrians could conveniently supply with every necessary from the opposite bank of the river. The republicans therefore determined to cross the river, and to invest it on every side; but the attempt was delayed until the result of the Quiberon expedition should be fully known. In the month of August, the passage of the Rhine at Dusseldorf was effected by Jourdan, who had been appointed commander-in-chief of the army of the Sambre and Meuse. Having driven in the Austrian posts, he crossed the Maine, and invested Mayence and Cassel; whilst Pichegru, having crossed the river near Manheim with the army of the Rhine and Moselle, at the same time took possession of that city. But a strong detachment of this army having driven Wurmser from an important post, began to plunder, and getting into confusion, the Austrians took prompt advantage of the circumstance, returned to the charge, and defeated the republicans. Jourdan was pursued by Clairfayt as far as Dusseldorf, where he made a stand; and Pichegru recrossed the Rhine near Manheim, leaving in that city a garrison of eight thousand men. But after a vigorous siege it surrendered to the Austrians; and the republicans were also driven from the vicinity of Mayence, upon which an armistice of three months was agreed to.

Conduct of the Directory.

The Directory, however, still resolved to prosecute the war with vigour, and therefore, during the winter, made great preparations for another campaign. But the Mountain party being again possessed of power, now began to discover their restless and turbulent disposition; incapable of long submitting peaceably to any government, they soon became disgusted with the Directory which they themselves had established, and were continually disturbing the public tranquillity. After the 5th of October, the people of Paris durst not openly avow their abhorrence of the Jacobins; but as it was understood that wearing green cravats was a token of contempt for these partisans, this piece of dress was prohibited by the Directory, on the pretence of its being a mark of attachment to royalty. Ashamed of this absurdity, however, they in a few weeks recalled their edict, and the proscription of green cravats ceased. In the south of France, the authority of the Jacobins produced very serious effects. Fréron, by whom they had been abandoned after the death of Robespierre, rejoined them before the 5th of October, and was sent with full administrative powers to Toulon, where he dismissed the municipality which had been chosen by the people, restored the Jacobin clubs, and caused to be imprisoned every person whom he suspected. Alarmed at the numerous complaints which were made from every quarter against the conduct of these turbulent men, the Directory resolved to obtain the confidence and affections of the people by deserting them entirely. Fréron was recalled from Toulon, and moderate men replaced the Jacobins in most public employments. The Directory also issued a public declaration that its confidence had been abused. The minister of police was charged to remove from Paris the members of former revolutionary tribunals, and such as had been active leaders of the Jacobins; and ten thousand men, called the Legion of Police, who had acted against the Parisians on the 5th of October, and were decidedly favourable to the Jacobins, received orders to join the armies on the frontiers. This induced the violent Jacobins to concert a plan for the ruin of the Directory and the majority of the councils, who had now abandoned them. But their designs were discovered and completely defeated. On the 10th of May the guards were increased, and large bodies of cavalry were stationed round the Luxembourg and Tuileries. The Council of Five Hundred was informed by the Directory that a terrible plot was ready to break forth on the ensuing morning. The conspirators, at the ringing of the morning bell, were to proceed in small parties of three or four, to the houses of those persons whom they had singled out for destruction; and having murdered these, they were then to unite in one body against the Directory, whose guard they conceived themselves able to overpower. Some of the leaders of this conspiracy were arrested, amongst whom was Drouet, postmaster of Varennes, who had stopped the unfortunate Louis on his way to the frontiers: with ten others, he was condemned at Vendôme, but he subsequently contrived to make his escape. The defeats which the Jacobins thus experienced, and the disgrace into which they had fallen, determined the moderate party in the two councils to attempt to procure the repeal of the decrees of the Convention, which had granted them an amnesty, and confirmed the laws against emigrants. A number of days were occupied in the discussion of these topics, but the moderate party gained nothing in favour of the emigrants; and with respect to the Jacobins, all they obtained was, that such of that party as had owed their preservation to the amnesty, should be deemed incompetent to hold any public offices.

State of the inances.

Another matter of no less serious a nature now called for the attention of the republican government. This was the deplorable state of the finances. Whilst the usurpation of Robespierre continued, terror supported the credit of the assignats, which, joined to the sale of the church lands and the property of the emigrants, furnished ample resources; but no provision was at all thought of for future exigencies. If money was wanted, more assignats were fabricated, and no inquiry was made concerning the public expenditure, as no taxes were demanded from the people. The Directory having complained to the councils of the great distress under which they laboured, and of the want of sufficient funds to meet the unavoidable expenses of the ensuing campaign, a law was passed on the 25th of March, giving authority to dispose of the remainder of the church lands at the value formerly fixed on them, namely, twenty-two years' purchase. A new paper currency, termed *mandats*, was also to be issued, and to be received in payment; but government had now lost all credit, and the mandats became rapidly depreciated in value, which increased the demand for national property. To prevent this, the legislature decreed that one fourth of every purchase should be paid in cash; a provision which obstructed the sale of the national property, and increased the circulation of mandats.

ational nstitute stablished.

During the preparations for the approaching campaign, the Directory attempted to render themselves popular at home, by establishing, under the protection of government, the French National Institute. Every man of science or learning who had escaped the persecution of the Mountain party was invited to become a member; and it was opened on the 4th of April, in the hall of the Louvre, when the ambassadors of Spain, Prussia, Sweden, Denmark, Holland, America, Tuscany, Genoa, and Geneva, were present, and the members of the Directory attended in their robes of state. The directorial president expressed the determination of the executive government to afford every encouragement to the improvement of science, literature, and the arts; and the president of the Institute replied that it was the determination of the members to endeavour to give lustre to the republican government, by the exercise of their talents, and by their publications. The speeches were enthusiastically applauded by a multitude of spectators, and the general expectation was, that France would now enter upon a career of glory and prosperity wholly unprecedented in her past history.

Proposal of peace by Great Britain.

About this time an approach towards a negotiation with France was made on the part of Great Britain, through Mr Wickham, ambassador to the Swiss Cantons. On the 8th of March a note was communicated to M. Barthélèmy, ambassador of the French Republic, in which it was inquired, whether France would be willing to send ministers to a congress to negotiate peace with his Britannic majesty and his allies? whether she would be inclined to communicate the general grounds upon which she would be willing to conclude peace, that his majesty and his allies might consider them in concert? and, whether she would desire to communicate any other mode of accomplishing a peace? Any answer which might be returned was directed to be transmitted to the British court; but it was at the same time intimated that Mr Wickham had no authority to discuss these subjects. On the 26th of the same month an answer was returned by Barthélèmy in name of the Directory, complaining of the insincerity of the British court in giving its ambassador no authority to negotiate, and stating that the proposal of a congress rendered negotiation endless. The Directory expressed their wish to obtain peace, but declared that no portion of territory would be relinquished which, in virtue of the constitutional decree, formed part of the Republic. To this note no reply was made; but it was complained of to the foreign ministers resident at the court of London, and considered as leaving Britain no alternative but the prosecution of the war.

Royalists in the west subdued.

During the winter season the Directory found means to reduce the western departments. The expedition from England had tempted the royalists once more to try their fortune in the field; but after a number of defeats, their leaders, Charette and Stofflet, were apprehended and put to death on the 29th of March; and this tended to suppress the insurgents in every quarter. Domestic enemies being thus subdued, the republican government was enabled to make the most vigorous exertions on the frontiers. Their military force was divided into three armies: the army of the Sambre and Meuse under Jourdan, principally stationed about Dusseldorf and Coblentz; the army of the Rhine and Moselle, commanded by General Moreau, stationed on the Upper Rhine, from Landau to Treves; and the army of Italy, which occupied the Italian coast from Nice towards Genoa, the command of which was now bestowed on General Bonaparte, who had so greatly signalized himself on the 13th Vendemiaire.

Bonaparte assumes the command of the army of Italy.

The army of Italy, which had hitherto operated on the flank of the Alps, was destitute of every thing, and scarcely thirty thousand strong; but it was full of courage and patriotism, and by means of it Bonaparte commenced that brilliant career of victory which had nearly terminated in the subjugation of all Europe. His plan was to debouch into Italy between the Alps and the Appennines, to turn the former range, intersect the enemy's line, and operate on his flanks. He had before him the allied force, consisting of ninety thousand men, placed in the centre under Argentau, on the left under Colli, and on the right under Beaulieu; but in a few days this immense force was dispersed by prodigies of genius and of courage. On the 9th of April the campaign was opened by General Beaulieu attacking the post of Voltri, six leagues from Genoa; the republicans defended themselves till the evening, when they retreated to Savona. Next day Beaulieu renewed his attempts, and penetrated to Montenotte, which was occupied by Colonel Rampon, with fifteen hundred men. In a moment of enthusiasm, their commander prevailed on them to swear that they would never abandon their post; and they kept their oath; for, in spite of every effort that could be made on the part of the enemy, they succeeded in arresting the progress of the Austrian general during the remaining part of the day. During the night the right wing of the French army, under Laharpe, took up a position in rear of the redoubt of Montenotte; whilst Bonaparte, Massena, Berthier, and Salicetti, advanced by Altara, to take the enemy in flank and rear. Powerful reinforcements were in the mean time sent to Beaulieu, who, on the morning of the 11th, again attacked the position of Montenotte; but the obstinate resistance of Laharpe, and the approach of Massena, at length forced the Austrians and Sardinians to give way on all sides; two of the enemy's generals were wounded, and two thousand five hundred men became prisoners. The republicans pursued them beyond Cairo, which, on the following day, fell into their hands.

Defiles of Millesimo forced.

On the 13th April, General Augereau forced the defiles of Millesimo, and by a rapid movement surrounded General Provera at the head of fifteen hundred grenadiers; but instead of surrendering, this brave officer forced his way through the enemy, and intrenched himself in the ruins of an old castle situated on the summit of the hill. Augereau with his artillery endeavoured to dislodge him, but without success; he then arranged his troops in four columns, and made an attempt to carry Provera's intrenchments by storm, which also proved unsuccessful. In this affair the French had two generals killed, and Joubert was wounded. A division was now left to continue the blockade of Provera The hostile armies continued in presence during the 14th. On the following day the Austrians made an attack on the republican centre; but Massena turned the left flank of their left wing in the vicinity of Dego, whilst Laharpe turned the right flank of the same wing; one column kept in check the centre of the Austrians, another attacked the flank of their left wing, and a third gained its rear. They were completely defeated at all points, with the loss, besides killed and wounded, of eight thousand prisoners. General Provera also surrendered.

Dego retaken.

After his defeat at Millesimo, Beaulieu made a vigorous effort to change the fortune of war. With seven thousand of his best troops he attacked Dego, where the republicans after their success were indulging in security, and made himself master of the village; but the troops rallied under Massena, who renewed the combat, and employed the greater part of the day in his efforts to retake it. The republicans were thrice repulsed, but Bonaparte having arrived in the evening with reinforcements, the village was retaken, and fourteen hundred men were made prisoners. Bonaparte had now accomplished his object of separating the Austrian and Sardinian armies; for his right wing being secured against the efforts of Beaulieu by the village of Dego, he was enabled to act against the Piedmontese troops with the greater part of his force. Augereau powerfully seconded his exertions, and having opened a communication with the Tanaro, Serrurier was now approaching the town of Ceva, in the vicinity of which the Piedmontese had an intrenched camp with eight thousand men. The redoubts which covered this camp were, on the 16th, attacked by Augereau, who carried the greater number of them, and thus forced the Piedmontese, during the night, to evacuate Ceva, which Serrurier entered in triumph on the morning of the 17th. Count Colli repulsed Serrurier on the 20th; but Bonaparte, on the 22d, defeated the Sardinian general at Mondovi, and there decided the fate of Piedmont. The beaten army endeavoured to make a stand at Fossano, whilst its wings rested on Coni and Cherasco; but on the 25th the latter place was taken by Massena, Fossano by Serrurier, and Alba by Augereau.

Armistice with Sardinia.

Previously to these movements, however, Count Colli had requested an armistice, which General Bonaparte granted, on condition that the fortresses of Coni, Ceva, and Tortona should be given up to him, with their magazines and artillery, and that he should have permission to cross the Po at Valentia. The armistice was signed on the 29th of April, and a definitive treaty was concluded at Paris on the 17th of May. The conditions, in as far as they concerned his Sardinian majesty, were unquestionably humiliating. The duchy of Savoy was given up to France, as were also the counties of Nice, Tende, and Breteuil; an amnesty was granted to all his subjects who had been prosecuted for political opinions; and it was agreed that the French troops should have free access to Italy through his territory. His Sardinian majesty also bound himself not to erect fortresses on the side of France, to demolish those of La Brunette and Suza, and to confess that his conduct to the last ambassador of the Republic had been disrespectful.

In the mean time, the republican army advanced towards the Po. Deceived respecting the article of the armistice which stipulated permission to Bonaparte to pass the river at Valentia, Beaulieu, concluding that the republican chief seriously intended to cross at that place, made every possible preparation to oppose him; whilst Bonaparte rapidly penetrated into Lombardy, and on the 7th of May was sixty miles down the river towards Piacenza before the enemy had obtained information of his march. He passed the river without difficulty. Six thousand infantry and two thousand cavalry were dispatched by Beaulieu, when it was too late, to oppose the passage of Bonaparte across the river; but they were met and defeated on the following day, near the village of Fiombio, whilst five thousand more who had advanced to their assistance were repulsed by Laharpe. On the 9th an armistice was granted by General Bonaparte to the Duke of Parma, on condition of paying two millions of francs, and delivering ten thousand quintals of wheat, five thousand quintals of oats, and two thousand oxen, for the use of the army. The duke likewise consented to give up twenty of his best paintings, to be selected by the republicans.

Victory at Lodi

Forced to abandon the Po, General Beaulieu crossed the Adda at Lodi, Pizzighettone, and Cremona, leaving some troops to defend the approaches to Lodi. On the 10th, the latter were attacked by the advanced guard of the republicans, who drove them into the town, and pursued them so rapidly that they had not time to break down the bridge on the Adda. The Austrians defended the passage with thirty pieces of cannon, and the republican officers, after holding a consultation, were of opinion that the bridge could not be forced. Bonaparte, however, having addressed his grenadiers, who declared themselves willing to make the attempt, formed them in close column, and, waiting a favourable moment, ordered them to advance. Under cover of the smoke of the enemy's artillery they reached the middle of the bridge unobserved; but the moment they were perceived a tremendous fire of grape and canister shot in a few seconds strewed the bridge with dead bodies. The republican officers, including the general-in-chief, now flew to the head of the column, and, urging on the troops, broke into the Austrian ranks, took the cannon, and forced the enemy to fly in all directions.

All that seems to have been expected from the campaign of Bonaparte in Italy was to induce the different princes and states to abandon the coalition against France, which every one of them had assisted, either with troops or with money and provisions. But this youthful chief far surpassed all that even the most sanguine had anticipated. The occupation of Alessandria, which opens the whole of Lombardy; the demolition of the fortresses of Suza and La Brunette on the side of France; the acquisition of the county of Nice and of Savoy; and the disengagement of the other army of the Alps under Kellerman, which was now rendered disposable; such were the fruits of a campaign of fifteen days, during which six victories had been gained. The king of Sardinia was also detached from the coalition against France, and so humbled and weakened as to be no longer in a condition to occasion any uneasiness to that country. Bonaparte likewise made himself master of Ferrara, Bologna, and Urbino, and granted to his holiness and the Duke of Modena an armistice on the usual terms of large contributions in money, as well as in paintings and curiosities for the national gallery of France. Terrified by his march into the Roman States, the Neapolitan cabinet, in like manner, requested a peace; and Bonaparte agreed to an armistice without any of the humiliating conditions demanded from the other states of Italy. He next proceeded to Leghorn, in order to drive out the English, and confiscate their property; and thus finished the task assigned him before the campaign on the Rhine had commenced. Mantua, it is true, was still in possession of the imperial troops; but that fortress was in a state of siege, and the rest of Italy had submitted to the French Republic.

Success of the French in Germany.

With a view to lessen the exertions of the republicans in Italy, the contest was renewed in Germany. General Jourdan was therefore instructed to denounce the armistice, and renew hostilities on the 31st of May. Jourdan at this time had to contend with General Wartensleben, whilst the archduke put himself at the head of the army in the Hundsruck to oppose Moreau on the Upper Rhine. The commencement of the campaign on the part of the French was distinguished by a singular stratagem, employed with the view of drawing the whole of the Austrian forces to the Lower Rhine, that an opportunity might thus be afforded General Moreau of suddenly entering Suabia, and carrying the war into the hereditary dominions of Austria. Jourdan began to make vigorous exertions, and Moreau remained inactive. On the 31st of May the lines of Dusseldorf were abandoned by the left wing of Jourdan's army, under the command of General Kléber, who defeated the Austrians in his march towards the Sieg. Advancing with his centre and right wing, Jourdan forced the Austrian posts on the Nahe, effected the passage of the Rhine, blockaded Ehrenbreitstein, and hastened forward as if he had intended to form the siege of Mayence. As these movements brought the archduke into the perilous situation of having Moreau in his front and Jourdan in his rear, he therefore crossed the river in haste, leaving the fortresses of Mayence and Manheim to retard the advance of Moreau, and attacked the advanced guard of General Jourdan, which, after an obstinate conflict, he forced to retire. Jourdan then withdrew to his former position, and Kléber on the 20th entered the lines of Dusseldorf.

But the archduke had no sooner withdrawn from the palatinate to force Jourdan down the Rhine, than Moreau marched speedily towards Strasburg, so that the hostile armies seemed to be receding from instead of approaching each other. The passage of the river opposite to Kehl was effected by Moreau on the 24th of June; an operation attended with considerable difficulty, owing to a sudden swell, which prevented the Austrians being taken by surprise, as appears to have been the original intention of the republican commander. The intrenchments on the islands occupied by troops were instantly carried at the point of the bayonet, and two thousand six hundred republicans effected a landing on the opposite bank, where they were exposed to the Austrian cannon from the camp of Wilstedt, and also to the fire of the fort. Still, however, they maintained their ground, and even acted on the offensive, until the boats returned with reinforcements, when the fort and redoubts were carried by storm, and the Austrians retreated towards Offenburg.

Austrians defeated by Moreau.

In consequence of the archduke's departure to the Lower Rhine in pursuit of Jourdan, and the detachments sent to Italy to check the victorious career of Bonaparte, Moreau was in a condition to enter Suabia at the head of a superior force. On the 26th of June he succeeded in compelling the Austrians to abandon their camp at Wilstedt, and next day proceeded with his army in three columns against another body of fifteen thousand men posted near Offenburg. A strong detachment was sent to their assistance by Wurmser, but the reinforcement was defeated on its march by two republican columns, and Offenburg was evacuated during the night. On the 2d of July a body of the French under General Laroche seized on the loftiest point in the ridge of mountains denominated the Black Forest; and the Austrians were next day, after an obstinate resistance, driven from the pass of Friedenstadt, by which their communication with the emigrants under the Prince of Condé was entirely cut off. On the 8th the Austrians were attacked at Rastadt by the left wing of the republican army, commanded by General Dessaix, and, after a most determined resistance, obliged to retreat to Ettingen.

The archduke now arrived with his army on the Lower Rhine, leaving Wartensleben to check the advance of General Jourdan, who, as soon as he received information of the archduke's departure, resumed the offensive. Kléber, as before, set out from the lines at Dusseldorf, whilst the centre and right wing crossed the Rhine in the vicinity of Coblentz. The French forced the posts of Ukareth and Altenkirchen; the whole army under Jourdan crossed the Lahn on the 9th of July; and next day Wartensleben was defeated with great slaughter, and the loss of five hundred prisoners. On the 12th the republicans entered Franckfort. The two imperial armies were now at no great distance from each other, being in fact in the centre between those of Moreau and Jourdan. Had the archduke, therefore, found it practicable to resist for a time one of these armies, whilst he fell upon the other with the main body of his army, it is not improbable that an end might thus have been put to any further invasion of Germany. But the activity of the republican officers was not to be easily checked, nor could their progress be arrested by any partial exertions. His last resource, therefore, was to give battle to Moreau, which he accordingly did; and the action was obstinately contested on both sides. The French, in their endeavours to force the heights of Rollensolhe, were four times repulsed; but, after a terrible slaughter, they at length succeeded in carrying the position at the point of the bayonet.

In consequence of the loss sustained at the battle of Ettingen, the imperial armies retired eastward, the archduke retreating through Suabia towards Ulm, where he had magazines. At every position of any strength he made a stand, in order, as much as possible, to obstruct General Moreau's advance; whilst Wartensleben, in his retreat through Franconia, offered a similar opposition to Jourdan. The archduke was forced by Moreau to cross the Neckar, and afterwards the Danube, by which means the whole circle of Suabia was in the rear of the republicans; and Wartensleben was obliged to retreat through Aschaffenburg, Wartsburg, Schweinfurt, and to cross the Rednitz, in order to avoid the army of Jourdan, which was pressing on his rear. Jourdan continued his advance until his right wing, commanded by General Bernadotte, reached Neumarck, and his advanced posts Teining; and the main body of the army having pursued Wartensleben beyond the Nab, arrived at Amberg on the 22d of August.

Great alarm in Germany.

The three republican armies under Moreau, Jourdan, and Bonaparte, thus commanded an immense tract of country, extending from the frontiers of Bohemia to the shores of the Adriatic (excepting only a part of the mountains of Tyrol), and caused unspeakable alarm throughout the whole of Germany. The payment of four millions of francs procured a peace for the Duke of Wirtemburg; and the circle of Suabia obtained it on condition of paying twelve millions of livres, and delivering for the use of the army eight thousand four hundred horses, five thousand oxen, a hundred thousand quintals of wheat, fifty thousand quintals of rye, a hundred thousand sacks of oats, a hundred thousand pairs of shoes, and a large quantity of hay. Peace was granted to the Margrave of Baden upon similar terms; and negotiations were also entered into by the Elector of Bavaria and the circle of Franconia, each party offering large sums in order to obtain it; and even the diet of Ra-

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tisbon sent a deputation to the republican generals to treat for a neutrality. About the same time Spain concluded a treaty offensive and defensive with France, and in consequence soon afterwards declared war against Great Britain. Bonaparte was still detained in Italy; but had it been in his power to traverse the Tyrol, and reach the Danube, it is probable that the emperor of Germany would have been obliged to accept peace upon any terms which the conquerors thought proper to prescribe. But though abandoned by every member of the coalition except Britain, the pecuniary aid furnished by the latter enabled the emperor to extricate himself from the dangers which surrounded him; with an almost unlimited command of money, one army after another was raised to check the career of Bonaparte in Italy, whilst his German armies were recruited by extensive levies, and by mercenary troops drawn from the states which had made peace with France.

Able conduct of the Archduke Charles.

The Archduke Charles having received strong reinforcements, came to the resolution of encountering Moreau at Umersheim. A battle accordingly ensued, which lasted seventeen hours, when one of the wings of the Austrian army succeeded in gaining about four leagues of territory in the rear of the republican army; but as the archduke had received information that Wartensleben was unable to maintain his ground against Jourdan, he deemed it prudent to retreat, and adopt new measures. On the 17th of August he left General Latour to keep Moreau in check, and crossing the Danube at Ingolstadt, marched to the relief of General Wartensleben, determined with their united forces to fall upon Jourdan. On the 23d he attacked Bernadotte at Teining, and compelled him to retreat towards Nuremberg. The archduke having thus placed himself on Jourdan's right, whilst Wartensleben menaced him in front, the French general was forced to fall back, which he did accordingly on the 24th. The state of the French finances at the beginning of this campaign was such that the armies of Jourdan and Moreau were under the necessity of making the war support itself, or, in other words, supplying their immediate wants by means of requisitions. This was particularly the case with Jourdan's army, which, when it commenced its retreat, suffered nearly as much from the exasperated inhabitants as from the pursuing enemy. The archduke and Wartensleben having effected a junction of their forces, the former was enabled to detach General Nauendorf with reinforcements to Latour, in order to keep Moreau in check, whilst he continued his pursuit of Jourdan towards Würtzburg. Here the French made a stand on the 3d of September, and a severe engagement ensued, in which Jourdan was defeated with great loss, and obliged to continue his retreat during the night. Having crossed the Lahn, he made a feeble resistance, and marched along the banks of the Rhine, till his army on the 17th arrived at Coblentz and Dusseldorf, the points from which it had formerly taken its departure.

Moreau's situation and retreat.

The army of Moreau was now in a situation of extreme peril; yet he maintained his position till the 17th of September, the day upon which Jourdan reached Dusseldorf. But he obviously wavered as to his future movements, and indeed seemed completely at a loss what course to pursue. He made an unsuccessful attempt to arrest the archduke in his pursuit of Jourdan, and frequently attacked, but without effect; on whatever side he moved, the Austrian generals gave way before him. But finding that the retreat of Jourdan was irretrievable, and that Bonaparte was still detained in Italy, he finally resolved to retire. To prepare for this arduous undertaking, he had crossed the Lech, which he suddenly repassed as if fully determined to penetrate further into Austria, and thus compelled Latour to fall back on Lansberg. Having thus obtained a free passage, he commenced his memorable retreat, passing between the Danube at Ulm and the Lake of Constance, whilst Latour continued pressing upon his rear. The defiles of the Black Forest were occupied by numerous bodies of Austrians and armed peasantry, whilst his right flank was harassed by Nauendorf and Petrasch at the head of twenty-four thousand men. To disengage himself he once more turned upon Latour with terrible impetuosity, defeated him, and took five thousand prisoners. He then continued his retreat, checking Nauendorf and Petrasch with the right wing of his army under General Dessaix, whilst the remainder cleared the passages in front, till he reached the Valley of Hell. This pass, which is a narrow defile extending some leagues between lofty mountains, and in particular places not more than a few fathoms broad, he forced with the centre of his army in a mass, whilst the wings opposed the enemy under Nauendorf and Latour; and after incredible efforts he arrived at Fribourg on the 13th of October. The archduke having discontinued the pursuit of Jourdan, now arrived, forced Moreau to abandon all his positions on the Suabian side of the Rhine, excepting the forts of Kehl, and a tête-de-pont at Hunningen. This memorable retreat has been severely censured by Napoleon in his *Mémoires*, dictated at St Helena; but apparently without sufficient reason. His dislike of Moreau seems to have biassed his judgment, and sharpened the edge of his criticism.

As the French frontier was at this time in a defenceless state, the imperial forces took advantage of the circumstance to cross the Rhine at Manheim, and march in different detachments to Weissenberg, Seltz, and Hagenau, almost to the gates of Strasburg, levying contributions and demanding hostages wherever they went. When these detachments were recalled, the archduke formed the resolution of terminating the campaign by the reduction of Kehl and the fortification at Hunningen; but this he found no easy task. Much of the winter was spent by the Austrians in endeavouring to reduce these places; but the French at length agreed to evacuate Kehl on the 10th of January, and the fortification at Hunningen was surrendered in the month of February.

Bonaparte victorious in Italy.

But although the republicans had experienced considerable reverses of fortune in Germany, yet Bonaparte continued to be victorious in Italy. Having laid the whole of that country under contribution, he had the means of preserving a vigorous and steady discipline over a well-paid army. The great secret of his tactics consisted in keeping his army always in hand, advancing with the utmost rapidity, and operating in masses on the decisive point; a system which could scarcely fail to succeed against that of cordons, to which it was opposed.[1] The style, too, in which he addressed his army before any great action, was well calculated to inspire them with enthusiasm. He knew the soldier, and possessed the invaluable art of awakening in his mind all those feelings which prompt to the performance of daring actions. His address to the army on entering Lombardy is a masterpiece of its kind. "Soldiers," said he, "you have rushed like a torrent from the summit of the Appennines, you have driven back and dispersed all who opposed your march. Your fathers, your mothers, your wives, your sisters, your mistresses, rejoice in your success, and boast with pride of being related to you. But remains there nothing more for you to effect? Shall posterity reproach us with having found a Capua in Lombardy? But I already see you rushing to arms; an unmanly repose fatigues you, and the days lost to glory are lost to your felicity. But let the people be tranquil; we are the friends of all nations, and more particularly of the descendants of the Brutuses, the Scipios, and the illustrious personages whom we have chosen as models. To restore the capitol, to replace with honour the statues of the heroes who rendered it renowned, and to rouse the Roman people, become torpid by so many ages of slavery, such will be the fruit of your victories; they will form an epoch to posterity, and you will have the immortal glory of renovating the fairest portion of Europe. The French nation, free and respected by all the world, will give to Europe a glorious peace. You will then return to your homes, and your fellow-citizens, who, when pointing to you, will say, 'He was of the army of Italy.'"

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[1] Napoleon, when asked what he considered as the most important rule or maxim in the art of war, replied, "Faire douze lieues par jour, combattre, et cantonner ensuite en repos."

Siege of Mantua.

During the early part of the month of July Bonaparte was occupied in commencing the siege of Mantua, a place of which he expected to become master towards the end of the month. In this, however, he miscalculated. Aided by Britain, Austria made great efforts, and poured reinforcements from all points into Italy. Twenty thousand troops were sent from the Rhine; large masses arrived from other quarters; and Italy had once more to be conquered. Bonaparte was therefore obliged to raise the siege, in order to make head against fresh masses descending from the Tyrol to dispute the possession of Italy with the youthful conqueror. On the 29th of July Massena was attacked and driven from his post at La Corona, whilst fifteen thousand Austrians forced the republicans to retire, first from Salo, and next from Brescia, with the loss of all the stores and magazines belonging to the army. The imperial troops, however, committed a fatal blunder in dividing into two columns, separated by physical obstacles, an army which, united, would have been more than a match for the enemy, and thus exposing themselves to be beaten in detail. Of this error the republican chief was fully aware, and did not fail to take advantage of it. He unexpectedly raised the siege of Mantua, and leaving only a small body of troops to keep the Austrians in check, marched rapidly westward, and on the 1st of August retook Brescia, with all the magazines and hospitals. Carrying the mass of his army along with him, he exceeded his enemies in numbers wherever he attacked them. Having formed a large body of his troops into close columns, he awaited the Austrians, who, as yet unacquainted with the new tactics, extended their line with the view of surrounding him. The result was such as might easily have been foreseen. He penetrated their line in all directions, threw them into the utmost confusion, made four thousand prisoners, and took twenty pieces of cannon. A division of the Austrians finding Salo in possession of the republicans, wandered about in quest of a road by which to make their escape, and, believing that the bulk of the French army had marched in search of Wurmser to give him battle, summoned Lonato to surrender. Their belief was well founded, but Bonaparte was still in Lonato, though with no more than twelve hundred men. His situation was no doubt critical, but, with great presence of mind, he threatened to destroy the whole division, for daring to insult the French army, by summoning its commander-in-chief to surrender. Persuaded that the whole army was in the place, the Austrians abandoned all idea of resistance; and by this admirable acting on the part of Bonaparte, four thousand men were induced to lay down their arms.

Defeat of Wurmser.

On the 5th and 6th Wurmser was attacked by Bonaparte, and driven from Peschiera and the line of the Mincio. But on the 7th the Austrians were obliged to abandon Verona, and again to betake themselves to the mountains of Tyrol; losing in a contest of a few days upwards of twenty thousand men, three fourths of whom were prisoners. The siege of Mantua was again undertaken by the French; but as their works had been destroyed by the enemy in their absence, and the cannon which they had left behind taken into the city, the French could not undertake a regular siege; and by the beginning of September Wurmser was in a condition to attempt the relief of the place. Informed of his approach, Bonaparte left a division to maintain the blockade of Mantua; and, directing his march northward with the main body of his army, drove the Austrians from Santo Marco and Roveredo to the pass of Calliano. Here however they made a stand, and an engagement ensued, in which the Austrians were defeated with the loss of six thousand prisoners, upon which the French entered Trent in triumph. But instead of retiring, Wurmser threw himself into Bassano, upon the flank and rear of Bonaparte, and then marched with great rapidity towards Mantua. He endeavoured to make a stand at Bassano, but was defeated with the loss of five thousand prisoners. He then crossed the Adige at Porto Legnago, and entered Mantua with no more than eight thousand five hundred men, infantry and cavalry. The loss which Wurmser had sustained was great beyond example, but still it had the effect of detaining Bonaparte in Italy to watch the numerous garrison of Mantua. He expected that, owing to its numbers, famine would soon reduce it to the necessity of capitulating; but the flesh of more than four thousand horses, which Wurmser carried into the place, afforded the troops subsistence for a considerable time, and enabled the gallant veteran to signalize himself by as brave a defence as any on record.

Battle of Arcole.

The emperor now endeavoured to relieve Mantua, by sending another army into Italy under the command of General Alvinzi. But having crossed the Piava, Alvinzi was met by the republicans, and compelled to repass that river. Davidovich, however, having with his division driven the French down the Adige towards Verona, Bonaparte found it necessary to concentrate his forces. Leaving General Vaubois to keep Davidovich in check, he therefore marched in person against General Alvinzi, and came up with the Austrians in position at the village of Arcole. But as the village could not be speedily turned, on account of a canal, the French were obliged to attempt the passage of a narrow bridge under the fire of the whole Austrian army. Their officers rushed to the head of the column, and in vain endeavoured to urge the troops to advance. Augereau rushed to the end of the bridge with a standard, but he was followed by no one. At length the general-in-chief hastened to the bridge, and exclaimed, "Grenadiers, follow your general;" the soldiers followed till within thirty yards of the bridge, when they became intimidated by the tremendous fire of the Austrians, and Bonaparte judged it prudent to withdraw the troops. In the evening General Guieux carried the village at the head of two thousand men, but the Austrians again recovered possession of it. On the 16th of November a desperate engagement took place in the vicinity of Arcole; but next day the Austrians, whilst pressing on the centre of the republican army, were unexpectedly taken in flank by the left wing of the French army, which was lying in ambuscade. Bonaparte having sent into their rear a party of horse with twenty-five trumpeters, the Austrians concluded from the noise that they were surrounded, and fled in all directions in the utmost confusion. Having driven Alvinzi across the Brenta, Bonaparte resumed the positions of Rivoli and La Corona, and Davidovich was driven back into Tyrol. Wurmser still defended Mantua, which held out during the remainder of the year; but with these operations the campaign in Italy terminated.

Whilst such was the fortune of the field of battle, Great

Negotiations between Britain and France.

Britain made an attempt to negotiate with France. Passports were obtained from the Directory, and Lord Malmesbury set out as ambassador to Paris. He commenced negotiations with Lacroix, the minister for foreign affairs; but his lordship soon discovered, or fancied he discovered, that the Directory had no serious intention of concluding a peace with Britain. As individuals, the British ministry did not approve of a peace at this time, yet officially they considered it as prudent to treat; that is, they sought from policy, what they had no desire, either from interest or inclination, to obtain. It was proposed by Lord Malmesbury, that the principle of mutual restitution should be agreed upon as the basis of the treaty; but the Directory desired that specifications should be made. Lord Malmesbury therefore proposed that the French should give up the Austrian Netherlands, in return for which Britain, he said, would consent to give up the foreign settlements belonging to the Republic which had been taken during the war. Many of the Dutch possessions abroad would also be relinquished, on condition that the authority of the stadtholder was acknowledged. His lordship was next required to give in the ultimatum of his government in twenty-four hours; and when he complained of this demand, he was informed, on the 19th of December, that the Directory would agree to no conditions repugnant to the French constitution, and that his further residence was unnecessary. During this year Great Britain maintained her accustomed superiority on the ocean. On the 16th of September 1795 the Cape of Good Hope was taken by Admiral Elphinstone; but as the Dutch were extremely anxious to recover this settlement, they advanced money to the French to enable them to fit out a squadron destined to co-operate in an attempt to reduce it. Seven ships of the line were accordingly sent out for this purpose, under the command of Admiral Lucas; but the latter having been caught between two fires, found it impossible to escape, and therefore surrendered to the British admiral without firing a gun.

Unsuccessful attempt on Ireland.

But although Britain maintained her superiority by sea, yet an invasion of Ireland was attempted by the French in the end of 1796; but as folly seemed to have concerted the scheme, it consequently proved abortive. The command was intrusted to General Hoche, without any second in command to take his place in the event of accident. The disaffected party in Ireland had received no information of the approach of the expedition, and the fleet was sent towards a part of the country where the people were not much disposed to receive them. In this expedition eighteen sail of the line, thirteen frigates, twelve sloops, and transports with twenty-five thousand men, were employed; but it was detained for some time when ready for sailing, in consequence of a mutiny. Hoche set sail on the 10th of December, but in working out of Brest a ship of the line was lost, and some others were considerably damaged. The frigate which had on board the commander-in-chief was separated from the fleet in a gale of wind, and when the latter arrived at Bantry Bay, it found itself without instructions. The officers and troops desired to disembark, but Admiral Bouvet refused to comply with their wishes. After remaining for some days on the coast, he sailed for France, and on the 31st reached Brest with part of the fleet. General Hoche reached Bantry Bay when it was too late, and consequently could not land. One ship of the line and two frigates foundered at sea, a frigate was captured by the British, and a ship of the line was run ashore to prevent her being taken.

Advantages gained by the Austrians.

In the beginning of the year 1797 the Archduke Charles was still employed in endeavouring to reduce Kehl and the fortifications opposite to Hunningen. Moreau continued his opponent. Hoche succeeded Jourdan on the Rhine, and Bonaparte was still occupied with the siege of Mantua, whilst powerful efforts were making to reinforce the army of Alvinzi. The youth of Vienna were requested to lend their assistance, and six thousand of them volunteered their services for Italy. By these and other means Alvinzi's army was augmented until it became fifty thousand strong; and with this force he menaced the republicans in all directions, in order to conceal from them the plan of his future operations. Bonaparte was at Bologna, to prevent the escape of Wurmser in that direction, when, receiving information of the approach of the Austrian army, he hastened to Mantua, and thence proceeded to Verona, where the centre of his line had already come to blows with the Austrians; but as they continued to attack on all points at once, he was as yet unable to penetrate the design of Alvinzi. On the 13th of January, however, the movements of the enemy became more serious upon the lower part of his line, near Porto Legnago; but having been informed in the evening that the upper extremity under Joubert had been attacked by greatly superior numbers, he concluded that the Austrians were there in greatest force. Notwithstanding all the lessons they had already received, the Austrians still persisted in dividing their army; experience had not yet taught them to correct an error which was soon to entail the same destruction on this as on former armies. Ten thousand troops, including the Vienna volunteers, received orders to proceed to Mantua by Porto Legnago, whilst Alvinzi in person advanced against Joubert, who was forced to retreat, and in fact reduced to such a situation that the capture of his whole division on the following day (the 14th) seemed highly probable.

Defeat of the Austrians.

Bonaparte having received information as to the real state of affairs, left Verona on the 13th, having ordered Massena to follow him with the centre to Rivoli as fast as possible. On the 14th, at the break of day, the division of Joubert attacked the Austrians, a circumstance which much surprised them, ignorant as they were that Bonaparte had arrived with reinforcements. But the superior numbers of the Austrians baffled all the endeavours of the French troops to turn their divisions; and the two wings of the republican army were forced back upon the centre in considerable confusion. Alvinzi encountered the centre, which with difficulty maintained its ground; and the Austrian wings advancing on both sides, entirely surrounded the French. The victory seemed already won, and it is even reported that Alvinzi had sent a courier to Vienna to announce the approaching capture of Bonaparte and his army. But the tide was already at the turn. Forming his troops in three strong columns, Bonaparte led them against the right wing of the Austrians, which they penetrated at various points, and forced to fly in such confusion that four thousand Austrians laid down their arms to a party of republicans which had not arrived in time to join the army, and surrendered themselves prisoners of war. Bonaparte, perceiving that this part of his line was no longer in danger, left Joubert to prosecute the victory, and proceeded to oppose the march of Provera. A detachment under General Murat having continued their march during the whole night of the 14th, seized on Montebaldo in the rear of the position at La Corona, to which part of the Austrians retreated; and on the following morning Joubert attacked them in front. Thus surrounded, they were thrown into confusion, six thousand were taken prisoners, and numbers perished in attempting to cross the Adige.

During this bloody conflict on the upper part of the Adige, Provera forced his passage across the lower part of the river, near Porto Legnago, and obliged the republican general Guieux to retreat towards Ronco. But as Provera was marching rapidly to Mantua, Augereau came up with his rear, and made two thousand prisoners; notwithstanding which the Austrian general on the 15th reached the neighbourhood of that city, which was blockaded at St George and La Favourite. The Austrian general summoned the republican commander to surrender; but the latter having refused to comply, Provera endeavoured, without success, to carry it by assault. He next made an attack upon La Favourite, and was seconded by Wurmser with the troops in the garrison, who had observed his arrival; but as Bonaparte had by this time arrived with reinforcements, Wurmser was defeated, and Provera being surrounded by the French, surrendered both himself and his troops as prisoners of war. In consequence of these engagements at Rivoli and Mantua, the Austrians lost twenty-three thousand prisoners and sixty pieces of cannon. The surrender of Mantua had now become inevitable, and in fact it capitulated from famine on the 2d of February. That the French emigrants might escape, Bonaparte allowed Wurmser to select and take out of the garrison seven hundred men, who were not to be examined nor viewed as prisoners of war; and the general himself was permitted to depart unconditionally.

The pope's
orces sub-
ued.

The most active and vigorous preparations were now making both by the emperor and the French to recommence the contest on the German frontiers; and it was therefore of importance that Bonaparte should leave Italy in his rear in a state of tranquillity. On the 1st of February he sent General Victor with the legion of Lombardy to enter the papal territories; and after the surrender of Mantua, he himself followed in person. The Lombard legion, after storming the position occupied by the papal troops, made a thousand of them prisoners, and took all their cannon. General Colli had carried away most of the treasure from the chapel at Loretto; but the republicans still found articles of gold and silver worth a million of livres, and the image of the virgin was sent to Paris as a curiosity. At Tolentino the republican chief was met by a messenger from his holiness, with overtures of peace; and on the 19th a treaty was concluded, by which the pope promised to pay fifteen millions of livres, and to deliver eight hundred cavalry horses, with an equal number of draught horses and oxen. He also agreed to pay three hundred thousand livres to the family of the French ambassador Basseville, whom the rabble had murdered at Rome, and to make an apology through his minister at Paris for that outrage against the law of nations and of humanity.

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The French having proved unfortunate in their invasion of Germany through Suabia and Franconia, now determined to make their principal attempt from Italy under the command of General Bonaparte. Considerable bodies of troops were therefore detached by the Directory from the divisions which had served under Moreau, and sent as secretly as possible towards Italy by the way of Savoy. The impending danger was however perceived by the court of Vienna, which accordingly conferred the command on the side of Italy on the Archduke Charles, the only Austrian general who had hitherto been successful against the republicans. The war was now about to be carried into territories where a foe had scarcely ever been seen by the house of Austria. It was necessary that Bonaparte should once more force his way across the Alps; that he should carry the war into that immense chain of mountains which, rising in the neighbourhood of Toulon and stretching northward, obtains the names of Piedmont and Savoy, and which, taking an easterly direction, forms the countries of Tyrol, Carinthia, and Carniola, and on the side of the Adriatic constitutes the frontier of the hereditary states of Austria. As to the fertile and level tract which belonged to Venice, it is situated between the mountains and the sea, and is crossed by many streams, which are increased by the melting of the Alpine snows, and the peculiar characteristic of which is, that they are greatest in summer and least in winter. But the archduke, instead of being ordered to make a stand in the defiles of the mountains, was sent into the plain to guard the passages of the rivers; a blunder which entered into the whole plan of defence adopted by the council of war at Vienna.

Progress
of Bonaparte's
army.

Whilst Bonaparte advanced into the territories of the pope, the Austrian army was assembling on the eastern bank of the Piava. The republicans were on the opposite side of the river, and Bonaparte, after quitting the papal territories, hastened to join them. Having effected the passage of the Piava on the 12th of March, the Austrians retired, skirmishing for some days, till they crossed the Tagliamento, where they halted and concentrated their whole force. On the 17th the republican army reached Valvesone, on the opposite bank of the river, and after some hesitation determined to force the passage. The stream had been diminished by the frost, and though the banks were high, the operation seemed practicable. After some sharp fighting, the French accordingly crossed the river in columns at different points. Joubert, with the left wing, then received orders to pass along the valley of the Drave, beyond the highest chain of the Noric Alps; Massena, at the head of the centre division, entered the defiles of these mountains; and the right division, commanded by Bonaparte, marched along the coast of the Adriatic. On the 19th the town of Gradisca, situated on the river Isonzo, surrendered to the right wing of the army; and its garrison, consisting of three thousand men, were made prisoners of war. On the 21st the same division entered Goritz, where it found the principal magazines and hospitals belonging to the Austrians. Trieste was taken on the 23d, and quicksilver, worth two millions of livres, was sent off by the French from the mines of Idria. On the 24th a large body of Austrians was kept in check by Massena and part of the right wing under General Guieux; but having procured reinforcements from the archduke, they engaged the French next day, and were defeated with the loss of five thousand prisoners and from three to four hundred baggage waggons. Equal success attended the left wing under Joubert, Baraguay-d'Hilliers, and Delmas. Four thousand prisoners were taken on the banks of the Lavis, and the enemy was defeated at Clauzen with the loss of fifteen hundred men. This division then directed its march eastward, along the valley of the Drave towards Clagenfurt, the metropolis of Carinthia, where it was met by General Massena, who had obliged the archduke to evacuate his head-quarters, and to fall back in order to cover the capital of the empire, which was now seriously threatened. Thus in fifteen days General Bonaparte had effected the passage of the Alps, taken twenty thousand prisoners, and arrived within twenty-four leagues of Vienna, which was thus completely exposed. Yet his own situation was not free from danger. The rapidity of his advance had rendered it impossible to take the necessary measures for protecting his line of communications; a hostile population hung upon his rear; a continued success could alone enable him to maintain his advanced positions, and the slightest reverse might lead to ruinous consequences. Bonaparte, therefore, prudently embraced the present moment of unprecedented success to make overtures of peace. On the 31st of March he wrote to the archduke, deprecating the continuance of the war, and entreating him to use his influence for putting a period to its ravages. But the prince replied evasively, that it did not belong to him to investigate the principles on which the war was carried on, and that he had no power to negotiate.

In the mean while the Austrians raised the peasantry of the Tyrol to harass the rear of the French army, and in consequence gained some advantages under Laudohn, who drove back the republican troops which had been left at Botzen and Brixen. The people of the Venetian states also rose against the troops which had been left amongst them, and, with the assistance of ten Sclavonian regiments, murdered every Frenchman they could find, not sparing even the sick in the hospitals, of whom five hundred were massacred at Verona. The Austrians now attempted to surround the invading army; but Bonaparte knew that the embarrassment of the court of Vienna was at least equal to his own. He was at the head of a body of men hitherto irresistible; and to surround his army was not to vanquish it. For these reasons he continued his advance, and on the 2d of April, after a bloody conflict, forced the strong defiles between Freisach and Neumarck, making six hundred prisoners. On the 4th his advanced guard reached Hunsmarck, where they again defeated the Austrians. The cabinet of Vienna, finding that there was now no place where the army of the archduke could make a stand, till it reached the mountains in the vicinity of the capital, thought it high time to treat for peace. With this view, therefore, Bellegarde and Morveldt requested a suspension of hostilities, to which the French commander consented, on condition of obtaining possession of Gratz and Leoben, about fifty miles from Vienna. This was on the 7th of April, but the armistice, which would have expired on the 13th, was afterwards renewed for a longer period. On the 19th a preliminary treaty was signed, by which the French were to retain the Austrian Netherlands, and the whole of Lombardy, now called the Cisalpine Republic, comprehending the Milanese, Mantua, Modena, Ferrara, and Bologna. Bonaparte consented to return to Italy, on condition that his army should be supplied with provisions during its march; and all further disputes were to be settled by a definitive treaty of peace. The overthrow of the Venetian government, which had so long been in a state of helpless decrepitude, speedily followed the signature of the preliminary treaty of Leoben. Bonaparte had for some time meditated the dismemberment of the Venetian states, and a pretext was now afforded him for carrying this design into execution by the insurrection and massacre above adverted to. He saw his advantage, and promptly seized it; announced that the hour of Venice was now come; declared war against the unfortunate city of the sea; brought up cannon to the edge of the lagoons; and by menaces of retaliation compelled the senate and the doge to pass a decree dissolving their ancient constitution, and establishing a kind of municipal democracy in its stead.

Peace between France and Austria.

During the approach of Bonaparte towards Vienna, the republican armies on the Rhine were pressing hard on the Austrians, to prevent their sending reinforcements to the archduke. An armistice was offered by the Austrians, but as the French required Ehrenbreitstein as a guarantee, both parties resolved to prosecute the war. The left wing of the army of General Hoche marched from Dusseldorf, whilst the centre and right wing crossed the Rhine near Coblentz. On the 18th of April a fierce contest took place between the hostile armies near the Lahn, in which the Austrians were beaten with the loss of four thousand prisoners. General Moreau having forced the passage of the Upper Rhine near Strasburg, attacked and carried the village of Diersheim; and next day the conflict was renewed with such vigour on the part of the republicans, that the fort of Kehl was taken, and five thousand Austrians were made prisoners. The French then advanced, and the Austrians were retiring towards the Danube, when all military operations were suspended, in consequence of intelligence received from the archduke and Bonaparte, that peace had been concluded. On the arrival of this intelligence, the army of General Hoche was making an attack upon Franckfort-on-the-Maine, which General Warnecht was employing every effort to defend. Both armies received the news about the same time, upon which the troops threw down their arms, and congratulated each other on the happy event.

Changes in the Directory; state of parties.

A contest of a serious nature was now fast approaching between the legislative and executive branches of the French government. The time had arrived when a third part of the legislative body was to be changed. On the 19th of May Letourneur went out of the Directory by lot; on the 20th the new third took their seats; and on the 21st Barthélèmy was chosen a member of the Directory in the room of Letourneur. Pichegru, Jourdan, and Willot, were amongst the members of the new third, so that a decided majority of both councils was of the moderate party; and two members of the Directory, Carnot and Barthélèmy, were understood to be men of the same description. The old conventionalists, therefore, employed every means which seemed calculated either to render the Mountain party odious, or to embarrass the Directory. On the 14th of June Gilbert Desmolières brought up a report from a committee on the state of the finances, in which he inveighed against the prodigality of the Directory, and censured in the strongest language the conduct of its agents. On the 18th the same committee proposed a new plan of finance, which went to deprive the Directory of the administration of the public money. On the preceding day Camille Jourdan had presented a report of great length on the subject of religion, in which he insisted on the impropriety of forbidding its ceremonies to be publicly displayed, and the iniquitous nature of that persecution which its ministers had suffered because they could not take the oaths prescribed by the legislature. On the 15th of July the Council of Five Hundred decreed that all the laws against refractory priests should be repealed; and on the following day a decree, requiring from them an oath of fidelity to the constitution, was carried by a majority of no more than six members. Eméry, a new member, proposed the repeal of the laws by which the property of emigrants had been confiscated and their relations declared incompetent to succeed them. The discussion which these topics underwent made the Directory and the Councils professed enemies to each other. The Councils wished the Directory to be changed before the expiration of the legal time, and the Directory desired to deprive of their seats many new members who had been elected by the people. As Barras was upon the whole the most obnoxious member of the Directory, an effort was made to deprive him of his seat, on the pretence that he was less than the legal age of forty; but his colleagues maintained that he had been born in the year 1755, and no proof of the contrary could be produced. Still the Directory did not want a number of adherents. The resolution of the Councils in favour of the priests had the appearance of a counter revolution, which induced the royalists to resume courage, and journals were rapidly published in defence of their cause. On the 20th of July the Councils received information that a division of the army under Hoche was within a few leagues of Paris; whilst the constitution declared that the Directory incurred the penalty of ten years imprisonment, if it brought troops any nearer the residence of the legislative body, without its consent, than twelve miles. An explanation was demanded and given; the Directory declared their ignorance of the march, which they said had been undertaken without orders from them, and owing to a mistake on the part of the officer by whom it was conducted; but the Councils paid no regard to an allegation which they evidently disbelieved. The turbulent suburb of Saint Antoine adhered to the majority of the Directory; and this encouraged them so much that they lost no time in proceeding to action.

General Augereau had been sent from Italy, upon the pretence of delivering to the Directory some standards taken from the enemy. On the morning of the 4th, the Tuileries was surrounded by a division of the troops, under the command of this officer; the guard of the Councils refused to act against them, and Ramel their commander was made prisoner. On entering the hall, Augereau seized Pichegru and twelve more of the chiefs of the opposite faction, whom he immediately sent prisoners to the Temple. Carnot made his escape on the preceding evening; but Barthélèmy remained, and was put under arrest. When several members of the Councils came to the hall at the usual hour, they were astonished to find that seals had been put upon the doors, and that they could not obtain admittance. They were ordered to go to the Surgeons' Hall, where the Directory, it was said, had appointed them to meet; but of both Councils not more than a hundred and twenty members assembled, who, however, sent to obtain from the Directory an explanation of the proceedings which had just taken place. They were given to understand, that what had been done was absolutely necessary for the salvation of the Republic, and the Councils were congratulated on their escape from the machinations of the royalists. According to the report of Boulay de la Meurthe, a great royalist conspiracy, the centre of which was in the bosom of the Councils, was endeavouring to subvert the constitution; but, by the indefatigable diligence and activity of the Directory, it had been defeated. It was proposed to banish the conspirators without a trial, and the Councils were so completely imposed upon, that they voted the deportation of fifty-three of their own members, and twelve other persons, amongst whom were the directors Carnot and Barthélèmy. During these transactions the city of Paris remained tranquil. The unfortunate issue of the struggle on the 5th of October had so completely subdued the ardour of the inhabitants, that they suffered the national representation to be violated with impunity, and saw liberty trampled under foot, without a single exertion in its defence. The Directory excused their conduct to the nation, under pretence of the existence of a royalist conspiracy. Pichegru, it was said, had offered to join the emigrants under the Prince of Condé, and the Austrians under Wurmser, and, at the head of this aggregate force, to march directly to Paris, and re-establish the monarchy. Moreau was also implicated in this conspiracy, but, as is alleged, saved himself by betraying his accomplice.

Treaty of Campo Formio.

The Directory were now powerful; but its members soon became giddy from the elevated nature of their situation, and seemed to act under the dangerous conviction that there was nothing in which they might not venture to engage, however great might be their ambition or rapacity. Whilst contending with the councils, they prolonged the negotiations with Lord Malmesbury; and, what is more extraordinary, acted in a similar manner respecting those which had been entered into between Bonaparte and the imperial ambassadors at Campo Formio. But the negotiations with the emperor were at length terminated, and on the 17th of October a definitive treaty was signed at Campo Formio. The Netherlands were given up to the French Republic, and the Milanese to the Cisalpine Republic; whilst the imperial territories in the Brisgau were surrendered to the Duke of Modena, as a compensation for the loss of his duchy in Italy. It was likewise agreed by the emperor that the French should possess the Venetian islands in the Levant, Corfu, Zante, Cephalonia, Santa Maura, Cerigo, and others; and, on the other hand, the emperor was to have the city of Venice, with its remaining territory, from the extremity of Dalmatia, as far as the Adige and the Lake of Garda. The Austrians accordingly withdrew from the bank of the Rhine, and the republicans were thus enabled to retake Mayence and Ehrenbreitstein. Venice was at the same time entered by the Austrians; and Bonaparte, when about to take his departure from Italy, left twenty-five thousand men to garrison Mantua, Brescia, Milan, and some other places, and to retain the Cisalpine Republic in a state of dependence upon France.

Naval successes of Britain.

At this time the empire of the seas was so completely possessed by Britain that the republican fleets lay blockaded in their own ports during the greater part of the year. But as the expedition against Ireland had completely failed, the Directory were at a loss how to dispose of the galley slaves who had formed part of Hoche's army. It would have been cruel to send them back to punishment; the troops refused to serve with them in the army; and by the new laws of France they could not receive a pardon, neither was it prudent to set so many criminals at liberty. To get rid of the difficulty, the Directory at last determined to send them over to England; and these criminals, to the number of about twelve hundred, were landed from two frigates and some small vessels on the coast of Wales, with muskets and ammunition, but destitute of artillery. On the evening of the day on which they landed, however (the 23d of February), they were made prisoners by a party of militia, yeomanry, cavalry, colliers, and others, under the command of Lord Cawdor. But although the navy of France continued in port, and therefore out of danger, the Spanish and Dutch allies of that country sustained serious losses by sea. A Spanish fleet of twenty-seven sail of the line, opposed to a British fleet of only fifteen sail under Sir John Jervis, was completely defeated off Cape St Vincent on the 14th of February. The Spanish fleet was on its way to Brest to effect a junction with the French fleet; but by the victory of Jervis this object was rendered unattainable. The Dutch were, if possible, still more unfortunate. Admiral Duncan having blockaded the Texel, where their fleet lay during the summer, a resolution was at length adopted to risk an engagement; and De Winter received positive orders to put to sea. Admiral Duncan was at this time refitting at Yarmouth; but on receiving intelligence that the Dutch fleet had sailed, he immediately put to sea in quest of the enemy, and on the 11th of October came up with their fleet, consisting of a force rather inferior to his own. The British admiral having carried his fleet through the enemy's line, commenced the attack between them and their own coast, about nine miles from Camperdown. The conflict lasted three hours, at the end of which time the greater part of the Dutch fleet had struck. Eight ships of the line, two of fifty-six and one of forty-four guns, were taken, besides a frigate, which was afterwards lost near the coast of Britain. See article BRITAIN.

Disturbances at Rome.

After the ratification of the treaty with the emperor at Campo Formio, Joseph Bonaparte was sent to Rome as plenipotentiary of the French Republic. The pope having now no expectation of foreign assistance, submitted to the demands for the reduction of his troops, and the liberation of every person confined in prison on account of political opinions. But on the 26th of December 1797, three men waited upon the ambassador, and requested the co-operation of France in bringing about a revolution which a party at Rome was anxious to effect. He refused to countenance the project, and did every thing in his power to dissuade them from embarking in such an enterprise; but unfortunately he neglected to communicate the intelligence to the papal government. On the 28th, however, he went to the cardinal secretary, and showed him a list of persons under his protection who had a legal authority to wear the tricolor cockade; he at the same time consented that all others wearing it should be punished; and he offered to give up six of the insurgents who had taken refuge in his palace. In the evening of the same day, a most serious tumult, in its origin not altogether unknown to his holiness, happened in the courts and vicinity of the French ambassador's palace, and the governor of the city endeavoured to disperse the rioters by parties of cavalry and infantry. But in attempting to induce the military to desist from firing upon the people, General Duphot, who belonged to the French mission, was shot by a petty officer belonging to the troops of his holiness. As soon as the Spanish ambassador received information of this event, he sent to the cardinal secretary, and protested against this daring violation of the privileges of plenipotentiaries. The palace of the French ambassador was still surrounded by the military, when he demanded his passports, which were granted, accompanied by many protestations of the innocence of government, and its sorrow that such an unfortunate occurrence should have taken place. Joseph Bonaparte retired to Florence, and thence proceeded to Paris. The protection of Austria, Spain, Naples, and Tuscany, was earnestly solicited by the pope; but all these powers seemed disinclined to interfere in behalf of the pontiff. General Berthier experienced little or no opposition on his march to Rome, where he subverted the dominion of the pope, proclaimed the sovereignty of the Roman people, and caused the tree of liberty to be planted on the very day on which the anniversary of the pope's election was being celebrated. Whilst in the Sistine chapel receiving the congratulations of the cardinals, the commissioner-general, and Cervoni, who commanded the troops within the city, entered the chapel during the ceremony, and announced to the sovereign pontiff that his reign was at an end.

Conquest of Switzerland.

But scenes of a different and more sanguinary character were in the mean time exhibited in Switzerland, a country which had preserved its neutrality during the conflict between France and the combined powers. About the end of the year 1797, an insurrection broke out in the Pays de Vaud, a district subject to the canton of Berne. This occurrence showed the government its critical situation, and induced it to issue a proclamation on the 5th of January 1798, requiring the people of the Pays de Vaud to appear in arms, renew their oath of allegiance, and reform all abuses. A commission of the senate of Berne was also empowered to examine every complaint, and redress every grievance; but their motions were considered as too tardy by popular impatience, and the insurgents endeavoured to make themselves masters of the strong places. Troops were sent against them by the government of Berne; but General Weiss having acted with hesitation, a body of republicans appeared under General Menard, who sent an aid-de-camp with two hussars to negotiate with Weiss. As the messengers returned, however, one of the hussars was killed, most probably by accident; but this circumstance was instantly magnified into a horrid breach of the law of nations. The French, therefore, continued to advance, and by the end of January were masters of the whole of the Pays de Vaud. The government of Berne, whilst it used every effort to maintain peace, prepared for war. But a truce was entered into with General Brune, the successor of Menard, and those who had killed the hussar were delivered up. An army of twenty thousand men was collected, the command of which was given to D'Erlach, once a field-marshal in the service of France. But disaffection prevailed in this army, and the people were far from being united amongst themselves. Of this the French were well aware, and therefore they demanded a total change of government. On the other hand, D'Erlach, apprehensive of a still greater defection in his army, requested permission to put an end to the armistice. The French now refused to negotiate, and on the 2d of March General Schawenberg took possession of Soleure at the head of thirteen thousand men; whilst Brune afterwards made himself master of Friburg, and forced the Swiss army to retreat. The government of Berne, now greatly alarmed, decreed the landsturm, or rising in mass, which the ancient customs of the country justified in the time of necessity. The people assembled, dissolved the government, and offered to dismiss the army, if the republican troops would retire. But this offer was rejected, except upon the condition of admitting a French garrison into Berne, and therefore the Swiss continued to advance. About six thousand of the army of D'Erlach had deserted, leaving him at the head of little more than fourteen thousand men; and although the rising had abundantly supplied him with numbers, yet raw and undisciplined levies, however numerous, were of little avail against veteran troops, and he was not allowed time to give them any thing like regular organization. He was accordingly attacked on the 5th of March, and driven from Newenbeg and Favenbrun; but having rallied his troops, he made a stand for some time at Uteren. The conflict was renewed at Grauholtz, whence the Swiss were driven four miles nearer the capital; and being at last completely defeated, they in a fit of fury and despair murdered many of their officers, amongst whom was their commander-in-chief. Berne capitulated to the French, and the more wealthy and populous states followed the example; but the poorer cantons made a vigorous effort to preserve their small possessions, and the independence of their country; they compelled Schawenberg to retire with the loss of three thousand men, but were at last totally vanquished by the superior skill and numbers of the republican army. The public magazines were plundered, and a new constitution, modelled on that of France, was forced upon them.

Conduct of the Directory.

As the Directory had made no scruple of violating the independence of other nations, it was but reasonable to expect that they would pay little regard to the liberties of their own. A third of the legislature was changed in the month of April; one member of the Directory also went out by ballot, and Treilhard was chosen to succeed him. Nothing was left unattempted by the Directory to influence the elections in favour of their friends; but their success was not commensurate with their exertions. On the 2d of May, they made a complaint to the Council of Five Hundred, of alleged royalist plots, by means of which it was said that the elections had been made to fall on persons who were inimical to the interests of the Republic; and on the 7th it was proposed by the committee which reported on the message of the Directory, that many electoral assemblies should be annulled. But General Jourdan opposed this plan, as incompatible with the freedom of election, and as proceeding upon the supposition of conspiracies the existence of which was not proved, and which most probably had no existence at all.

Threat of invasion.

After peace had been proclaimed between France and Germany, the Directory made no secret of their determination to attempt the invasion of Great Britain. Whether this project originated with Bonaparte himself, or was intended by his kind friends of the Directory as a snare for him and his victorious army, is a matter which our readers must be left to determine for themselves. It appears, however, that soon after the return of Bonaparte to the capital, where the Directory received him with all imaginable splendour, an army was offered him by the government, with which to invade England; and it is also certain that he accepted the command. Barras, indeed, told him not to repose on his laurels, but to prepare for undertaking the conquest of the bitterest and most formidable enemy of the Republic; a mission, however, which it was somewhat more easy to confer than to execute. This came eventually to be the opinion of the general himself; after calculating all the chances, he thought it possible to gain a battle on British ground, but quite hopeless to maintain a footing in that country. But England, though invincible on her own soil, might be deeply wounded through her commerce and her colonies;

these he considered as the principal sinews of her strength; and if he could divert in different channels the main branch of the one and seize upon the most important of the other, he doubted not that he would thereby effectually humble the haughty island. Impressed with the common but groundless notion that Britain derived incalculable resources from her Indian dominions, and conceiving that commercial superiority must ever belong to the nation which is possessed of the safest and readiest communications with the East, Bonaparte thought of restoring the trade of India to its ancient channel through Egypt and the Levant. With such views he contemplated the seizure and conquest of the former, as the first step towards the realization of his design; and this once effected, he conceived that, proceeding from Egypt as from a place of arms, he might march towards the Euphrates, and in less than four months reach the Indus, there to dispute with the English the possession of that country whence he supposed they derived their inexhaustible resources. An expedition to Egypt was therefore resolved on, with the full concurrence of the Directory, who were delighted to be rid of a too fortunate soldier, and to the great satisfaction of Bonaparte himself, whose imagination seems to have been carried away with the idea of perhaps founding an eastern empire.

French expedition to Egypt.

This resolution, however, was kept a profound secret, and every artifice employed to mislead the English as to the real destination of the intended expedition. Threats of invasion were therefore studiously reiterated, and matters were so contrived as to give to the necessary preparations, which could not escape observation, an appearance calculated to confirm the idea that an invasion was actually intended. Prodigious stories were circulated concerning large rafts of timber, by means of which the Army of England was to be transported to Britain; and, to give the greater probability to this report, General Bonaparte, the commander-in-chief, made a journey to the coast opposite England. Meanwhile, the fleet was getting ready in the harbour of Toulon, and troops were collected in its vicinity; and when every thing had been prepared, Bonaparte embarked with forty thousand veteran troops, and, on the 9th of June, reached Malta. Having landed his troops in different places, he resolved to make himself master of this island; and, after a very feeble opposition, the grand-master capitulated, giving up in a few days a fortress which might have held out for months against all the troops of the French Republic. Bonaparte left in the island a garrison of four thousand men, and on the 21st of June sailed for Alexandria. Admiral Nelson was dispatched in pursuit of the French fleet; but being wholly ignorant of its destination, he sailed for Naples, where he obtained information of the attack upon Malta. To that island accordingly he steered his course, and on his arrival he found that Bonaparte was gone; but conjecturing that he had sailed for Alexandria, he immediately prepared to follow him. The French commander, however, instead of keeping a direct course towards the coast of Egypt, stood along that of Greece, until he had made the easternmost point of the island of Candia; then steering to the southward, he protracted his voyage, so as not to reach the Egyptian coast till Admiral Nelson had left it.

On the 5th of July, Bonaparte landed his troops, and took by storm the city of Alexandria. The republican transports were then drawn up within the inner harbour of Alexandria, and the ships of war were anchored along the shore of the bay of Aboukir. The republican army then marched on towards the Nile, and, in proceeding along the banks of that river, suffered much from the intense heat of the climate. They soon came to action with the Mamlukes; but this superb cavalry found itself unequal to contend with European discipline and valour. Under Murad Bey, their most distinguished chief, they made a last effort near the Pyramids; but were routed with the loss of two thousand men killed, four hundred camels with baggage taken, and fifty pieces of cannon. Cairo immediately surrendered.

Battle of the Nile.

Bonaparte having proceeded thus far in the conquest of Egypt, framed a provisional government, and issued proclamations in Arabic, protesting that the French were friendly to the religion of Mahommed, owned the authority of the Grand Signior, and were only come to inflict punishment on the Mamlukes, the oppressors and spoilers of Egypt. Thus far the good fortune of Bonaparte seemed still to attend him. But on the 1st of August the English fleet under Admiral Nelson appeared off the mouth of the Nile; and before the sun of the morrow rose, that of France had been destroyed, and all communication between the French army and Europe thus completely cut off. The action commenced at sunset, and continued, with occasional intervals, till daybreak, when the morning disclosed to the astounded invaders the extent of the calamity which had befallen them. (See article BRITAIN.) It would be difficult to point out any naval engagement of modern times, productive of results so important as this. The military exertions of France had by degrees destroyed the combination which the princes of Europe had formed against her; the victories of Bonaparte had humbled the pride of Austria; the Continent looked with dismay towards the new Republic; and when the Directory seized on Rome and Switzerland, no power ventured to interpose in their behalf. But in consequence of the victory of the Nile the aspect of affairs suddenly underwent a remarkable change, and the conqueror of Italy was shut up in a distant country, from which the fleets of Britain might prevent his return. Proposals were therefore made by Britain to the northern powers, to recommence hostilities against France; the states of Italy determined to make a vigorous effort for the recovery of their independence; and the court of Naples, encouraged by the destruction of the French fleet, threw off the mask which it had been compelled to wear, and joined the new confederacy against the Republic.

General Humbert invades Ireland.

The French, it is well known, had long held out encouragement to the Irish rebels; but as the expectations of the latter were disappointed, they broke out into open rebellion without the promised assistance; and when the spirit of insurrection had been almost wholly extinguished, the Directory, with its usual imbecility, made a feeble attempt to revive it. On the 22d of August General Humbert, with a handful of troops, amounting only to eleven hundred men, landed at Killala. Yet this force, small as it was, would have proved formidable a month before. On landing they were joined by a party of the more desperate rebels in the vicinity, and defeated General Lake at the head of a superior force, taking from him six pieces of cannon. They sent in different directions to announce their arrival, advanced a short way into the country, and maintained their ground for three weeks. But receiving no reinforcements from France, finding the rebellion in a great measure crushed, and being informed that General Cornwallis was about to surround him with twenty-five men, General Humbert laid down his arms to a British force four days after he had dismissed his Irish associates, that they might provide for their own safety. Active measures were now taken by the Directory to send troops to Ireland when it was too late; the vigilance of British cruisers defeated all their endeavours. On the 12th of October, La Hoche, a ship of eighty-four guns, and four frigates, were captured by Sir John Borlase Warren, in attempting to reach Ireland with three thousand men; on the 20th another frigate, destined for the same country, was also taken. The Directory therefore abandoned the attempt as hopeless.

1798. Imprudence of Naples.

The victory of the Nile, important as beyond all doubt it was in a political point of view, seems nevertheless to have been over-estimated by the court of Naples, which, considering the destruction of the army of Egypt as certain, now rushed headlong into a new war with France. Disdaining to wait until the Austrians were ready to take the field against the republicans, the king prevailed on General Mack to assume the command of his army, began the war without any foreign aid excepting that of the British fleet, and thus brought upon himself the vengeance of the French Republic. The Directory had no conception that he would adopt such an insane line of conduct; and consequently, when General Mack appeared at the head of forty-five thousand men, the troops of France in that quarter were not in a condition to contend with him. When General Championet complained of the attack made upon his posts, he was informed that his Neapolitan majesty had resolved to take possession of the Roman territory, advised to retire quietly into the Cisalpine states, and further apprised that his entrance into Tuscany would be considered as a declaration of war. Championet having no force sufficient to contend with the Neapolitan army, accordingly evacuated Rome; but he left a garrison in the castle of St Angelo, and concentrated what troops he could collect in the northern parts of the Roman states. In the end of November General Mack entered Rome without opposition. When these transactions became known at Paris, war was immediately declared against the king of Naples and the king of Sardinia. The latter had committed no act of hostility against the French; but he was accused of disaffection towards the Republic. This charge could scarcely fail to be true. For, ever since the entrance of Bonaparte into Italy, he had been reduced to a most humiliating condition; his strongest fortresses were in the possession of the French; a garrison had been placed in his capital; contributions were levied from his subjects at the pleasure of the conquerors; and he was reduced to such a situation, that, unable to protect himself, he made a voluntary surrender of his continental dominions, and agreed to retire to the island of Sardinia.

But a period was soon put to the dispute with Naples. As the French retreated, the people of the country gave them infinite trouble and uneasiness, and the Neapolitan troops scarcely observed the rules of modern warfare towards such as they made prisoners. When, by orders from General Mack, Bouchard summoned the castle of St Angelo to surrender, he declared that he would view the prisoners in the light of hostages for the conduct of the garrison, and that a man should be put to death for every gun which was fired from the castle. It is not to be imagined that the Neapolitan officers would have dared to hold such language if they had not calculated on the vigorous co-operation of the Austrian forces; but in this expectation they found themselves grievously disappointed, and were ere long obliged to change their tone. The Neapolitan troops were defeated by one fourth of their number, at Terni, Porto Fermo, Civita Castellana, Otricoli, and Calvi; and as the army of Mack was speedily reduced by defeat and desertion to less than twelve thousand men, he advised the king and his family to take refuge on board the British fleet which was then lying at Leghorn. This advice was adopted, and the royal family reached Palermo in Sicily on the 27th of December. General Mack now requested an armistice, which was refused; and being driven from Capua, the only remaining post of any importance in the Neapolitan territory, and in danger from the disaffection of his troops, he surrendered himself and the officers of his staff as prisoners to the republican general. And such was the lame and impotent conclusion of a campaign undertaken in contempt of all prudence, commenced with gasconading and cruelty, and carried on in such a manner as to leave it exceedingly doubtful which was more remarkable, the utter incapacity of the officers, or the abject cowardice of the troops.

1799. Conduct of the Lazzaroni.

In Naples there had long been a numerous body of men called Lazzaroni, who subsisted entirely on charity. These vagabonds frequently threatened the state if their wants were not immediately supplied, and their submission was often purchased by liberal contributions. Having been informed that the French, wherever they came, destroyed all the monasteries and other sources of charity, this immense gang of sturdy beggars determined to oppose them to the utmost, and to appear forsooth as the advocates of royal government. In the beginning of January 1799 they exhibited marks of discontent, and at last broke out into open insurrection. They appointed as their commander-in-chief Prince Militorni, who, however, did his utmost to restrain their violence and love of plunder. But all his efforts were unavailing. They declared war against the French, forced open the prisons, and murdered all who had been incarcerated for disaffection to the government. Their ravages now became so dreadful and boundless, that Prince Militorni abandoned them, and proceeded to Capua, where he requested Championet to take possession of the city, in order to rescue it from utter destruction. It was accordingly agreed that a column of French troops should advance against the capital by a circuitous route, and endeavour to enter the city from the opposite quarter. But before this plan could be carried into execution, a great body of the Lazzaroni marched out (on the 19th and 20th of January) to attack the French in the fortifications of Capua. This daring attempt failed, as might have been expected, and multitudes perished by the fire of the French artillery; but in order to favour the capture of Naples by the detachment sent for that purpose, Championet continued on the defensive. On the 21st the Lazzaroni, informed that a French column had marched for Naples, returned to the city; and although Championet closely pursued them, they arrived in time to barricade the streets, and prepare for the defence of different quarters. A fierce conflict now commenced, and lasted from the morning of the 22d till the evening of the 23d of January, when, having been driven from street to street, they finally rallied at one of the gates, where they were almost totally cut off.

Unpopularity of the Directory.

This advantage may be considered as the last which the Directory obtained; for the consequences of their past misconduct were now rapidly gathering around them. They were justly unpopular at home, both from their mode of conducting public affairs, and their repeated violations of the constitution. Their profusion was boundless, and the demands which they made upon conquered countries exorbitant. Championet was so ashamed of their proceedings, that he refused to enforce their orders in Italy, and was in consequence deprived of his command, and thrown into prison; whilst Schérer, the war minister, was appointed his successor. Under the latter the rapacity of the government agents, and the embezzlement of the public stores, were carried to an incredible extent. Still France continued to be dreaded by foreign nations, to whom the true state of her internal affairs was but imperfectly known. A Russian army had arrived, but the cabinet of Vienna was at a loss whether to declare war or temporise a little longer. Britain solicited the aid of Prussia with an offer of large subsidies; but Sièyes, the French plenipotentiary at Berlin, artfully contrived to defeat the negotiation, and counteract the unpopularity of his country in Germany, by giving to the world the secret convention of Campo Formio, which determined the greater number of the German princes to observe neutrality under the guardianship of Prussia.

War declared against the emperor.

On the 2d of January a note was presented to the congress at Rastadt, by the French plenipotentiaries, intimating, that if the entrance of Russian troops into Germany was not prevented, it would be considered as tantamount to a declaration of war. To this no satisfactory answer was returned. On the 26th of the same month the strong fortress of Ehrenbreitstein, which had been blockaded since the treaty of Campo Formio, surrendered; and the possession of this place, together with that of Mayence and Dusseldorf, rendered the French powerful on the Rhine. Switzerland and all the fortified places of Italy were also in their hands, so that they were fully prepared to commence active operations. At this period Jourdan commanded on the Upper Rhine from Mayence to Hunningen; the eastern frontier of Switzerland was occupied by Massena; Schérer commanded in chief in Italy, with Moreau under him; and Macdonald was at the head of the troops in the Roman and Neapolitan territories. But these armies thus disseminated did not exceed a hundred and seventy thousand men, a force greatly inferior to that of Austria, independently altogether of the Russian army. The Directory, however, trusting to the unity of its own plans, the wavering politics of the court of Vienna, and the slow movements of the imperial armies, was anxious to renew the contest; and, accordingly, on the 13th of March war was declared against the emperor of Germany and the Grand Duke of Tuscany. Jourdan had actually crossed the Rhine at Strasburg on the first of that month, and occupied strong positions in Suabia. Manheim was taken, and General Bernadotte summoned Philipsburg, whilst General St Cyr entered Stutgardt. To oppose the march of this army, the Archduke Charles crossed the Lech upon the 4th of March; whilst, on the other side, Massena entered the territory of the Grisons, surprised a strong body of Austrians, made the whole prisoners, with their general and his staff.

But the plan of campaign could not be carried into operation without the junction of Massena's and Jourdan's armies; and to accomplish this it was necessary to carry the important post of Feldkirch, which was occupied by General Hotze. Defeated in his first attempt, Massena renewed the attack five times with fresh troops; but the determined bravery of the Austrians rendered all his efforts ineffectual. As the French, however, were in possession of the Grisons, this facilitated the invasion of the Engadine, where the Austrians being too weak to resist, retreated into the Tyrol, and were pursued by the republicans, who forced some of the defiles, and pushed forward their flying parties as far as Glurentz and Nauders.

Battle of Stockach.

The vanguard of the principal Austrian army now advanced to meet the French, and on the 20th of March was attacked by Jourdan, who drove in the enemy's outposts; but on the following day the centre of the French army was attacked, and forced to retire to Stockach during the night. The archduke encamped before Stockach on the 24th, and the republicans again attacked him on the following day. Their main object of attack was his right wing under General Meerfeldt, which they succeeded in driving into a wood between Liptingen and Stockach. Meerfeldt renewed the conflict without success. But the left wing having maintained its ground, sent reinforcements to General Meerfeldt, who in his turn obliged the French to retire. The French, however, made four thousand prisoners during the various movements of the day. Yet their loss was so great, and the Austrian force so much superior, that Jourdan durst not hazard another engagement. He therefore retreated on the following day, and, finding that he was not a match for the enemy, sent part of his army to cover Kehl and Strasburg, and marched with the remainder towards Switzerland. By this event General Massena, who was forcing his way into the Tyrol and Engadine, was obliged to return to the protection of Switzerland. He was now appointed to the chief command in this quarter, and Jourdan was removed.

Italy.

The Austrians were not less successful in Italy, notwithstanding they had been attacked by the French before the termination of the armistice. General Kray obtained a complete victory at Legnago, and forced the enemy to fly for protection under the walls of Mantua. On the 15th of April they were again attacked by the Austrians at Memiruolo, and forced to retreat after an obstinate resistance. The loss sustained by the French in these different engagements was certainly great; but the Austrians also purchased their success at a costly rate. Schérer at first gained some advantages over them, but he wanted the skill necessary to improve them. The Austrian posts were forced by a division of his army on the 26th of March, and four thousand men made prisoners; but another division being repulsed, Schérer withdrew his troops, and thus relinquished the advantages he had obtained. On the 5th of April the division under Moreau was again successful, and took three thousand prisoners; but, by the unskilful measures of Schérer, he was not supported, and the triumph of the Austrians was therefore complete.

Suwarof.

A short time previous to this, the Russians had effected a junction with the imperialists, and the command of the combined army was given to Field-marshal Suwarof. The Russian commander on the 24th of April advanced towards the Adda, and after carrying the outposts of Moreau, determined to attack him in his intrenchments. Suwarof maintained a show of attack along the whole line of Moreau, whilst he secretly threw a bridge amongst the rocks at the upper part of the river, where such an operation had been considered as impossible. By this bridge part of the combined army next morning turned the republican fortifications, and attacked their flank and rear, whilst the remainder forced the passage of the river at different points. The French fought with their usual intrepidity, but were soon driven from all their positions, and forced to retreat towards Pavia, with the loss of six thousand men killed, five thousand prisoners including four generals, and eighty pieces of cannon.

General Moreau now established the remains of his army, amounting to about twelve thousand men, upon the Po, between Alessandria and Valentia, where, on the 11th of May, he forced a body of Austrians to retreat, and took a number of prisoners. On the 12th about seven thousand Russians crossed the Po at Basignano, and marched towards Pecetto, when Moreau fell upon them with incredible fury; and as they obstinately refused to lay down their arms, about two thousand of their number were drowned in repassing the river, and a few taken prisoners. On the advance of Suwarof, General Moreau was under the necessity of retiring to occupy the Bochetta, as well as other passes leading to the territory of Genoa, when the combined army commenced the sieges of the fortified places in Italy then occupied by the French. Bellegarde drove the French from the Engadine; Massena, pressed by the archduke, was obliged to retire to the vicinity of Zurich; and nearly the whole of Piedmont had risen against the republicans. The armies received no reinforcements from the interior of France, and their officers were obliged to act upon the defensive. In one instance only they had the power of acting on the offensive, and it was certainly done with great vigour. General Macdonald had still a considerable army in the territories of Naples and of Rome; and the combined powers had made no effort to cut off his retreat, which, indeed, could scarcely be accomplished in the mountainous countries of Tuscany and Genoa. Knowing his situation secure, he was in no haste to withdraw, although nearly the whole of the country between him and France was occupied by the allies. His army amounted to about thirty thousand men, and he had received orders from the Directory to leave the territories of Rome and Naples, and unite, if possible, with the army of Moreau. From the situation of the allies, however, he resolved to hazard an action by himself. With Moreau he had concerted a plan for dividing the enemy, and vanquishing them in detail, as Bonaparte had previously done with so much success. Macdonald alone was in a situation to strike an important blow; but it was nevertheless necessary that Moreau should draw upon himself as many of the Austro-Russian forces as possible, in order that the remainder might be the more completely exposed to the attack of Macdonald.

Stratagem of Moreau.

Moreau artfully availed himself of the circumstance of the French and Spanish fleets being in the vicinity of Genoa, to spread a report that they had brought him powerful reinforcements, intending thereby to withdraw the attention of Suwarof from Macdonald. The Russian general was at Turin, and his advanced posts were at Susa, Pignerol, and the Col d'Assiette, whilst General Hohenzollern was stationed at Modena with a considerable force, and General Ott occupied Reggio with ten thousand men. General Macdonald began his operations on the 12th of June, when his advanced divisions attacked and defeated Hohenzollern, and made two thousand prisoners. General Ott was also attacked, and compelled to retreat, upon which the French made their entry into Parma on the 14th. The Austrian general was again attacked on the 17th, and forced to retire towards Giovanni; but here the progress of the French was arrested by a more powerful and determined antagonist.

French defeated by Suwarof.

Suwarof having received information of the approach and successes of Macdonald, left Turin on the 15th of June, at the head of twenty thousand men, and came up with the enemy upon the banks of the Tidone. The centre and right wing of Suwarof's army were commanded by Rosenberg and Förster; the Austrian general, Melas, commanded the left wing; Prince Bagration was at the head of the advanced guard; and Prince Lichtenstein commanded the reserve. An action immediately ensued, and was continued with desperate fury for three successive days, when victory at length declared in favour of Suwarof. Driven from the Tidone to the Trebbia, the French were finally defeated on the 19th, after a greater slaughter on both sides than the oldest officer ever recollected to have witnessed. Victory had remained doubtful until General Kray arrived with large reinforcements from the army besieging Mantua, and, in direct contempt of his orders, decided the fortune of this protracted and terrible battle. The republicans retreated during the night, and were next day pursued by the army of Suwarof formed in two columns. Seldom could the French be overtaken in retreat; but this the victorious barbarian accomplished, and, having surrounded the rear-guard, obliged them to lay down their arms. The rest of the army defended themselves in the passes of the Appennines and territory of Genoa, after losing nearly half their numbers in killed, wounded, and prisoners. Moreau, in the mean time, gave battle to the Austrians under Bellegarde, who, though greatly superior in numbers, were totally defeated. But this temporary advantage proved of little avail. Suwarof rapidly returned from the pursuit of Macdonald, and Moreau was compelled to retire. The fortresses of Italy now surrendered in close succession, and the combined powers regained a complete ascendency in that country.

Siege of Acre.

The affairs of the republic became equally critical in Palestine. After having defeated the Mamlukes, and made himself master of Alexandria and Cairo, Bonaparte led an army into Palestine. At the head of ten thousand men, with officers eminently skilled in war, he reached Acre on the sea-coast, and laid siege in due form to this town, which was but indifferently fortified, and defended by a small garrison. But Sir Sidney Smith received the command, and detained Bonaparte sixty days before Acre, although the number of the garrison by whom it was defended scarcely exceeded three thousand men. The French commander made eleven successive attempts to carry the place by assault; but in all these he proved unsuccessful, and was at last obliged to raise the siege, after he had lost eight generals, eighty-five inferior officers, and nearly one half of his army. The successful defence of this place destroyed the *prestige* of invincibility, and mainly contributed to decide the fate of the French army in Egypt.

Murder of the French ambassadors at Rastadt.

Whilst France experienced such reverses abroad, she was much disturbed also by internal commotions, and the Directory now found itself in a most critical situation. The new elections were still unfavourable to their interest, and they could no longer command a majority in the Councils. When they sought money they met with reproaches for their profusion; and royalist insurrections in the west and south were with difficulty subdued, on account of the absence of the military. But in the midst of these difficulties an event occurred which seemed to promise the Directory the return of their former influence. On the 28th of April the French plenipotentiaries having received orders to quit Rastadt in twenty-four hours, demanded passports from Colonel Barbasey, but were informed that none could grant these excepting the commander-in-chief. They accordingly set out without passports. The three ministers, Bonnier, Roberjot, and Jean Débry, were in separate carriages, Roberjot having his wife, and Jean Débry his wife and daughters along with him; and they were attended by the ministers of the Cisalpine Republic. At a short distance from Rastadt, however, they were met by fifty Austrian hussars, who stopped the carriage of Jean Débry, and fiercely demanded his name. Débry gave them the information required, adding, that he was a French minister returning to his own country. He was immediately torn from his carriage, desperately wounded with sabres, and thrown into a ditch for dead; whilst Bonnier and Roberjot were murdered outright on the spot. When the ruffians departed, the carriages returned to Rastadt, and Jean Débry wandered all night in the woods. Next day he retraced his steps, and demanded the restitution of the papers which the assassins had carried off when they plundered the carriages; but these were refused. Rastadt and its vicinity had been occupied by French troops during the sitting of the congress, and the Austrians had obtained possession of the place only a few days before. In any view, therefore, this event was a severe reproach to the discipline of the Austrian army; but it is probable that more than the want of subordination was at the bottom of a crime so atrocious, indeed unprecedented in the history of civilized nations. The archduke, it is true, lost no time in declaring his utter ignorance of the matter, in a letter addressed to Massena; but this was far from giving satisfaction to the Directory or to France. In a message to the Councils on the 5th of May, they accordingly described it as a premeditated act on the part of the Austrian government, intended to insult France by the murder of her ambassadors.

Sièyes chosen a member of the Directory.

The introduction of a new third this year into the legislature was the commencement of a violent opposition to the Directory. Sièyes, who had been ambassador at Berlin, and possessed considerable influence over all parties, was elected a member of the Directory. This station he refused to occupy on the establishment of the constitution, and therefore his acceptance of it at such a critical juncture excited surprise. Treilhard was removed upon the pretence that he had held an office in the state within less than a year previously to his election; and Merlin and Reveillère-Lepeaux were under the necessity of resigning, to avoid a threatened impeachment. Barras, however, still retained his place, and Moulins, Gohier, and Ducos, men little known, were chosen members of the Directory. An attempt was made to revive public spirit by the establishment of clubs; a proceeding of which the Jacobins were the first to take advantage. They soon proposed violent measures, and began to denounce the members as well as the conduct of government. But their intemperance having alarmed the Directory, permission was at length obtained from the Councils to suppress their meetings.

Battle of Novi.

The Directory now employed every effort to reinforce the armies which had lately suffered such dreadful losses. In the beginning of August the army of Italy amounted to forty-five thousand men, and General Joubert was promoted to the chief command. Turin, Alessandria, Milan, Peschiera, and Ferrara, were captured by the allies with astonishing rapidity. Turin sustained a bombardment of only three days, Alessandria held out seven, and Mantua only fourteen; the latter place contained thirteen thousand men, who were dismissed on their parole. The combined forces next laid siege to Tortona; but General Joubert resolved to attempt its relief, which he expected to accomplish before the arrival of Kray with reinforcements. On the 13th of August, the whole of the Austrian posts were driven in by the republicans, who took possession of Novi. But on the 15th they were attacked by Suwarof, who had by this time received reinforcements from Mantua under General Kray. The right wing was commanded by Kray, the left by Melas, and the centre by Prince Bagration and Suwarof in person. The engagement commenced about five o'clock in the morning; but soon afterwards General Joubert, whilst urging his troops forward to charge with the bayonet, received a musket shot in his body, and falling from his horse, immediately expired. Moreau new assumed the command, and after a bloody conflict the allied army gave way in all directions. The Russians in particular suffered severely from the obstinate manner in which they fought. The French line was attacked at three in the afternoon, but remained unbroken; and the whole would have terminated in the defeat of the allies if General Melas had not turned the right flank of the republican line, and, following up his advantages, obtained possession of Novi, when the French army began to retire under the direction of General Moreau. The French now lost all hope of being able to defend Genoa, and therefore prepared to evacuate that city and territory. The Directory fully expected that the south of France would immediately be invaded; but in this they were happily deceived. The conquered army was astonished to find itself unmolested after so signal a defeat, and in a few days sent back parties to reconnoitre the movements of the allies. Championet, the successor of Joubert, was amazed to discover that they had rather retreated than advanced, on which account he resumed the positions which the army had occupied before the battle of Novi.

Suwarof marches to the relief of Switzerland.

So far from prosecuting the advantages which he had obtained in Italy, Suwarof was persuaded to abandon that country with the Russian troops, and to march to the deliverance of Switzerland. In the month of August, the army of Massena in this quarter amounted to seventy thousand men, a force which not only prevented the archduke from pursuing his advantages, but even enabled the French to threaten his position; and the right wing under General Lecourbe had carried Mount St Gothard, the great pass leading from the eastern parts of Switzerland into Italy. Suwarof's expectations were no doubt high, as he had never yet been beaten; and he felt flattered in being called upon to undertake an enterprise in which the Austrians had hitherto failed, even under their most fortunate general. But when he was ready to march, the Austrian commander in Italy refused to furnish him with mules for transporting his baggage, and asserted that he would be furnished with a competent number at Bellinzone, where, however, none were to be found. Suwarof had therefore no alternative but to dismount his cavalry, and make use of their horses to drag along the baggage. In spite of all obstacles, however, he arrived, by forced marches, on the frontiers of Switzerland, upon the very day which he had stipulated with the archduke. But the archduke, either supposing that it would demean a prince of the house of Austria to serve under a Russian general, or not having courage enough to require the most experienced general in Europe to receive orders from one so much his junior, immediately marched into Suabia, and carried with him a large body of troops. It is not easy to conceive upon what principle the council of war at Vienna could imagine that so very able an officer as Massena would continue inactive at the head of an army almost double that which had been sent to oppose him. The archduke marched against the French in Suabia, who resisted him as long as the small number of their troops would permit; but they were gradually driven towards the Rhine. To carry on the deception, however, they made a serious stand in the vicinity of Manheim, where they lost nearly eighteen hundred men.

In the mean time Switzerland was completely exposed to the army of Massena. The right wing of the combined army was commanded by General Hotze; the centre, composed of the newly arrived Russians, was headed by Korsakof, and the left wing by General Nauendorf. As soon as Massena understood that the archduke had entered Manheim, and that Suwarof was approaching Switzerland by St Gothard, he commenced his movements, and, as St Gothard was defended by Lecourbe, determined to anticipate the Russian general. Having by a false attack, on the 24th of September, drawn the attention of the Russians to another quarter, he suddenly crossed the Limmat, three leagues from Zurich. Some French divisions now engaged the Austrians, but the main body of the army marched against the Russians. Hotze fell in the beginning of the action, and Petrasch, who succeeded him, saved himself from a total defeat by retiring in the night with the loss of four thousand men. The Russians fought with singular obstinacy, though in a mountainous country to which they were strangers, and contending against the ablest commanders in Europe. It was in vain to attempt to put them to flight, for even when surrounded they refused to lay down their arms, and stood to be slaughtered on the spot. But the Austrians having retreated on the 25th, the Russians on the 28th followed their example, retiring in good order under General Korsakof, but with the loss of three thousand men, which, considering their perilous situation, was not very great.

Suwarof disgusted with the conduct of Austria.

During these transactions General Suwarof was advancing from Italy with an army of from fifteen to eighteen thousand men. Having carried the pass of St Gothard, he descended into the valley of Urseren, drove Lecourbe before him with great slaughter, and advanced as far as Altorf. He next day reached the canton of Glaris, and made a thousand prisoners, whilst General Linken defeated another corps of thirteen hundred men. Massena now turned upon Suwarof, and surrounding him on all sides, expected to take both the field-marshal himself and the grand duke Constantine prisoners. But Suwarof defended himself in a masterly manner, and there being one pass in the mountains which the republicans had left unoccupied, the veteran discovered it, and thus effected his escape, but lost his cannon and baggage amongst the dreadful precipices with which the country abounds. He made his way through the country of the Grisons, and arrived at Coire with only about six thousand men. When Suwarof discovered in what manner affairs had been conducted, when he ascertained the perilous situation in which the Russians had been left by the archduke, and saw the destruction which had in consequence overtaken them, his indignation knew no bounds; he considered himself and his men as betrayed, complained bitterly of the commander of the allies in Switzerland, publicly charged the council of war at Vienna with selfishness and injustice, and refused any longer to co-operate with the Austrian army. He transmitted an account of the whole to Petersburg, and withdrew his forces to the vicinity of Augsburg, there to wait for further orders from his court.

British invasion of Holland.

In the mean time Great Britain made active preparations to invade Holland, with an army of forty thousand men, composed of British troops and Russian auxiliaries. The first division, under General Sir Ralph Abercromby, sailed in the month of August, protected by a fleet under Admiral Duncan; but bad weather prevented any attempt to land the troops till the morning of the 27th, when the disembarkation was effected without opposition, at the Helder Point. As the invaders had not been expected to land in North Holland, there were but few troops in that neighbourhood to oppose them. But before the British had proceeded far they were met by a considerable body of infantry, cavalry, and artillery, hastily collected from the adjacent towns. The Dutch fought with great obstinacy, but, fatigued by the steady opposition of their antagonists, they fell back about two leagues, and in the night evacuated the fort of Helder, which was taken possession of by the British on the morning of the 28th. Admiral Mitchell now entered the Zuyder-Zee with a detachment of the British fleet, in order to give battle to the Dutch under Admiral Story; but the latter, instead of retiring to the shallow water with which that sea abounds, surrendered his whole fleet, on the 30th of August, without firing a gun, pretending that from the mutinous disposition of his seamen he could not prevail upon them to fight. If the expedition had terminated here it would have been fortunate. This success, however, was followed up by an attempt to restore the authority of the stadtholder, and to re-establish the ancient form of government. But as no more than the first division had arrived, the terror of invasion began to be dissipated, the enemies of the new government became disheartened, and time was allowed to prepare for defence. Nor were these the only errors chargeable against the expedition. The British troops were landed in the worst place which could possibly have been selected, in a part of the country everywhere intersected by ditches and canals, and abounding more than any other with persons disaffected to the person and government of the stadtholder; and this unfortunate expedition was undertaken towards the approach of the rainy season, when a campaign in Holland is next to impossible. An invasion of Holland seemed so natural an operation on the part of Britain, and one too which might be undertaken with so many advantages by a power which had the command of the sea, that when it was first talked of the French Directory hesitated to undertake the defence of that country; but when the time and the place of disembarkation came to be known, the prospect of an almost certain success put an end to every doubt on the subject; and General Brune was accordingly sent with such troops as could be hastily collected, to co-operate with General Daendels. In the mean while, as no reinforcement had arrived, General Abercromby could only act on the defensive; and the enemy, encouraged by his want of activity, ventured to attack him on the 10th of September. Two columns of Dutch and one of republicans advanced against the invaders, but were repulsed in every direction, and forced to retreat to Alkmaer. On the 13th additional troops arrived under the Duke of York, who now assumed the chief command; and the Russians having also arrived, the army, upon the 19th, assumed the offensive. The left wing under General Abercromby advanced along the shore of the Zuyder-Zee to attack Hoorne; Generals Dundas and Pulteney commanded the centre columns; and the Russians were led by their own general D'Herman. But, owing to some misconception, the Russians advanced to attack the enemy about three o'clock in the morning, some hours before the rest of the army had begun its march. Their first efforts, however, were crowned with success, and they made themselves masters of the village of Bergen; but as they pressed too eagerly forward, without waiting for the co-operation of the other columns, the enemy nearly surrounded them; their general was made prisoner; and notwithstanding that the British troops came up in time to cover their retreat, they lost upwards of three thousand men. This defeat of the right wing induced the commander-in-chief to recall his troops from their advanced positions, notwithstanding Abercromby had by this time made himself master of Hoorne and its garrison, and Pulteney had carried by assault the chief position of the Dutch army. The severity of the weather prevented any fresh attack being made till the 2d of October. On that day, however, an action was fought between the British and the united Dutch and French troops, which was warmly contested, and did not terminate till late in the evening, when the British regained possession of Alkmaer and the neighbouring villages. But as this engagement had taken place among the sand-hills near the sea, the fatigue which the troops had undergone prevented them from profiting by their victory; and the fugitives were enabled to take up a position between Baverwyck and Wyck-op-Zee. Here they were again attacked on the 6th by the Duke of York, who after a sanguinary contest kept possession of the field. This, however, was the last success gained by the invading army. The Duke of York, finding that he could make no further progress, that the enemy had been rapidly reinforced, and that the difficulties presented by the face of the country and the badness of the weather also conspired against him, retired to Schager Brug, where he waited for fresh orders from England. But being closely pressed by the enemy, the embarkation of the troops must have been effected with great difficulty, had he not entered into a convention with the Dutch and French that his retreat should not be molested, in return for which he engaged not to injure the country by demolishing any of the dikes which defended it against the sea, and also to restore to France and Holland eight thousand prisoners taken before the present campaign.

French affairs.

The affairs of the French Republic now began to wear a more favourable aspect. Championet, it is true, had been defeated in Italy, and Ancona surrendered on the 13th of November to General Frölich; but the French were still masters of the Genoese territory, Switzerland, and Holland; and the new combination formed against them seemed about to be dissolved. Prussia withdrew at an early period, and still preserved a neutrality; and, from the fate of Suwarof's army, it was reasonable to conclude that the emperor of Russia would also desert the cause of the allies.

Revolution of the 18th Brumaire.

But the crisis of the directorial government was now fast approaching. Bonaparte, on his retreat from Syria, had received intelligence that a Turkish army, supported by a fleet, was about to invade Egypt. He hastened his return across the desert, and arrived in the vicinity of the Pyramids on the 11th of July, when he found that an army consisting of eighteen thousand Moslemins had landed at Aboukir, carried that place by assault, and put the garrison, consisting of five hundred men, to the sword. On the 15th he marched against these new invaders, and ten days afterwards not only defeated, but annihilated, their whole force, slaying about half their number, and driving the remainder into the sea. On the 10th of October the Directory received a dispatch announcing this victory; and on the 14th of the same month the less agreeable intelligence was communicated, that Bonaparte, accompanied with his principal officers, had landed on the shores of Provence. The state to which France had been reduced under the

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directorial regime was truly deplorable. Not to mention the disastrous defeats which had been sustained by the French army, the loss of Italy, and of all the advantages secured to the Republic by the treaty of Campo Formio, the provinces had fallen into a state of extreme disorganization; the roads were infested with brigands; and, by the law of hostages, all persons nobly born, or related to the nobility, were obliged either to skulk in concealment, or to join the insurgent bands. The rich were vexed with the same exactions as in the early period of the Revolution, when the country was menaced with invasion; the great mass of the population had been decimated by the consumption of the armies; the fields in many places remained uncultivated; disorder and misery everywhere prevailed. The necessity of a change was every day becoming more and more obvious; and whatever difference of opinion there might be in the capital, the provinces were prepared to submit to any government which might supersede the Directory. Even the members of this body itself had become convinced that the period of its demise was at no great distance. Barras treated with the Bourbons; Sièyes had repeatedly remarked that the chief thing wanting was a *head;* others held similar language; and the minds of all, excepting the extreme democrats, were prepared for a change.

Bonaparte, on his arrival, repaired to the Luxembourg. The Directory praised and feared, but dared not reproach him with the bold step he had taken in returning to France. He had evidently come to watch the course of events, and with this view shut himself up in a modest mansion in the Rue Chantereine. But it soon appeared that he was the loadstone which drew to it all interests and all ambition; ministers, generals, deputies, men in office who desired to retain their places, and men out of office who desired to dispossess the actual occupants, flocked in crowds to General Bonaparte. All parties in fact made overtures to him; the extreme democrats, who sought in him an instrument, and the moderates, who desired the re-establishment of order at almost any price. Not to have picked up the fragments of sovereign power which thus crumbled and fell at his feet, would have been an act of self-denial unexampled in the annals of ambition. The country had despaired of obtaining at once a free and an efficient government; and, torn by the violence of contending factions, it now languished for repose. Bonaparte took several days to mature his plans, and decide on the course which he was to adopt. The democrats and moderates were equally eager in their advances. But his revolutionary connections inclined him to the former; and as his brother Lucien had, in compliment to him, been chosen president of the Council of Five Hundred, Bonaparte proposed, through this party, to become Director in room of Sièyes. Gohier and Moulins were accordingly sounded, but these pragmatical blockheads objected on the ground of the law which required that a director should be forty years of age. The facility of getting a dispensation voted was hinted at; but they persisted, not seeing the inevitable consequences of their obstinacy; and Bonaparte instantly joined Sièyes and the moderates, with whom he planned a change, not only in the members, but also in the form of government. But to effect this, it was necessary to commence with a *coup d'état*, or revolution; and the success of the latter must in a great measure depend on the support of the military. Of that order Bonaparte was the natural representative, and great exertions were now employed to secure its co-operation. He could reckon on the inferior officers and the troops; their idol is always a victorious leader. But three of the generals, Moreau, Augereau, and Bernadotte, were either too high in rank to stoop to a comrade, or too republican in principle to acquiesce in a project of revolution which might terminate in establishing a despotism. Moreau, however, was irresolute, and being discontented with the Directory, suffered himself to be neutralized, if not gained over; Augereau, brave in the field of battle, wanted political courage and conduct; and even Bernadotte, who had both, and argued stoutly against Bonaparte, was stilled, awed, or duped by his address.

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On the 18th of Brumaire, the day fixed for this revolution, Bonaparte summoned all the generals and officers in Paris to an early breakfast. It was a kind of levee; some regiments were to be reviewed; and it was necessary to harangue the troops. The Directors Barras, Moulins, and Gohier, were kept in ignorance of the plot; they inhabited the same palace, that of the Luxembourg, and, forming a majority of the Directory, might have done mischief. The first step, however, had all the forms of legality. The Council of Ancients, in which the influence of Sièyes predominated, met at six in the morning, and passed the preconcerted decree removing the sittings of the legislative body to Saint Cloud, and conferring upon Bonaparte the command of the troops in the capital. The decree was brought to Bonaparte in the midst of his levee, and immediately communicated to the officers present, whom he also addressed. The moment for action had now arrived. Seizing Lefebvre by the arm, he presented him with a sword, and won the rough soldier by a few magical words. The decree of the Legislative Assembly secured the obedience of Moreau. Bernadotte alone stood firm, but he was not permitted to retire, until he had given a promise not to raise agitations, harangue the soldiers, or act in any way until legally summoned. Having thus made himself certain of the military, Bonaparte rode to the Tuileries, reviewed the troops, and watched the course of events. Talleyrand had been sent to the Luxembourg to induce Barras to resign, and the latter had sent his secretary to the Tuileries to collect tidings. The directorial emissary was brought to Bonaparte, who instantly addressed him as if he had been the Directory itself: "What have you done with France, which I left so brilliant? I left peace and I find war, victories and I find reverses; I left you the millions of Italy, and I find nothing but spoliation and misery. Where are the hundred thousand soldiers, my companions in glory? They are dead." This was spoken to excite the officers around, and to dispose them to march against the Luxembourg, which he was now prepared to do. But the prudence of Barras rendered such a step unnecessary. Having received from Talleyrand a promise of oblivion for the past, wealth and impunity for the future, he signed his resignation, and left the capital for his house in the country, attended by an escort of dragoons. Moulins and Gohier, less accommodating, were ordered to be put under a guard in the Luxembourg, and Moreau was charged with this invidious duty. As Sièyes and Ducos had also resigned, the Directory was now virtually dissolved; and all that remained to be done was to replace it with a new executive government.

On the following day, being the 19th of Brumaire, the members of the two Councils met at Saint Cloud. Bonaparte had occupied the road and the environs of the château with troops; but his project was still far from being accomplished. The democratic majority in the Council of Five Hundred were indignant; the moderate majority in the Council of Ancients wavered as the crisis approached; and whilst the one prepared for extremities, the other began to repent their own act, and to be apprehensive of the intentions of Bonaparte. When the Councils met, the greatest agitation prevailed. In the Five Hundred the oath of fidelity to the constitution was renewed; and it was feared that some similar demonstration would be made by the Ancients. Informed of this dangerous spirit of resistance, Bonaparte resolved to confront, and if possible put it down by his presence. Surrounded by his staff, he accordingly entered the Council of the Ancients, and addressed their president, but with so much confusion both of language and of manner that his partisans began to despair. "Representatives," said he, "you are on a volcano. I was tranquil yesterday when your decree was brought me, and I have come with my comrades to your aid. On this account I am recompensed with calumnies. I am stigmatized as a Cromwell and a Cæsar. If such were my character, I had no need of coming here." He then mentioned the resignation of the Directors, the distress of the country, and the agitated state of the Council of Five Hundred, upon which, he said, no dependence could be placed; and he besought the Ancients to save the Revolution, liberty, and equality. "And the constitution," exclaimed a voice. "The constitution!" repeated Bonaparte, pausing and collecting himself; "I tell you, you have no constitution. You violated it in Fructidor, in Floreal, and in Prairial, when you seized by force and condemned the national representatives, when you annulled the popular elections, when you compelled three directors to resign. The constitution, forsooth! a name at once invoked and violated by every faction in turn. What force can it possess, when it has ceased to command even respect? The government, if you would have such a thing, must be fixed on a new basis." Having thus shown the necessity of the revolution, he then proceeded to re-assure his partisans, by promising it success; and, pointing to the glittering bayonets of the soldiers, "I am accompanied," added he, "by the god of fortune and of war." The Ancients applauded this speech, and Bonaparte, satisfied with the effect it had produced, hurried to the other wing of the château, where, in the Orangery, the Council of Five Hundred were in a state of extreme excitement. Leaving his staff behind, he advanced into the hall, whilst the grenadiers who followed him remained at the door. As he proceeded towards the chair, which was occupied by his brother Lucien, a violent tumult ensued, and the epithets "Cromwell," "Cæsar," "Usurper," were freely applied to him from all parts of the house. Had the assembly heard him calmly, and then voted him a traitor or outlaw, his career might have been speedily closed; for Jourdan and Augereau were both without, and might easily have withheld or drawn off the soldiers. Instead of this, however, the exasperated deputies sprang from their seats as soon as he appeared, and pressing upon him, collared, hustled, and maltreated him, whilst Arena Corsican endeavoured to dispatch him with a dagger. The grenadiers flew to his assistance, and rescued him from their fury. "Let us outlaw him; a vote of outlawry," was the instant cry of the assembly; "let him be treated like Robespierre, let him be put *hors la loi*." But Lucien refused to put the decree to the vote; he resisted, gained time, and at length, when about to be overpowered, was borne out of the hall by the grenadiers whom Napoleon sent to his assistance. Throughout the whole of this trying scene the civilian showed more courage and presence of mind than the soldier. Divesting himself of his robes, Lucien mounted a horse and harangued the troops, telling them that the majority of the Council of Five Hundred were held in terror by a few democrats armed with poniards, who menaced them, and attempted to assassinate the general. This declaration produced a great impression; and the demand whether they might be reckoned on was answered with acclamations by the troops. A company of grenadiers was instantly ordered to clear the Orangery. They advanced from the one end to the other with fixed bayonets, whilst the deputies escaped by the windows and through the woods, leaving in their retreat fragments of their robes upon almost every bush. In the evening of the same day the Council of Ancients, and about fifty members of the dispersed Council of Five Hundred, passed a decree abolishing the Directory, and establishing in its room three consuls, Bonaparte, Sièyes, and Roger Ducos, as a provisional government, which, in concert with two committees chosen from each council, was authorized to prepare a constitution.

A consular government established.

The plan of a new constitution was presented to the public by the consuls in the month of December 1799. According to this plan, eighty men, who had the power of nominating their own successors, and were called the Conservative Senate, had likewise authority to elect the whole of the legislators and executive rulers of the state, whilst none of these offices could be held by themselves. One man, called the chief or first consul, was to possess the sovereign authority, to hold his office for ten years, and to be competent to be re-elected; and other two consuls were to assist in his deliberations, but to have no power to control his will. The legislative power was divided into two assemblies; the Tribunate, composed of a hundred members, and the Conservative Senate, of three hundred. When the first consul thought proper to propose a law, the Tribunate might debate upon it, without having authority to vote either for or against it, whilst the members of the Senate might vote, but were not entitled to debate. The consuls and the members of the legislative body, as well as of the Conservative Senate, were not responsible for their conduct; but the ministers of state employed by them were understood to be accountable. The committees which framed the constitution nominated the persons who were to execute the functions of government. Bonaparte was appointed first consul, and Cambacérès and Lebrun second and third consuls. Sièyes, as formerly, declined taking any active part in the administration of public affairs, and received, as a gratuity for his services, an estate belonging to the nation, called Crosne, in the department of the Seine and Oisne.

Bonaparte proposes to treat with Britain.

Bonaparte had not been long in possession of the reins of government, when he made overtures for negotiating peace with the allied powers at war with France. Separate proposals were made to the different belligerent powers, no doubt with a view to dissolve the coalition; but the decrees of the Convention which had declared war against all the powers of Europe still remained unrepealed. Departing from the forms sanctioned by the custom of nations in carrying on diplomatic correspondence, he addressed a letter directly to his Britannic majesty, the substance of which was, whether the war, which had for eight years ravaged the four quarters of the globe, was to be eternal? and whether there were no means by which Britain and France might come to a good understanding? To these questions the British ministry made a formal and elaborate reply, in which they dwelt much on the bad faith of the revolutionary rulers, and the instability of the governments of France since the subversion of the monarchy. The overture transmitted to Vienna was of a similar description, and experienced similar treatment; but, irritated by the shameful treatment of Suwarof while carrying on the war in Italy and Switzerland, the emperor of Russia abandoned the coalition.

On the 7th of March Bonaparte sent a message to the legislative body, containing his ideas as to the conduct and designs of the British cabinet, and assuring them that he would invoke peace in the midst of battles and triumphs, and fight only for the happiness of France and the repose of the world. This message was followed by two decrees; the one calling, in the name of honour, upon every soldier absent upon leave from the armies of Italy and the Rhine, to join them before the 5th of April; and the other appointing a fresh army of reserve to be assembled at Dijon, under the immediate command of the first consul.

Affairs of Italy.

About this time the belligerent powers were nearly ready to open the campaign both in Italy and on the Rhine. The Genoese Republic formed the only territory of any importance in Italy, which remained in the hands of the

French; but the army by which it was defended had been very much reduced since the preceding year, and might be considered as in a state of mutiny, from the want of pay, clothes, and provisions. The Austrians were most anxious to obtain possession of Genoa and its dependencies; and in this they were seconded by the Genoese themselves, who regarded the republicans as the destroyers of their commerce. Massena received the command of the army in Genoa, with extraordinary powers, and by his conduct proved himself a general of consummate abilities. Carrying with him a reinforcement of troops from Lyons and Marseilles, and reducing to order and obedience all whom he had found ready to desert their standards, he was soon at the head of a force sufficient to check the progress of the Austrians, and to keep the Genoese in subjection. But after a number of battles, all of them most vigorously contested, he was at length obliged to retire within the city, where he had soon an opportunity of distinguishing himself by one of the ablest and most obstinate defences on record. The appearance of the British fleet on the 5th of April was the preconcerted signal for Melas to attack Genoa, the communication between which and France was thus cut off. But previously to the arrival of Lord Keith, a quantity of wheat and other provisions had been thrown into the city, by which means the army and the inhabitants were rescued from immediate famine. The surrounding country was soon occupied by the Austrians; but as Massena still lived in the expectation of supplies from France, he obstinately refused to surrender the city. General Melas having nothing to apprehend from the army shut up in Genoa, left General Ott to continue the blockade, and with the remainder of his forces marched against Suchet, who commanded another division of the French army. On the 7th of May a battle was fought, between Ceva and St Lorenzo, in which the republicans were defeated with the loss of twelve hundred prisoners and ten pieces of cannon. The consequences of this defeat, which in the circumstances was perhaps inevitable, proved eminently disastrous to the French. Suchet was obliged to abandon his strong position on the Col di Tende, where he left behind him four pieces of cannon and two hundred prisoners; and though he disputed every defensible point on his retreat, the Austrians drove him from one post to another, till he was finally obliged to take refuge behind the Var; by which means General Melas became master of the whole department of the Maritime Alps.

Campaign on the Rhine

But the campaign on the Rhine did not open in so favourable a manner for the Austrians as that of Italy. The court of Vienna directed the Archduke Charles to resign the command of the army to General Kray, who had eminently distinguished himself during the Italian campaign of 1799. Of his military talents there could be only one opinion, and his integrity and zeal had been sufficiently tried; but he had the misfortune not to be noble, and in the Austrian dominions the want of high birth cannot be compensated by the possession of great talents. It could scarcely be expected, therefore, that a divided army, commanded by an officer without birth, though possessed of ability, would make head against the united veterans of France, led on by a general under whom they had been accustomed to conquer; and, in fact, the Hungarian troops, finding themselves ready to be sacrificed to the dissensions of their officers, refused to fight against the enemy. At the opening of the campaign, the council of war at Vienna had sent General Kray instructions how to dispose of his forces and having no general under him to support his views, he was under the necessity of obeying his instructions whether he approved of them or not. Instructions of a similar nature had been transmitted to Moreau by the chief consul, but he refused to fight under restraint. Conscious that in knowledge of the military art he was not inferior to Bonaparte himself, whilst he possessed the advantage of being infinitely better acquainted with the country, he sent a courier to Paris to inform the first consul, that if the orders sent him were to be rigidly obeyed, he should feel it his duty to resign his command, and accept of an inferior station. He accompanied his resignation with a plan of the campaign which he had framed for himself; and as the propriety of his suggestions forcibly struck the mind of the first consul, he was ordered to act according to his own judgment.

Being thus judiciously left to adopt and execute his own measures, General Moreau crossed the Rhine, and drove the Austrians from one post to another, till General Kray, finding it impracticable to adopt offensive measures with a mutinous army and disaffected officers, resolved to maintain his position at Ulm, and wait for reinforcements from Vienna. He had been defeated at Stockach, at Engen, and at Möskirch, although on almost every occasion he gave proofs of ability and determination; but no talents, however great, can counteract the pernicious effects of treachery and disaffection, to say nothing of an absurd and impracticable plan of operations. At one time, indeed, seven thousand men, when ordered to advance, instantly threw down their arms. Convinced that it was absolutely vain to attempt any offensive operation, Kray intrenched himself strongly at Ulm, which, as it commands both sides of the Danube, is consequently a place of great importance. But Moreau, perceiving his intentions, resolved to attempt the passage of the Danube, and force Kray to a general engagement, by cutting him off from his magazines at Donawert; and with this view he ordered Lecourbe, with one of the wings of his army, to take possession of a bridge between Donawert and Dillingen. This was not effected without difficulty and loss; but it fully disclosed the intentions of the French general. The Austrians, in fact, perceived their danger in all its magnitude, and accordingly disputed every inch of ground with the enemy. Kray sent reinforcements to the left bank to oppose the passage, and a battle in consequence ensued at Hochstet, in the vicinity of Blenheim, where victory again declared for the French, who made four thousand prisoners. Sensible that his situation had now become perilous in the extreme, Kray left a strong garrison at Ulm, and marched against the enemy, whom he attacked at Neuburg. The troops on both sides fought with determined bravery; but, after a severe contest, the Austrians were obliged to fall back on Ingolstadt. This battle may be said to have decided the fate of Germany. The electorate of Bavaria was now in the possession of the French, besides other territories of less extent; and as they approached the hereditary dominions of the emperor, republican sentiments were loudly expressed, whilst the people in many parts evinced such a leaning towards the enemy, as to convince the court that no dependence could be placed on armies composed of such persons. The imperial family, and the British ambassador, were openly insulted in the theatre, and the cry of "Peace, peace," resounded from every part of the house.

Views and wants of Napoleon.

"A new dynasty must be baptized in blood." This was the careless remark of a rhetorician, but Napoleon deeply felt its truth. His authority, which wanted the sanction of time, required the support of victory. It was necessary for his own sake, as well as for that of the country which had placed its destinies in his hands, that he should strike a blow which would at once humble the enemy, and impress the world with an idea of his irresistible power. With this view, he had caused to be assembled at Dijon, and organized by Berthier, an army of reserve (as it was called), which was thought to have no other destination than that of defending the course of the Rhine, but which was in reality intended to perform a conspicuous part on an independent theatre of action. The object of Napoleon was to reconquer

Italy, which, with the exception of Genoa, where Massena still held out, the Austrians now occupied to the foot of the Alps. And every thing seemed to favour the project which had been so boldly conceived. His preparations had been so skilfully masked, that when the government ostentatiously announced the real strength of the army of reserve, the statement was universally discredited; and Melas, who commanded the imperial forces in Italy, so little dreamed of being called upon to contend for the possession of that country with the most fortunate and enterprising general of his time, that his whole attention was directed towards the pursuit of Suchet, who was now retreating over the Alps of Savoy. In his head-quarters at Alessandria, he never suspected that he would have to oppose an invading force descending into Italy by the pass of the Great St Bernard. The real views of Bonaparte were too bold to enter into the conception of the Austrian general. These were, to traverse Switzerland by the lake of Geneva and the valley of the Rhone as far as Martigny, and thence to cross the Great St Bernard, and descend into the plains of Lombardy in rear of Melas; in other words, to intersect the communications of the Austrian general, disarrange all his plans, oblige him to countermarch and take up new positions, and, lastly, impose on him the necessity of receiving battle in a situation where defeat would be total ruin. He expected to reap the benefit of a complete surprise, and at all events to take the enemy *in flagranti delicto*.

Passage of the Alps; invasion of Italy.

On the 6th of May the first consul left Paris, and proceeded to take the command of an army the strength and destination of which had given rise to so many conjectures. This army, which had been reinforced from the Rhine, and amounted to about forty thousand men, immediately began its march into Switzerland, and on the 20th crossed the Great St Bernard. The passage of this mountain is justly accounted one of the most extraordinary achievements in modern warfare, and is not inferior in any of its circumstances to the celebrated passage of the Alps by Hannibal. The French army now advanced by a path which had hitherto been considered as practicable only for mules and foot passengers; they removed their cannon from the carriages, placed the guns in the hollowed trunks of trees, and thus dragged them up the steep ascent. In May winter still reigns with unmitigated severity in these regions; and the rigours of a northern climate, snow, ice, and whirlwinds, increased the dangers of the march; but all difficulties were overcome by the enthusiasm and perseverance of the troops. On reaching the summit, refreshments awaited them at the convent, to the monks of which large sums had been transmitted for the purpose; and in that cloud-capped habitation of peace, the soldiers as they passed received a cordial welcome, and enjoyed some needful rest. The division which crossed the Simplon encountered still greater difficulties than that which passed the Great St Bernard, having to clear deep fissures in Indian file, and sometimes clinging to a single rope. In descending from Mount St Bernard into the valley of Aoste, the road passes under the fort of Bard, by which it is completely commanded. Here, then, was a lion in the path. The troops might avoid it by clambering over the adjoining precipices, but for the artillery this was impossible. The fort was summoned and cannonaded, but in vain; the governor disregarded the menaces of the invaders, and his little citadel was secure against a *coup-de-main*. What was to be done? The case seemed desperate, but ingenuity at length triumphed. The street of the village immediately below was covered with straw and small branches, and the cannon were dragged past during a dark night without attracting the attention of the garrison. Had the fort opened its fire, and delayed the army longer, all the advantages of this bold march would have been lost. But fortune still remained true to her favourite; and Bonaparte, having cleared an obstacle which at first appeared insuperable, followed the course of the Doria and the Po, entered Milan and Pavia, and thus accomplished his first object, namely, that of placing himself on the communications of Melas.

The Austrian general had already retrograded; he could not credit the report of Bonaparte being in Italy, but still he had taken the precaution to fall back. What above all astonished him, was to hear that the French had cannon; how had they passed the Alps? Bonaparte arrived at Milan on the 2d of June, and there expected Moncey to join him with reinforcements from the army of Switzerland. In the mean time he dispatched his lieutenants to seize the towns on the Po; which was promptly effected. In occupying Piacenza, Murat intercepted a courier on his way to the Austrian head-quarters, with tidings of the fall of Genoa. This event, which disengaged and rendered disposable a large Austrian force, left Napoleon no alternative but either to fall back and wait for his expected reinforcements, or to march against Melas, and put all to the hazard of a battle. He chose the latter course, and trusting that his own genius and fortune would compensate for his deficiency in effective force, resolved to anticipate the enemy. Melas had concentrated his whole force at Alessandria, on the Bormida; and General Ott, having reduced Genoa, was rapidly advancing, with the intention of surprising the French advanced posts on the Po, and at the same time combining his operations with those of the principal army in a grand effort against the enemy. But Ott was himself surprised by Lannes at Montebello, and after a severe action completely defeated with the loss of five thousand men. The French army now advanced to Stradella, where it took up an advantageous position, and remained several days to allow Suchet to close upon the enemy's rear, and Massena, with the liberated garrison of Genoa, to join from the south. The Austrians in the mean while made no movement; and Napoleon, apprehensive that Melas might escape him, either by marching north towards Turin or south towards Genoa, advanced into the plains of Marengo; thus giving a prodigious advantage to the enemy. But although Melas was greatly superior in cavalry, and might at his option either attack the French, or defend the course of the Bormida, behind which his army was concentrated, Bonaparte was still so apprehensive that he might file off towards Genoa, that he detached Dessaix, who had just arrived from Egypt and taken the command of a division, to counteract any movement in retreat, and to compel the Austrians to receive battle. But this measure, which in its consequences had nearly proved fatal to the French army, proceeded on a total miscalculation; for at the very moment when Napoleon was thinking of preventing the flight of Melas, it was decided in a council of war that the only mode of securing Genoa was to give battle to the French.

Battle of Marengo.

On the morning of the 14th, which Melas had fixed on for the attack, the French were echelloned in an oblique formation, extending from Marengo, the village next the Bormida, which was occupied by their advanced guard, to San Giuliano, where the head-quarters were established, with considerable intervals between the divisions. The Austrians passed the Bormida in three columns, by as many bridges, which they had thrown across the river. One cause of the want of preparation on the part of Napoleon, was the assurance he had received that the principal bridge had been broken down; and this was perfectly true; but the Austrians had not lost a moment in re-establishing the bridge, and thus restoring their communications with the opposite bank of the stream. The first burst of the attack was directed against the French at Marengo. But instead of advancing boldly to the charge, and storming the key of the position, the imperialists deployed, planted batteries, and waited to effect tardily by their fire what an assault might have at once accomplished. This afforded the French time, which they so much wanted, and enabled Napoleon to recall Dessaix. The right and left of the Austrians had scarcely an enemy to contend with; for being composed chiefly of cavalry, in which arm the Austrian army was eminently powerful, they swept every thing before them; and at length, turning towards the centre, drove the enemy from the village of Marengo, across a swampy rivulet in the rear. At mid-day, the plain presented an extraordinary spectacle. The French in disordered masses were in half retreat, yet still maintaining a vigorous resistance; whole columns of wounded and stragglers were pressing towards the rear, and throwing into confusion the ranks which still held firm; the Austrian cavalry domineered in the plain, and threatened at every moment to break in among the disordered troops; the fate of the day seemed already decided. Seeing himself victorious at Marengo, General Melas retired to Alessandria to write his dispatches, leaving the chief of his staff, Baron Zach, to complete the victory. He had already withdrawn from the field a considerable body of cavalry, which he deemed it necessary to send against Suchet; a fatal error, which he had soon reason to repent. But whilst Melas thus indulged in the security of an assured triumph, Bonaparte was preparing to make a stand at San Giuliano, and to avenge the defeat of the morning by fighting a fresh battle in the evening. Dessaix had now joined, and highly applauded the resolution of the general-in-chief. The artillery was at the same time placed in battery upon an eminence commanding the high road, along which the Austrians shortly afterwards advanced in column. But success had rendered them as imprudently confident in the evening as the French were in the morning, and they came on less to dispute the victory than to gather up the fruits of one which had been already gained. Bonaparte now rode leisurely along his newly-formed line. "Soldiers," said he, "we have retreated enough for to-day; you know it is my custom to sleep on the field of battle." When the imperialists led on by Zach approached San Giuliano, the battery, unmasked, opened its fire; Dessaix led on his fresh division of infantry to the attack; Kellerman, with a brigade of light horse, watching the favourable moment, charged and broke through the advancing column, then wheeling round, charged back and again penetrated it. Thus surprised and enveloped, the head of the column laid down its arms, and the remainder scarcely attempted to make a stand; being speedily routed and put to flight, it communicated its panic to the troops in the rear, which, had they come up with suitable determination, might have repeated at San Giuliano the success of Marengo. All was now lost. The imperialists fled across the plain of Marengo towards the bridges, pursued by the French, who slaughtered the fugitives in all directions. The carnage was dreadful, and continued until nightfall, when the victors, weary of slaying and oppressed by fatigue, slowly withdrew. Thus the battle of Marengo, which a vigorous charge of cavalry would for ever have decided, was restored and gained by six o'clock in the evening. Dessaix fell early in the second battle, to which the brilliant charge so opportunely executed by young Kellerman gave the decisive turn.[1]

Italy was thus conquered at Marengo; and France by one battle regained her superiority in the field. An armistice was now agreed to, the terms of which were, that Piedmont and Genoa were to be given up to the French, and that the Austrians should retire behind the Mincio; thus abandoning at once all the conquests of Suwarof. The convention with Melas was considered as preparatory to a treaty; and, in fact, Bonaparte offered to Austria the terms of Campo Formio; but the cabinet of Vienna, more resolute in adversity than in prosperity, pleaded her engagements with Britain, as precluding her from treating excepting in conjunction with that power, her ally. Hohenlinden was destined to add its glories to that of Marengo, before peace could be conquered.

General Kray was anxious to avail himself of the armistice concluded in Italy in order to arrest the progress of Moreau; but that able general refused to listen to any overtures upon the subject, until he should have received instructions from Paris. Count St Julien, however, arrived with proposals of peace from the imperial cabinet, in consequence of which the armistice was extended to Germany; and the posts then occupied by the respective armies were considered as constituting the line of demarcation. But, in opposition to the spirit of the stipulations with General Melas, the French reinforced their army in Italy, levied immense contributions, and raised troops in different states which they themselves had declared independent.

Distress of the French in Egypt.

Whilst France was thus victorious in Europe, her troops in Egypt were subjected to the greatest hardships. The circumstance of their being abandoned by their chief gave rise to bitter complaints; and Kléber is said to have declared that the same universe should not contain him and Bonaparte. Under the auspices of the latter, a convention for the evacuation of Egypt by the French was concluded at El Arisch on the 24th of January 1800, between the Grand Vizier on the part of Turkey, and Sir Sidney Smith on that of Great Britain. By virtue of this convention, the republican army, with its baggage and effects, were to be collected at Alexandria, Rosetta, and Aboukir, and to be conveyed to France in vessels belonging the Republic, or such as might be furnished for that purpose by the Sublime Porte.

Kléber assassinated.

Towards the close of the year 1799 the British ministry had reason to believe that an arrangement would be entered into between the Grand Vizier and General Kléber for the evacuation of Egypt by the French; and as such an event was much to be desired, Lord Keith received orders to accede to it, but only on condition that Kléber and his army should be detained as prisoners of war. The convention of El Arisch accordingly fell to the ground; and, but for the honourable conduct of Sir Sidney Smith, Kléber would have been treacherously attacked by the Grand Vizier whilst resting upon his arms, in reliance that the treaty would be ratified. But the Turks paid dear for their meditated perfidy. On the 20th of March, Kléber attacked and totally routed them at Heliopolis, near Cairo, with the loss of more than eight thousand men killed and wounded on the field of battle. This victory restored to the French Cairo, which in terms of the convention of El Arisch they had abandoned. Kléber again proposed to evacuate Egypt, upon the terms agreed to by the Grand Vizier and Sir Sidney Smith; and Lord Keith being now empowered to agree to them, a suspension of hostilities took place, and the Turks were about to be delivered from an enemy whom they were not able to expel, when General Kléber was suddenly assassinated. Both parties had reason to regret this event, as Kléber was not only one of the most able, but also one of the most upright and honourable men ever intrusted with the command of an army.

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[1] The partisans of Napoleon assert that the order for this charge issued from him. But Kellerman, supported by almost all the officers who were present, claimed it as his own spontaneous act; and a strong feeling of resentment was excited in his mind by the omission of all notice of this achievement in the official account of the battle. The service thus rendered was perhaps too great to be acknowledged. "That charge of yours was opportune," observed Napoleon, after the battle, in a tone of lukewarm praise. "Opportune indeed," replied Kellerman; "it has placed the crown on your head."

Resolution of the British government.

Menou succeeded Kléber in the command of the French army in Egypt, but refused to quit that country by capitulation; in consequence of which the British government formed the resolution of expelling him by force. Sir James Pulteney had received the command of twelve thousand men in the Mediterranean, with orders to act in such a manner as might most effectually annoy the enemy; but as this plan had been disconcerted by the result of the battle of Marengo, he was superseded by Sir Ralph Abercromby, who carried out with him reinforcements, together with a train of artillery from Gibraltar. Having touched at Minorca and Malta, Sir Ralph steered his course thence for the coast of Egypt, which he reached on the first of March 1801, and next day anchored in the Bay of Aboukir. But the weather prevented him from attempting to land till the 8th, when the first division effected a landing in the face of the French, to the amount of four thousand men, and the disembarkation was continued during that and the following day. The army moved forward on the 12th, and coming in sight of the enemy, gave them battle on the 13th. The conflict was obstinate on both sides, and the loss very considerable; but victory in the end declared for the British. This advantage was followed up with vigour, and on the 21st a more decisive battle was fought about four miles from Alexandria, where, after various turns of fortune, the British were finally victorious. In the heat of the action, General Abercromby received a mortal wound, and died on the 28th. The loss on both sides was severe.

The northern confederacy.

As the fate of Egypt was in a great measure decided by these two battles, we shall now advert to affairs of great importance which about this time took place in Europe. The northern powers, jealous of the maritime superiority of Britain, and acting under the influence of the Emperor Paul, resolved to revive the armed neutrality of Catharine II. established during the American war, and to claim the right of trading to the ports of France without being subjected to what they conceived the intolerable evil of having their vessels searched. The ministry of Great Britain had determined to break up this confederacy; but, to the astonishment of the nation, which was not prepared for such an occurrence, they suddenly resigned.

Change of ministry in Britain.

Various causes have been assigned for an event so unexpected; but the ostensible reason was a difference in the cabinet relative to Catholic emancipation. After the union of Ireland with Britain, the minister appears to have proposed this subject in the cabinet; but his majesty, from some conscientious scruples founded on his coronation oath, gave it his direct negative, and in consequence Mr Pitt and his friends tendered their resignation. They were succeeded by men, however, who had generally supported Mr Pitt's administration during the war, and who were entirely of the same school in politics. Mr Addington was appointed first lord of the treasury and chancellor of the exchequer; Lord Eldon, lord high chancellor; the Earl of St Vincent, first lord of the admiralty; Lords Hawkesbury and Pelham, secretaries of state; and the Honourable Colonel Yorke, secretary at war. The former ministry was dissolved on the 11th of February; but owing to the indisposition of the king, the new ministry did not enter upon office until the middle of March, during which interval Mr Pitt and his associates had the chief management of public affairs. The new ministry commenced their career by solemnly pledging themselves to the nation that they would employ their united efforts in procuring a safe and honourable peace with France, which in fact was loudly demanded by the nation.

Proceedings of the northern confederacy.

About this time measures the most hostile were adopted towards Britain, by the powers composing the northern confederacy. The city of Hamburg was taken by a Danish force under the Prince of Hesse; and the king of Prussia likewise sent a numerous army into the electorate of Hanover, all with the view of injuring British commerce. To punish this audacious conduct, and dissolve the northern confederacy, a fleet of seventeen sail of the line, four frigates, four sloops, and some bomb vessels, was fitted out in the ports of Britain, and sailed from Yarmouth on the 12th of March, under the command of Admiral Sir Hyde Parker, Lord Nelson, and Rear-admiral Graves; and having passed the Sound, appeared before Copenhagen on the 30th of the same month. The Danes did not appear in the smallest degree moved by this display of force, thinking it impossible to molest either their fleet or their city without passing through a channel so extremely intricate that it was once believed hardly safe to attempt it even with a single ship unopposed by an enemy. But this channel was sounded by Lord Nelson, who undertook to conduct through it a large division of the fleet; and having requested from Sir Hyde Parker the command of the squadron, it was accordingly given him, and Rear-admiral Graves was appointed his second in command. As the largest ships drew too much water for being employed in so hazardous an attempt, his lordship selected twelve of from seventy-four to fifty guns, together with four frigates, four sloops, two fire-ships, and seven bombs. To this a prodigious force was opposed, consisting of six sail of the line, eleven floating batteries, each mounting from eighteen to twenty-eight heavy guns, one bomb-ship, and a number of schooners; and these were supported by the Crown Batteries, mounting eighty-eight pieces of cannon, by four sail of the line, moored in the mouth of the harbour, and by a few batteries on the island of Amak. On the 2d of April, Lord Nelson attacked this tremendous force, and after an obstinate and bloody action, which lasted four hours, silenced the fire of the batteries, taking, burning, and sinking about seventeen sail, including seven ships of the line. A suspension of hostilities was the immediate consequence of this brilliant victory, and the armed neutrality was in fact dissolved.

Battle of Hohenlinden.

When the armistice was signed between the Austrian and French generals in the year 1800, the troops of the latter were in possession of Germany almost to the banks of the Inn, and of Italy to the frontiers of Venice; but the spirit of the emperor was yet unsubdued, and he declined abandoning his allies by ratifying the preliminaries of peace which Count St Julien had agreed to at Paris, more especially as the latter was alleged to have exceeded his powers. Kray having retired from the army, the Archduke John succeeded him in the command, and with the emperor in person repaired to the army; but they soon found it impracticable to undertake any offensive operation against Moreau, and therefore another armistice, comprehending Italy, was agreed to. The emperor wished to include Britain in any treaty which might be entered into with France; but as Bonaparte refused to admit any plenipotentiary from that power until a naval armistice had been agreed to, Moreau received orders to resume his military operations. The command of the Austrian divisions was now given to generals whose very names were unknown beyond the confines of their own country, and who had shown themselves but little acquainted with the military art. Moreau was on the banks of the Iser, with his troops considerably disseminated; the Austrians were on those of the Inn, occupying a good line of defence if they had understood its importance, or had the prudence to maintain it. But whilst the French general-in-chief was meditating the plan of his winter campaign, the right wing of his army was attacked and driven back by the Austrians; and had they known how to make a judicious use of their advantage, the French commander would in all probability have been reduced to act on the defensive. Elated with success, however, they unaccountably abandoned their position on the Inn, and marched to attack the French along wretched roads, rendered nearly impassable by November weather. Moreau was with his army at Hohenlinden, behind the forest of Ebersberg, where he awaited the approach of the enemy. The archduke ordered his army to advance in separate columns by the roads and paths leading through the forest, on the exterior edge of which he intended to deploy and give battle. His centre, under Kollowrath, took the principal road, but was encountered as it debouched from the forest by the divisions of Ney and Grouchy; whilst another division of the French under Richepanse turned the flank of the Austrians, and fell with great fury upon its rear at the other side of the forest. This double attack was attended with complete success. The centre was entirely routed, with the loss of no less than eight thousand prisoners, besides killed and wounded; and the defeat of the rest of the army followed as an inevitable consequence. Had the Archduke Charles commanded on this occasion, a defeat caused by such a blunder would have been impossible; but this prince was now in disgrace for having counselled peace. At Hohenlinden the Austrians lost in all eighty pieces of cannon, two hundred caissons, and ten thousand prisoners.

Conse- uences of his battle.

Moreau allowed the enemy no time to rally, but marching directly towards the Inn, crossed that river on the 9th of December, drove the enemy before him, and struck the court of Vienna with consternation and dismay. Prince Charles was recalled and invested with the command of the army; but after many fruitless efforts to retrieve its honour, he on the 27th of December proposed an armistice, which was acceded to by the French commander, upon condition that it should be immediately followed by a definitive treaty. If the archduke could have placed any dependence upon his army, this armistice would not in all probability have taken place. The position of Moreau was, in fact, perilous in the extreme. Having advanced into the very heart of the Austrian states, he had behind him on his right about thirty thousand men in the Tyrol, and upwards of fifty thousand on his left. But Austrian valour was now well nigh extinguished by so many reverses of fortune; the officers were discontented; and the army was not in a condition to make head for a single day against so able and enterprising an enemy. Accordingly, the armistice was followed by a treaty of peace, which was signed at Luneville on the 9th of February 1801, between the emperor for himself and the Germanic body on the one hand, and the first consul of the French Republic, in name of the people of France, on the other. By this treaty the emperor ceded the Brisgau to the Duke of Modena, in lieu of the territories lost by that prince in Italy, and bound himself to find indemnities in the Germanic empire to all those princes whom the fate of war had deprived of their dominions. The Grand Duke of Tuscany renounced his dukedom, with its dependencies in the isle of Elba, in favour of the Duke of Parma, who assumed the title of king of Etruria; and for this the empire was to provide him with an adequate indemnification. Italy resumed its republican forms and divisions of governments under French influence and protection; and the Rhine still continued the boundary of France on the side of Germany. On the 28th of March, peace was also concluded between the French Republic and the king of the Two Sicilies. By this treaty his majesty obliged himself to shut the ports of Naples and Sicily against ships of every description belonging either to the British or the Turks; and he renounced for ever Porto Longano in the island of Elba, his states in Tuscany, and the principality of Piombino, to be disposed of in such manner as the French Republic might think proper.

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Great Britain had now no ally left to aid her in the contest with France, excepting the Turks in Egypt and the Portuguese in Europe, powers which rather diminished than increased her strength. At the desire of France the Spaniards had made an attack upon Portugal, and conquered some of its provinces; but a treaty of peace was concluded on the 6th of June, by which the king of Spain restored all his conquests excepting the fortress of Olivenza; and the prince regent of Portugal and the Algarves promised to shut the ports of his territories against the ships of Great Britain, and to make indemnification to his Catholic majesty for all losses and damages sustained by his subjects during the war. When the first consul had made peace with all his other enemies, he threatened Great Britain with an immediate invasion; a circumstance which at first gave great uneasiness to a considerable part of the nation. But in order to assuage this alarm, Lord Nelson was sent to destroy the shipping in the harbour of Boulogne; and though his success fell short of what had been expected by many, he nevertheless made such an impression on the enemy as showed that Britain could annoy the coast of France with greater facility than France could molest that of Britain.

Treaty with France; peace of Amiens.

During the summer of 1801, attempts were again made by Britain to negotiate with France. From the total dissolution of the northern confederacy, the first consul could not fail to perceive that it was impossible for him to ruin British commerce, and consequently that all the treaties which he might make for excluding our ships from neutral ports would signify nothing. He seemed determined, however, to keep possession of Egypt; and Britain, on the other hand, was as fully resolved to wrest it from him. On this account the negotiations were protracted till the conquest of that country became known both at London and Paris. On the death of Sir Ralph Abercromby, General Hutchinson succeeded to the command of the British forces in Egypt, and as he was acquainted with the designs of his predecessor, one spirit seemed to actuate both. Rosetta surrendered, and this was soon followed by the capitulation of Cairo; and Menou having accepted of similar terms for Alexandria, the whole of Egypt fell into the hands of the allies, and the republican troops with their baggage were conveyed to the nearest French ports in the Mediterranean, in ships furnished by the allies. After these events, the negotiations between Britain and France proceeded more agreeably; and, on the 1st of October, the preliminary treaty was signed at London by Lord Hawkesbury on the part of his Britannic majesty, and by M. Otto on that of the French Republic. By this treaty Great Britain engaged to give up all the conquests made by her during the continuance of the war, excepting the islands of Ceylon and Trinidad, whilst France was in fact to restore nothing. The Cape of Good Hope was to be free to all the contracting parties; the island of Malta was to be given up to the knights of the order of St John of Jerusalem; Egypt was to be restored to the Ottoman Porte; Portugal was to be maintained in its integrity, excepting what had been ceded to the king of Spain by the prince regent; Naples and the Roman States were to be evacuated by the French, and Porto Ferrajo by the British, together with all the ports and islands occupied by them in the Mediterranean. Plenipotentiaries were also appointed to meet at Amiens, for the purpose of drawing up and concluding a definitive treaty. This accordingly took place on the 22d of March 1802, and the French Republic was thus acknowledged by the whole of Europe.

Retrospective view of the revolutions.

Having thus arrived at the period when the dogs of war were during a brief interval chained up, and the nations of Europe allowed to respire a little after the fierce contest in which they had been engaged, it may not be uninstructive or uninteresting to pause for a moment and pass in review that extraordinary series of revolutions in France which overthrew the monarchy to make way for the Republic, and in turn destroyed the Republic to make way for the Consulate and the Empire.

Popular insurrections, and an army, have hitherto been the usual means, or chief instruments, of every revolution; but insurrections of this description have generally been fomented by a certain number of factious men, devoted to and dependent upon some ambitious chief, daring, brave, possessed of military talents, the absolute conductor of every step of the revolt, and the master of all the means of the insurrection. In the hands of such a chief, the soldiers, or people armed, are mere machines, set in motion or restrained according to his pleasure, and are always employed to put an end to revolutionary disorders and crimes, as soon as the object of the revolution has been attained. Thus Cæsar and Cromwell, after they had usurped the supreme power, lost no time in securing it, by placing it upon the basis of a wise and well-regulated government; and they employed in quelling the troubles which had favoured their usurpation, those very legions which they had used to excite them.

But this was not the case in France. In that country the revolution, or rather the first of those revolutions it experienced, and of which the others were the inevitable consequence, does not seem to have been the result of a conspiracy or preconcerted plan to overturn the monarchy and to establish a republic in its place. It was unexpectedly engendered by a mixture of weakness, ignorance, negligence, and numberless errors in the government. The States General, however imprudent their convocation may have been, would have produced only useful reforms, if they had found the limits of their power marked out by a hand sufficiently firm to keep them within their natural boundaries. It was but too evident, however, that even before their opening they were dreaded, and that consequently they might attempt almost any thing they pleased. From that time, under the name of Clubs, various associations and factions sprang up; some more violent than others, but all tending to the subversion of the existing government, without agreeing upon the form of that which was to be substituted in its stead: and at this period also the projects of the faction whose views were to get the Duke of Orleans appointed lieutenant-general of the kingdom began to manifest themselves.

This faction, or, as some call it, this conspiracy, was, in truth, of the same nature with those which had produced all former revolutions, and might have been attended with the same consequences had the Duke of Orleans been possessed of the energy and courage requisite in the leader of a party. The people had already declared in his favour, and he might easily have corrupted and brought over a great part of the army had he been equal to the command of it; but, on the very first occasion of personal risk, he discovered such cowardice and meanness that he defeated his own conspiracy, and convinced all those who had entered into it that it was impossible to continue the Revolution, either in his favour or in conjunction with him. The enthusiasm which the people had felt for him ended with the efforts of those who had excited it.

First revolution.

Neckar, whom the multitude had associated with this prince in their homage, still preserved for some time his worshippers, and that little cabal was for ever exalting him to the skies. But inferior even to Orleans in the talents and dispositions necessary to influence the army in his favour, he was as little calculated to be the leader of a revolution; and for this reason his panegyrists confined themselves, in the pamphlets and placards with which they inundated the capital, to insinuating that the only means of saving the state was to declare Neckar dictator, or at least to confer upon him, under some title more consistent with the monarchy, the authority and powers attached to that republican office. In fact, if after his dismission in the month of July 1789, he had dared to make this a condition of his return to the ministry, it is more than probable that the king would have been under the necessity of agreeing to it, and perhaps of re-establishing in his person the office of mayor of the palace. At that moment he might have demanded any thing; eight days later he might have been refused every thing; and soon afterwards he was reduced to the humiliating necessity of sneaking out of the kingdom like an outlaw, to escape the effects of the general contempt and censure which he had brought upon himself.

General Lafayette, who then commanded the Parisian national guard, gathered the wrecks of all this popularity, and might have turned them to the greatest advantage, if he had possessed that resolute character and heroic judgment of which Cardinal de Retz speaks, and which serves to distinguish what is truly honourable and useful from that which is only extraordinary, and what is extraordinary from that which is impossible. With the genius, the talents, and the ambition of Cromwell, he might have gone as great a length; with a less criminal ambition, he might at least have made himself master of the Revolution, and directed it at his pleasure; in a word, he might have secured the triumph of whatever party he chose to declare himself the leader. But, as unfit for supporting the character of Monk as that of Cromwell, he soon betrayed the secret of his incapacity to all the world, and was distinguished amongst the crowd of constitutional leaders only by his tri-coloured plume, his epaulettes, his white horse, and his saying that insurrection is the most sacred of duties when oppression is at its height.

The Revolution, at the period when the faction which had begun it for the Duke of Orleans became sensible that he was too much a coward to become a leader, and when Lafayette discovered his inability to conduct it, was too far advanced either to recede or to stop; and hence it continued its progress, but in a line which no other revolution had ever taken, namely, without a military chief, or the intervention of the army; and it gained triumphs, not for any ambitious conspirator, but for political and moral innovations of the most extraordinary kind, innovations the most suited to mislead the multitude, who were incapable of comprehending them, and to let loose those passions which are most dangerous to the repose and happiness of nations. The more violent combined to destroy every thing; and their fatal coalition gave birth to Jacobinism, a revolutionary product till then unknown, and till now not sufficiently unmasked. This new creation took upon itself alone to carry on the Revolution; it directed and executed all its operations, all the explosions and the outrages which occurred; it everywhere appointed the most active leaders, and employed as instruments the profligates of every country. Its power far surpassed that which has been attributed to the inquisition, and other similar tribunals, by those who have spoken of them with the greatest exaggeration. Its centre was at Paris; and its ramifications, formed by means of clubs in every town and little borough, overspread the whole surface of the kingdom. The constant correspondence kept up between those clubs and that of the capital, or, to use their own expressions, between the affiliated popular societies and the parent society, was as secret and as speedy as that of free-masons. In a word, the Jacobin clubs had succeeded in causing themselves to be looked up to as the real national representation. Under that assumed character they censured all the authorities in the most imperious manner; and whenever their denunciations, petitions, or addresses failed to produce an immediate effect, they gained their point by having recourse to insurrection and assassination. Whilst Jacobinism thus subjected all France to its control, an immense number of emissaries propagated its doctrines amongst foreign nations, and prepared for it new conquests in distant countries.

The National Assembly, the capital, indeed all France, was divided into three distinct parties. The most considerable in number, but unhappily, through a deficiency of plan and resolution, the weakest, was the party purely royal; it was adverse to every kind of revolution, and was solely desirous of some improvements, with the reform of abuses and pecuniary privileges. The most able and most intriguing was the constitutional party, or that which was desirous of giving France a new monarchical constitution, but modified after the manner of the English, or even the American, by a house of representatives. The third party was the most dangerous of all, by its daring spirit, by its power, and by the number of proselytes it daily acquired in all quarters of the kingdom; it comprehended the democrats of every description, from the Jacobin clubs, calling themselves Friends of the Constitution, to the anarchists and plunderers of the school of Hebert and Chaumette.

The democratic party, which at first was only auxiliary to the constitutional one, in the end annihilated it, and became itself subdivided into several parties, whose fatal struggles produced all the subsequent revolutions. But in principle the constitutionalists and the democrats formed two distinct though confederate factions; both were desirous of a revolution, and employed all the usual means of accomplishing it, except troops, which could be of no use to them, for neither of them had a leader to put at the head of the army. But as it was of equal importance to both that the king should be deprived of the power of making use of it against them, they laboured in concert to disorganize it; and the complete success of that manœuvre was but too fully proved by the fatal issue of the departure of the royal family for Montmédy. The revolution then took a more daring and rapid stride, which was concluded by the constitutional act of 1791. But the incoherence of its principles, and the defects of its institutions, present a faithful picture of the disunion of its authors, and of the opposite interests by which they were swayed. It was, properly speaking, a compact or compromise between the party of the constitutionalists and that of the democrats, in which, to secure co-operation, mutual concessions and sacrifices were made. But this absurd constitution, the everlasting source of sorrow and remorse to all who had a part in framing it, might have been got over without a shock, and led back to the old principles of monarchical government, if the assembly who framed it had not separated before they witnessed its execution; if, in imposing on the king the obligation to maintain it, they had not deprived him of the power and the means; and if the certain consequence of the new mode of proceeding at the elections had not been to secure, in the second assembly, a considerable majority of the democratic against the constitutional party.

The second assembly was likewise divided into three factions, the weakest of which was the one that desired to maintain the constitution. The two others were for a new revolution and a republic; but they differed in this, that the former, composed of the Brissotines or Girondists, was for effecting it gradually, by beginning with divesting the king of popularity, and allowing the public mind time to wean itself from its natural attachment to monarchy; and the latter, which was the least numerous, was eager to have the republic established as speedily as possible. These two factions, having the same object in view, though taking different roads, were necessarily auxiliaries to each other; and the pamphlets, excitations to commotion, and revolutionary measures of both, equally tended to overthrow the constitution of 1791.

Those different factions, composed of advocates, attorneys, apostate priests, doctors, and a few literary men, having no military chief capable of taking the command of the army, dreaded the troops who had sworn allegiance to the constitution and obedience to the king, and who moreover might be influenced by their officers, amongst whom there still remained some royalists. The surest way to get rid of all uneasiness on the subject, was to employ the army in defending the frontiers. For this purpose a foreign war was necessary, to which it was known that the king and his council were equally averse. Nothing more was wanting to determine the attack which was directed, almost at the same time, against all the ministers, in order to compel them to retire, and to put the king under the necessity of appointing others more disposed to second the views of the parties. Unhappily this attempt was attended with all the success which its authors had promised themselves; and one of the first acts of the new ministry was to declare war against the emperor. At the same time, the emigration which had been provoked, and which was almost everywhere applauded, even by the lowest class of people, drained off the flower of the royalist party, and left the king, deprived of his best defenders, exposed to the suspicions and insults which sprung from innumerable calumnies, for which the disasters at the beginning of the war furnished but too many opportunities.

In this manner was prepared and accelerated the new revolution, which was accomplished on the tenth of August 1792, by the deposition and imprisonment of the king, and by the most flagrant violation of the constitution of 1791. The latter, however, was not entirely abandoned on that day; for the project of the Girondists, who had laid the plot of that fatal conspiracy, was then only to declare the king's deposition, in order to place the prince royal upon the throne, under the guidance of a regency composed of their own creatures; but they were hurried on much further than they meant to go, by the violence with which the Jacobins, who took the lead in the insurrection, conducted all their enterprises. The prince royal, instead of being crowned, was shut up in the Temple; and if France at that moment was not declared a republic, this was less owing to any remaining respect for the constitution, than to the fear the legislative body entertained of raising up against it the majority of the nation, who could scarcely fail to be astonished and exasperated at finding a constitution fenced by so many oaths thus precipitately overthrown. It was on these grounds that the opinion was adopted, that a National Convention should be convoked, in order to determine the fate of royalty.

Second revolution.

From this moment the Girondists daily lost ground, and the most furious members of the democratic party, supported as they were by the Jacobin club, by the new commune of Paris, and by the tribunes, made themselves masters of every debate. It was of the utmost importance to them to control the ensuing elections; and this was effected by the horrible consternation which the massacres of September excited throughout the kingdom. The terror of being assassinated, or at least maltreated, drove from all the primary assemblies not only the royalists and constitutionalists, but moderate men of all parties; those assemblies became entirely composed of the weakest men and most desperate characters to be found in France; and from amongst the most frantic of these a large proportion of the members of the Convention was chosen. Accordingly, this third assembly, in the first quarter of an hour of its first sitting, was heard shouting for the abolition of royalty, and proclaiming the Republic, upon the motion of a member who had formerly been a player.

Such an opening but too plainly showed what was to be expected from that horde of plunderers who composed the majority of the National Convention, and of whom Robespierre, Danton, Marat, and the other leaders, formed their party. That of the Girondists still existed, and was the only one really republican. Glutted with the horrors already committed, they seemed desirous of arresting the torrent, and laboured to introduce into the assembly the moderation necessary to give to the new Republic a wise and solid organization. But the superiority of their knowledge, talents, and eloquence, which their opponents could not dispute, had no power over men thirsting for blood, and determined to rule by the instrumentality of terror alone. They had no doubt occasion for atrocities, to prepare the terror-stricken nation to suffer them to commit, in its name, the murder of the unfortunate Louis XVI.; and that sacrifice was necessary to commit the Revolution beyond all possibility of retreat, and bring about a third revolution, which Robespierre and his associates were already preparing. Fear had greatly contributed to the two former; but this was effected by terror alone, without popular tumults, or the intervention of the armies, which, being now drawn by their conquests beyond the frontiers, never heard any thing of the revolutions at home till they were accomplished, and always obeyed the prevailing faction, by whom they were either paid or allowed to pay themselves.

By the degree of ferocity discovered by the members of the Convention in passing sentence upon the king, and in the debates relative to the constitution of 1793, Robespierre was enabled to mark which of the deputies were most likely to second his views, and which of them it was necessary to sacrifice. As to the people, they could not but receive with transport a constitution which seemed to realise the chimera of their sovereignty, but which would only have given a kind of construction to anarchy, if the execution of this new code had not been suspended, on the pretence common to all acts of despotism and tyranny, that the safety of the state is the supreme law. This suspension was effected by establishing the provisional government, which, under the title of revolutionary government, concentrated all the powers in the National Convention until there should be an end to the war, and to all intestine troubles.

Third revolution.

Although the faction which acknowledged Robespierre as its head possessed a decided majority in the assembly, and might consequently have considered themselves as exclusively exercising the sovereign power, he was a demagogue of too despotic a nature to endure even the appearance of sharing the empire with his associates. Hence he greatly reduced their number, by causing all the powers invested in the National Assembly by the decrees which had established the revolutionary government, to be transferred to a committee, of which he got himself appointed a member, and in which he was certain to rule, by obtaining as colleagues men less daring, but if possible even more wicked, than himself; such as Couthon, Saint-Just, Barrère, and others of the same stamp. This committee, styled the Committee of Public Safety, soon seized upon both the legislative and executive powers, and exercised them with the most sanguinary tyranny ever heard of amongst men. The ministers were merely their clerks; and the subjugated assembly, without murmur or objection, passed all the revolutionary laws which were proposed, or rather dictated, by them. One of their most decisive proceedings was the establishment of those revolutionary tribunals which covered France with scaffolds, on which victims of every rank, age, and sex, were daily sacrificed; so that no class of men should be beyond the influence of that stupifying and general terror which Robespierre found it necessary to spread in order to establish his power. Nor was this all. He soon dragged some members of his own party, such as Danton, Camille Desmoulins, and others, whose energy and popularity had offended him, before one of those tribunals, where he had them condemned to death. By the same means he had got rid of the leaders of the Girondists; and had caused all the moderate republican party, who were still members of the assembly, except those who had time and address to escape, to be sent to prison, in order to be sentenced and executed on the first opportunity.

In this manner ended the third revolution, in which the people, frozen with terror, dared not take a part. Instead of an army of soldiers, Robespierre employed an army of executioners and assassins, set up as revolutionary judges: and the guillotine, striking or menacing all indiscriminately, rendered France submissive from one end to the other. A nation, formerly proud, even to idolatry, of its kings, was thus seen to expiate, by rivers of blood, the crime of having suffered the most virtuous of all their monarchs to be murdered on a scaffold. In the room of the famous Bastille, whose capture and demolition had set only seven prisoners at liberty, two of whom had long been in a state of lunacy, the colleges, the seminaries, and all the religious houses of the kingdom, were converted into so many state prisons, into which were incessantly crowded the victims devoted to feed the ever-working guillotines, at once the chief resource of supplies for the government, and the instrument of its ferocity. "The guillotine coins money for the republic," said Barrère. In fact, according to the jurisprudence of the revolutionary tribunals, the rich of every class were declared suspected persons, and received sentence of death for no other reason but that of giving to the confiscation of their property a show of judicial form.

Fourth revolution.

But still blood flowed too slowly to satisfy Robespierre; his aim was but partly attained by the proscription of the nobles, the priests, and the wealthy. He fancied not only an aristocracy of talents and knowledge, but of the virtues, none of which however his orators and journalists would admit, save that horrid "patriotism" which was estimated according to the enormity of the crimes committed in favour of the Revolution. His plan was to reduce the French people to a mere plantation of slaves, too ignorant, too stupid, or too pusillanimous, to conceive the idea of breaking the chains with which he would have loaded them in the name of liberty; and he might perhaps have succeeded, had not his ambition, as impatient as it was jealous, too soon unveiled his intention of resorting to the guillotine to strike off the shackles with which an assembly of national representatives fettered or might fetter his power. He was about to give the decisive blow, which he had concerted with the Commune of Paris, the Revolutionary Tribunal, the Jacobin Club, and the principal officers of the national guard, when the members of the Convention, who were marked out to be the first sacrificed, anticipated him at a moment when he least expected it, by attacking himself in the assembly, with energy sufficient to rouse against him and the Jacobins all the sections of the capital. The parties came to blows, and for several hours victory remained uncertain, but at length it declared in favour of the Convention. In the space of a day that execrable monster was dragged from the highest pitch of power ever attained by any tyrant, to the very scaffold which was still reeking with the blood of his last victims. His principal accomplices in the Committee of Public Safety, in the Commune, in the national guard, in the Revolutionary Tribunal, and many of his agents in the provinces, met the same fate. The revolutionary tribunals were suppressed, the prisons thrown open, and the terrorists hunted down wherever they could be found.

This fourth revolution, in which the faction which was then esteemed the moderate party overthrew the terrorists, and seized the supreme power, was no less complete than those which had preceded it, and produced the constitution of 1795. All France received as a great blessing a constitution which delivered them from the revolutionary government and its infernal policy. Besides, in spite of great defects, it had the merit of coming nearer than the two preceding ones to the principles of order, justice, and real liberty, the violation of which had, during the five preceding years, been the source of so many crimes and disasters. The royalists, considering it as a step towards monarchy, were imprudent enough to triumph in it; and their joy, as premature as it was indiscreet, so alarmed the assembly, that they passed the famous law, ordaining the primary assemblies to return two thirds of the members of the Convention to the legislative body destined to succeed that assembly. It was thus that the spirit of the Convention continued, for the first year, to be displayed in the two councils. In the year following, the bias of the public mind, too hastily turned towards royalty, showed itself, in the elections of the members for the new third, so clearly as to alarm the regicides who composed the Directory, and the conventionalists who still formed a third of the legislative body; nor did they lose a moment in devising means for their defence. That which appeared to them the surest, was to publish notices of plots amongst the royalists, and annex one or more denunciations, in terms so vague as to leave room for implicating, when necessary, all their adversaries; whilst by the help of this imposture they procured some secret information, ever easily obtained by those who have at command the guillotine and the exchequer. This masked battery was ready to be opened before the members of the new third took their seats. These at first confined themselves to the object of securing a constant majority in the two councils in favour of moderate opinions; but in a little time every sitting was marked by the repeal of some revolutionary law, or by some decree tending to restrain the executive authority within the limits fixed by the constitution.

Fifth and sixth revolutions.

Alarmed at the abridgment of their power, and dreading still more serious attacks, the Directory came to the resolution of no longer postponing the blow which they had been meditating against the Legislative Assembly; and in the manner already related they accomplished a fifth revolution, as complete as any of those by which it was preceded. It differed indeed from them essentially in the facility and promptness with which it was effected; although the party which prevailed, that is to say, the majority of the Directory, and the minority of the legislative body, had to combat, not only against the constitution, but against the opinion, and even against the indignation, of the public. That moral force, on which the majority of the two councils had unluckily placed all their reliance, vanished in an instant before the physical force of a detachment of troops consisting of six or seven hundred men. The Directory, compelled to withdraw the larger body of troops which they had thought necessary to ensure the revolution they were meditating, discovered great ability in securing the two councils, by appearing to dread them; but it was chiefly to the energy of their measures, and to the concentration and promptness with which they were executed, that they owed their success. Two days before, the legislative body might without obstruction have impeached, arrested, and even outlawed, the majority of the Directory, who were execrated by the public under the title of the triumvirate; and, if requisite, they would have been supported by more than thirty thousand armed citizens, who, with Pichegru and Willot at their head, would soon have dispersed, and perhaps brought over, the feeble detachments of troops of the line which the Directory had at their command. But the legislative body, relying too much upon its popularity, did not sufficiently consider that the people, whose impetuosity is commonly decisive when allowed to take advantage in attack, are always feeble when acting on the defensive, and totally unable to withstand any assault made previously to an insurrection, seeing it is always easy to prevent their assembling. It was on this principle that the Directory founded their operations, and the 5th of September too well proves how justly. That day reduced the legislative body to the most degrading subjugation, a mere caricature of national representation; it invested the Directory with the most arbitrary and tyrannical power, and restored the system of Robespierre, under a form less bloody, but not less pernicious; for the revolutionary tribunals which that monster had established were scarcely more expeditious than the military commissions of the Directory. The power of arbitrary and unlimited transportation is, in time, as destructive as the guillotine, without possessing, like that, the advantage of exciting a salutary horror, which, by recovering the people from the state of stupor and apathy, the first effects of terror, gives them both recollection and force to break their chains. Though, in violating the most essential regulations of the constitution, the Directory obtained a temporary confirmation of their power, their example pointed out to Bonaparte and Sièyes the path which they pursued with infinite address, and in which they accomplished a sixth revolution, by the establishment of the consulate, the character of which will be sufficiently unfolded in the sequel.

Policy of Bonaparte.

The truce of Amiens having been concluded (it had none of the characteristics of a solid peace), Bonaparte pursued his plans of internal organization with an evident view to the re-establishment of monarchy in France. A church had already been reared up, and the Catholic religion, with a suitable hierarchy, re-constituted by the state. With this view the pope had been spared when the course of events placed him at the mercy of the conqueror; and the year 1801 was spent in negotiating a "concordat" with Rome, by which, in return for a decree declaring the Catholic religion that of the great majority of the French, and undertaking to grant salaries to the clergy, the pontiff agreed to consecrate such bishops as should be nominated by the French government, to give up all claim to the lands which had belonged to the church, and to order a public form of prayer for the consuls. At the desire of Bonaparte, the court of Rome further consented to secularize Talleyrand, and to make certain other concessions, all indicating an accommodating, if not an obsequious spirit towards the ruler of France.[1] The next desideratum was an aristocracy, which, after the conclusion of the peace, every effort was used to supply. The ancient nobility were allowed, nay even encouraged, to return to France; Napoleon seemed anxious to gather around him the fragments of a monarchy sanctioned by time, though at last overthrown by the force of opinion and circumstances; but, stripped of their properties, and alike disinclined to the Revolution and its representatives, they refused to abandon the cause of legitimacy for an equivocal or anomalous place in the consular court. In one sense they judged rightly; for, even if they had availed themselves of the permission granted by the French government, it would still have been necessary to counterbalance the old nobility by elevating to the same rank those who had attained to distinction during the wars and struggles of the Revolution, in short, warriors and civilians, who had earned their honours in the school of democracy. Accordingly Napoleon, obliged for a time to abandon this idea, formed a scheme eminently calculated to attach to him a nation which, with all its professed republicanism, still retained a strong predilection for the trappings of monarchy. This was the institution of the Legion of Honour, by which, at the expense of red ribbons and very moderate pensions, an order of merit was created, into which every man of ambition or enterprise might hope one day to gain admission, and which was calculated to ensure the attachment of all the men of courage and ability in the country. But when the project was communicated to the council and the legislative body, an instant outcry was raised against it. "It destroys equality, it contradicts the principles of the Revolution. The legion of honour contains all the elements of hereditary nobility; privileges, powers, honours, titles and pensions. It is sowing the seeds of an aristocracy." Bonaparte combated these objections, of which he must nevertheless have felt the force. "You cite the Roman republicans against me; the Romans, amongst whom distinctions were perhaps more marked than amongst any other people. Observe the consequence when the noble class of patricians was destroyed at Rome; the Republic, left at the mercy of the populace and its leaders, ran straight through anarchy and proscription to despotism." And was not this also the case in France? Did not the re-action which followed the reign of terror prepare the way for that despotism which Napoleon himself was so soon to establish over France? In one respect, however, the first consul acted with equal firmness and justice. When Mathieu Dumas proposed to confine the decorations of the legion of honour to the military, he peremptorily refused to admit any such exclusive limitations, and persisted in his determination to render the new order equally accessible to the soldier and the civilian.

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[1] In re-establishing religion in France, Bonaparte encountered much opposition from the prejudiced incredulity of those around him. "Hearken," said he to one of his councillors during a promenade at Malmaison; "I was here last Sunday, walking in this solitude amidst the silence of nature. The sound of the church bells of Ruel suddenly struck upon my ears. I was moved, and said, if I am thus affected, what must be the influence of those ideas on the simple and credulous mass. The people must have a religion, and that religion must be in the hands of the government." The councillor, thus addressed, waiving the broad question of religion or no religion, objected to Catholicism. "It is intolerant; its clergy are counter-revolutionary; the spirit of the present time is entirely opposed to it. And, after all, we, in our thoughts and principles, are nearer to the true spirit of the gospel than the Catholics, who affect to reverence it." Bonaparte urged, that by his leaning to Protestantism the government would be weakened, not strengthened; one half of France might embrace it, but the other half would remain Catholic. "Let them call me papist if they will. I am no such thing. I was a Mahommedan in Egypt, and I will be a Catholic here for the good of the people." This was certainly very accommodating; but, notwithstanding, considerable resistance was experienced. The theophilanthropists raised the cry of no popery. The soldiers, too, were excessively indignant. In commemoration of the re-establishment of the church, Cardinal Caprara celebrated *Te Deum* in Nôtre Dame on Easter Sunday 1802, when the first consul attended, surrounded by his officers. On his return he asked several of them their opinion, and, in particular, addressing General Delmas, said, "Well, general, we have just witnessed a very imposing ceremony; I hope you are satisfied." "Yes," replied Delmas, "a pretty capucinade; there was only wanting the million of men who have perished in overthrowing all you have built up. We must now, I presume, fasten beads to our swords." Lannes expressed his resentment in still stronger terms. Perceiving in the hall of the Tuileries Cardinal Caprara and several bishops, he accosted them in the rudest manner; then entering without ceremony the cabinet of Bonaparte, he exclaimed, "Eh! que fais-tu de ce tas de prêtres dans tes antichambres; chasse-moi toute cette canaille; est-ce avec des soldats de cette espèce que tu as gagné la bataille de Marengo? A quoi diable songes-tu donc? Tu verras qu'un beau jour ils te jetteront bas." Delmas received orders

Plans for establishing the sovereignty in his family.

But whilst Napoleon was thus reconstructing the supports and providing the ornaments of monarchical power, he did not neglect the necessary means for raising the edifice itself; that is, the establishment of a permanent sovereignty in his own person and family, on a basis involving a full recognition of the rights and interests created by the Revolution. In this, accordingly, he laboured with equal skill and perseverance, advancing step by step towards his object. It was at first hoped indeed that he would be contented with the second place, and restore the crown to the Bourbons; and, on this supposition, Louis XVIII. twice addressed him in terms which might perhaps have conciliated ordinary ambition. But although Josephine exhorted him to imitate the conduct of Monk, and there were not wanting others to insinuate the same advice, Bonaparte, satisfied that there were more difficulties in the way of restoring the Bourbons than of founding a new dynasty, and that the men of the Revolution would more readily tolerate as sovereign one who had risen from its ranks, than receive back any member of a family who had so many wrongs to avenge, resolved to put on his head the crown which genius and fortune had enabled him to win. Accordingly, he began by feeling the pulse of the nation in a pamphlet, which, it is said, was written by his brother Lucien, and corrected by himself. But as the public mind was not yet prepared for so violent a transition, the experiment failed; ridicule was provoked at the idea of an Emperor of the Gauls; and the first consul, throwing the blame of this alleged imprudence on his brother, deprived him of his office of minister of the interior, and sent him as envoy into Spain. Meanwhile, the Tribunate, or representative body, had been remodelled, and the most froward patriots excluded; an "epuration" which materially facilitated the development of his plans. In May 1802, Bonaparte was declared first consul for another ten years; and, after a short interval, this was amended into a vote by which he was appointed first consul for life. Under a republican designation, he thus became the acknowledged sovereign of France; and it is not less remarkable than instructive that this surrender of the liberties of the country encountered much less opposition in the council than the institution of the legion of honour had done. The history of the Revolution shows, indeed, that it is not liberty which the French prize, but equality and military glory.

Effects of the peace of Amiens.

The views of the consular government in concluding the peace of Amiens were now sufficiently indicated by the course which Napoleon pursued in extending his influence over the neighbouring states. The Cisalpine Republic had been remodelled to suit his views, and the first consul elected as president of its legislature. The Batavian and Ligurian Republics were obliged to submit to similar modifications; Piedmont was formally annexed to France, and divided into departments; and the stipulations of the treaty of Luneville, which guaranteed the independence of the republics of Italy and Holland, thus became void. Britain began to show alarm and distrust, though the grounds for such a feeling were scarcely stronger now than at the time when the treaty of Amiens had been concluded. Bonaparte was merely following out the system which he had previously adopted. Remonstrances were made against these encroachments and usurpations; but the answer was ready and conclusive. "You must have foreseen all this. The Cisalpine Republic chose the first consul as its president in January 1802, two months before the signature of the preliminary treaty of Amiens; you could not be ignorant of the fact. And why should England complain of the infraction of the treaty of Luneville, when Austria, with whom it was concluded, remains silent?" This seems wholly unanswerable. Great Britain was neither a party to nor the guarantee of the treaty of Luneville, and no stipulation had been included in that of Amiens, that the articles of the treaty of Luneville should be observed. She had obviously, therefore, no right whatever to interfere. According to the admission of Lord Castlereagh, she had made "a peace to try France;" but then this trial should in justice and fairness have been confined to the treaty which she had actually concluded, and not extended to a different one in which she could not even pretend to have any concern, excepting upon the assumption that she held Aus-

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to quit Paris immediately; Lannes, more favoured, was only admonished to show a little more patience, and less vivacity. "I shall know," said Napoleon, "how to govern these men, and prevent them from exciting any disturbance. What I do is necessary; I pray you in future to be more reserved." Moreau, Bernadotte, Oudinot, Colaud, Victor, and others, entertained the same sentiments as Lannes and Delmas; and the army, generally, was decidedly opposed to the concordat, and the re-establishment of the clergy. (Montgaillard, *Histoire de France*, tome v. p. 445.)

tria in tutelage. On the other hand, it was equally futile to complain of interference with the Helvetian Republic, because, in concluding a peace with France, it must have been foreseen that Napoleon would inevitably act by it as he had already done by the Cisalpine Republic. In treating, the object of both powers was most probably the same, namely, to display to Europe a readiness to make peace, and thus cast on each other the blame of the inevitable and speedy rupture. But in playing this difficult and not very creditable game, English diplomacy was completely at fault. The French observed the treaty to the letter; by the English it was decidedly violated. The former continually appealed to the compact which had been entered into between the two countries; the latter were obliged to travel out of the bond in quest of reasons or pretexts to justify the nonfulfilment of its stipulations. The British ministry may have had rational grounds for their mistrust; indeed it is certain that they had such; but in withholding Malta and the Cape of Good Hope, merely because France had increased her territories and encroachments in Europe, they took up an indefensible position, and consequently were under the necessity of supporting their cause with vague and unstatesmanlike recrimination.

Fresh causes of alienation.

But whilst the peace which had so recently been concluded was thus endangered by the hesitation of the British government to surrender Malta, and the transmission of counter orders not to deliver up the Cape of Good Hope to the Batavian Republic, other sources of division and alienation were unhappily opened up. Sensitive at all times to public opinion, and peculiarly so at this time when employed in rearing the fabric of his power, the first consul felt deeply the unsparing attacks which were now made upon him by the English press, and re-echoed by the papers of the French royalists in England. To him this was a species of warfare at once more dangerous and more galling than any other. A formal demand was therefore made by the French ambassador in London that this torrent of abuse should be checked; and further, that the press should be prohibited from indulging, in future, in strictures offensive to the head of the French government. The ministry replied that the press in this country was free; that so far from having any control over its conduct, they were themselves daily exposed to the utmost severity of remark; and that all persons aggrieved by it must seek redress in the ordinary courts of law. Nevertheless, to avoid the appearance of conniving at or encouraging such attacks, they consented to gratify him as far as might be done in a constitutional way, by sending one of the libels complained of to a jury. But this made matters ten times worse. Peltier was acquitted, and an obscure libel received consequence from the prosecution, and notoriety, if not fame, from the incomparable splendour of the defence. Another demand, that the Bourbons and their partisans should be expelled from England, met with a firm and generous refusal. Chagrined and exasperated, Bonaparte now condescended to enter into a personal quarrel with the English press, and employed his time in dictating articles for the *Moniteur*, filled with acrimony and insult. About the same time also appeared a report by Sebastiani (who had been employed in a mission to the Levant), in which, amongst other things, it was stated that six thousand French soldiers could reconquer Egypt, and that England durst not renew the war against France. To say that intemperate paragraphs in newspapers, and silly vaunting in reports, could ever become a reasonable ground of war, is preposterous. But the English government, by its want of foresight and precaution, if not also by its want of faith, was reduced to the humiliating necessity of appealing to such authorities in vindication of its conduct. The first consul now demanded why Malta had not been evacuated according to stipulation. The English ministry replied by a claim to retain it, on the ground that France had increased her territory in Europe, and that Egypt was threatened. But the first objection was irrelevant, and the second ridiculous. Bonaparte, whose throne was being erected on the basis of national glory, could never consent to the retention of Malta by the English; to demand it of him was in fact to declare war. "England," said the French minister, "shall have the treaty of Amiens, and nothing more than the treaty of Amiens."

A rupture inevitable.

A rupture was now inevitable, as indeed it had from the first been, and accordingly both countries made preparations for war. Napoleon assembled troops in the fortresses of Holland and the north of France, and dispatched envoys to Austria and Prussia. Britain was not less active; in all her ports and harbours the deep note of preparation was heard. Still Bonaparte was unwilling to commence war, and, unavoidable as it now seemed, made a last effort to ward it off. In an interview with the British ambassador, Lord Whitworth, he expressed himself with a degree of frankness and sincerity unusual in diplomacy, but which unhappily led to no amicable result. "Why should I wish for war?" said he. "A descent upon England is the only mode I have of combating her; and this, if compelled, I am resolved to undertake. But why suppose that, arrived at my present height of power, I should risk my reputation and life, unless constrained thereto by necessity, in an expedition in which myself and the greater part of my army would most probably go to the bottom of the sea; for there are a hundred chances to one against me." But all this candour proved unavailing. Napoleon was exceedingly averse to war at this time, when he had good cause to apprehend that the basis on which his power was fixed had not yet become sufficiently consolidated to withstand the rude shock of a fresh contest. For the same reason England was inexorably bent upon trying again the fortune of arms. A warlike message from the king to parliament in March 1803 formed the prelude to the storm which was now ready to burst. Bonaparte replied in a diplomatic note of singular ability and unanswerable cogency of reasoning. It was important to him to cast upon England the whole blame of the rupture; he had at once to satisfy the people of France, and to conciliate the other powers of Europe; and, besides, his pride was mortified to find England assume the language of cold and haughty defiance, if not insult, at the very moment when he had almost humbled himself before the minister of that country. Hence his keen and quick resentment prompted him to break through the rules of courtly decorum, and, at a public levee held on the 13th of March, to give vent to the bitterness of spirit which this conduct had excited. "You are decided on war, it seems you wish it," said he, addressing the British ambassador. "After fifteen years of combats, we must yet recommence and fight for fifteen years to come. You force me to it." Then turning to the ambassadors of Spain and Russia, he said, "The English will have war. They are the first to draw the sword; I will be the last to put it in the scabbard. They do not respect treaties, which we must henceforth cover with black crape. You may destroy France, but you shall not intimidate her." "We do not wish to do either the one or the other," replied Lord Whitworth. "Respect treaties, then. Wo be to those who do not respect them; they shall be responsible to Europe for the consequences." At the conclusion of the levee, he again addressed the British ambassador when near the door: "The Duchess of Dorset has passed the unpleasant season at Paris; I sincerely wish she may pass the pleasant one also; but if it be true that we are to have war, the responsibility, in the sight of both God and man, will rest on those who shall refuse to execute the treaty." It has been said by some that this burst of anger was calculated. Why might it not be natural and sincere? War at this time was not for the interest of Napoleon, or of the country which had placed him at its head; he required time to mature his plans of government; France languished for repose. But the die was now cast, and all that remained was to abide the hazard of the throw.

British ultimatum.

Lord Whitworth was now instructed to demand that the French forces should evacuate the Batavian and Swiss territories; that a suitable provision should be made for the king of Sardinia, and that Britain should be permitted to retain possession of Malta for ten years. This was called an ultimatum, and a week was insultingly fixed as the term beyond which no reply would be received. Yet even now the French government did not assume a peremptory tone. Talleyrand was sincerely averse to war, and up to the last moment used every effort to prevent it; foreseeing, probably, the pernicious consequences which would result even from fresh victories. But the English ministry resisted every advance towards an accommodation of the points in dispute, gave wretched and shuffling reasons for a mistrust which in the main was perhaps not altogether groundless, and sought to cover the blunders of their diplomacy by means of sullen pride and defiance. Outwitted, out-argued, and outdone, both in talents and in good faith, they had no voice for, no resource in, any thing but war. Orders had already been issued for seizing the ships of France, and those of the states dependent on or in close alliance with that country; a measure entirely in the spirit of that usurpation which they at once denounced and imitated; and the first consul retaliated by detaining all the British subjects whom curiosity or business had induced to visit France. And thus recommenced between the nations a quarrel unrivalled for the inveteracy of its spirit and the variety of its fortunes. "The rupture was to the first consul," says Bignon, "the decisive point of his destiny. Henceforth he saw England rise before him like a cape of storms, which he was for ever forbidden to pass."

Renewal of hostilities.

The first step of Napoleon, on the renewal of hostilities, was to put his armies in motion; that of Holland to occupy Hanover, and that of Lombardy to invade Naples, and garrison Tarentum. Britain, secure from direct attack in her insular fortress, could only be combated by establishing the power of France in the sea-ports, and excluding British commerce from the Continent. To bestride Europe like a huge colossus, having one foot on the Mediterranean and the other on the Baltic, was therefore the grand object of Napoleon; and this menacing attitude he lost no time in preparing to assume towards England. That power now reigned supreme as empress of the seas; but "her control stopped with the shore," which was now about to be closed against the enterprise of her people. Towards the end of May 1803, General Mortier marched against Hanover with an army from Holland, and speedily made himself master of the country. The troops of the electorate, incapable of offering any serious resistance, retreated before the enemy, and at length capitulated, when they were discharged on condition of not serving against France during the war. About the same time the kingdom of Naples was re-occupied with equal facility by a French force. These sudden conquests, however, excited uneasiness and suspicion on the part of the northern powers. Russia, which had taken the Sicilian court under its protection, was offended by the re-occupation of the Neapolitan territory, and still more seriously displeased to observe the French flag waving on the shores of the Baltic. Prussia had still greater cause for alarm at the presence of so formidable a neighbour; more especially as the French, not satisfied with Hanover, already threatened to occupy Hamburg and Bremen, the possession of which was necessary to enable them to give the law to the north of Germany. The blow aimed at England thus recoiled on a power whose selfish and temporising policy had induced her to withdraw from the contest with republican France, and leave her allies to defeat and humiliation. But as these proceedings placed the courts of Berlin and St Petersburg under the necessity of either humbling themselves before France, or throwing themselves once more into the arms of Britain, Napoleon sought by every means to conciliate these powers, and even to bribe them to join him in his attempts to destroy the commercial and maritime superiority of this country. "The germ of what was subsequently called the Continental System," says Bignon, "already existed in the mind of the first consul, and this system reposed upon the support of Prussia. One of the objects of the usurpation of Hanover was to make that court feel the inconvenience of a state of indecision towards France, and the advantages of a close alliance with her. To render Prussia powerful, in order that by its union with France it might awe the Continent to quiet, was the aim of Napoleon. If it be asked why, towards the close of his reign, Napoleon showed himself inexorable towards Prussia, the reason is, that Prussia was the power which wished him most ill, in forcing him to combat and destroy her, instead of extending and strengthening her monarchy, in order that she and France united might keep Austria and Russia immoveable, and at the same time give that development to the continental system which would force England to make peace." Prussia, in short, was to be fattened and enriched at the expense of acting in subservience to the views of France, and Hanover was offered to her as the price of her submission. The bribe was tempting, and there was considerable hesitation in refusing it. All the old ministers were disposed to accept the electorate with the French alliance; Hardenberg alone was of a contrary opinion, and his view ultimately prevailed. But the influence which decided the Prussian court to reject the insidious proposals of Bonaparte was that of the Emperor Alexander, whose opinions, arguments, and weight overcame all the representations of Duroc and the other French envoys, even when on the point of accomplishing their object.

Effect of Napoleon's measures on public opinion.

By a singular turn of opinion and events, every act of Bonaparte now told in favour of Britain, the ministry of which, had he remained on the defensive, could scarcely have persisted in a war which had been undertaken without any adequate object, and in the prosecution of which there was no reasonable prospect of success. But the occupation of Hanover and the south of Italy excited the apprehensions of Europe; whilst the army collected on the northern coasts of France, and destined to invade England, had the effect of exciting the patriotic energies of that country, silencing the arguments of the friends of peace, firing the national pride, and uniting all by the tie of a supposed common danger. The voice of reason, prudence, and humanity, was drowned in the tumult of contending passions; and the most unjustifiable war in which Britain had ever engaged, suddenly became, in the broadest sense of the term, a national one. Meanwhile, as a field of battle was denied to Napoleon, he turned his activity towards military organization, forming the armies and preparing the resources with which his most brilliant conquests were afterwards achieved. Alessandria was fortified upon the most approved principles, at an enormous expense, and rendered the bulwark of Italy. From Otranto to the Texel every coast and sea-port was put in a state of defence; and the British fleet, whilst blockading every harbour, and menacing every accessible point, might observe the gigantic attempt made by the enemy to surround Europe, as it were, with a wall of iron. The few remaining colonies or foreign possessions of France now fell into the hands of Britain; and Louisiana, which had been wrested from Spain, was sold to the United States, as the only mode left of deriving advantage from the acquisition, and at the same time defeating the views which England might entertain in regard to the occupation of the province.

Conspiracy against the first consul.

Whilst public attention was mainly directed to the army and flotilla assembled at Boulogne, Ambleteuse, and other places adjoining, for the professed purpose of invading Britain, it was suddenly diverted from military projects by the discovery of a conspiracy against the first consul. The hopes which the royalist party had entertained upon his first accession to power have already been noticed. They fancied that, satisfied with military glory, he might be prevailed on to favour a restoration, if not directly to assist in bringing it about; and, in two letters, Louis XVIII. demanded of him this act of disinterestedness, which, however, he calmly but firmly declined. His subsequent measures for strengthening and perpetuating his power left no doubt that, occupying the first place in the state, he would never voluntarily descend to the second, and that the hopes which they had so hastily formed were entirely fallacious. Disappointment now gave place to intrigue, and intrigue became envenomed by the spirit of revenge. The decree which conferred upon Napoleon the consulship for life had encountered very considerable opposition. Lafayette protested against it; Camille Jourdan published a reclamation in favour of the liberty of the press; and Madame de Staël opened her brilliant saloon to the most distinguished opponents of the consular government. Of all this the royalists now took advantage; and a correspondence was entered into with Louis XVIII., who promised, in the event of his restoration, to respect the principles of liberty, and further to grant a charter in which these should be fully recognised. The hopes of the royalists were thus kept alive; the activity and confidence of their adherents were augmented; whilst the watchfulness and jealousy of the government were proportionally increased. But although the opinions and predilections of speculative persons seldom lead those who entertain them to embark in the perilous adventure of conspiracy, the Bourbons counted amongst their more zealous and active partisans men eager to strike a blow at the head of the new government, and to anticipate events rather than to wait for their tardy development. Of these, General Pichegru was one. His fortunes were now desperate; and he had many wrongs, or at least misfortunes, to avenge. Having escaped from Sinamary, to which he had been banished by the faction of the 18th of Fructidor (4th September 1797), the expatriated general returned to Europe; openly espoused the cause of the Bourbons; and, as Bonaparte had now become master in France, wished to attempt by a *coup-de-main* to overturn the principal author of his misfortunes. A plan of conspiracy, having for its object to overthrow the consular government and to restore the Bourbons, was accordingly arranged at London, in conjunction with Georges Cadoudal, son of a miller at Morbihan, a determined Chouan, and other persons well fitted to engage in such an enterprise. The views of the conspirators can only be gathered from circumstances, and from the admissions afterwards made by themselves when arrested by the French police; but it seems tolerably certain that the assassination of the first consul was regarded by them as a preliminary measure, indispensable to the success of the counter revolution which it was their main object to bring about. The whole fabric of Bonaparte's power rested on the basis of his character and reputation; he was not part of a system established on a wide and solid foundation, but the system itself; the existence of the consular government depended entirely on him; and hence the surest as well as speediest mode of overturning his authority was to begin by destroying himself. But be this as it may, the ultimate success of the enterprise depended on providing beforehand the means of giving it a determinate character, and at the same time acting powerfully on public opinion.

What the conspirators most wanted, therefore, was a name to oppose to that of Bonaparte; a leader of eminence, whose reputation might conciliate public opinion, and bear to be put in competition with that of the first consul. Moreau was precisely such a personage, indeed the very man they required. Possessing great talents for war, his success had been commensurate with his ability as a commander, and the renown of Hohenlinden had equalled, if not eclipsed, the glory of Marengo. Besides, he was discontented, living in affected obscurity, and full of resentment on account of the unmerited neglect with which he had been treated since the 18th of Brumaire. But though a brave soldier, Moreau was deficient in moral courage. He could not persuade himself either to yield or resist; he wanted the strength of mind or the dissimulation necessary to restrain the expression of his resentment; nature had denied him that promptitude of volition as well as energy of action which are so indispensable in the chief of a party; and, on the 19th of Brumaire, he had not dared to convert that revolution to his own advantage or that of the nation, and had even served, though with a bad grace, as aide-de-camp to his more audacious rival. His wife also had great influence over him, and having been slighted at the consular court, now exerted it to induce him to listen to propositions for overthrowing the tyranny of Bonaparte. The royalist agents, ever on the watch, took advantage of these dispositions, effected a reconciliation between him and Pichegru, and thus entangled him in a scheme destined to prove his ruin. Pichegru arrived from England in January 1804; Georges Cadoudal had preceded him by several months. They both saw Moreau, who was disgusted with the ferocity of the Chouan; but their scheme, whatever it was, made little progress towards maturity. From the first, indeed, Fouché had spread his toils around them; numbers of their accomplices were already arrested; and if Pichegru and Cadoudal were still allowed to remain at large, it was only that they might gain over Moreau, and effectually implicate him in their schemes. Meanwhile the conspirators were unable to come to any decision. At their last interview Pichegru showed much hesitation; Moreau possessed ambition which he could not conceal, but was totally wanting in character; Georges, and especially Pichegru, perceived that he had personal views. Cadoudal, endowed with great energy, and devoted to the cause of the Bourbons, pressed, conjured, threatened Moreau, but could not decide him to act; and Pichegru ended by proposing to adjourn the execution of the plot for four days. But in the night fixed for action, the conspirators, whilst impatiently waiting the signal agreed on, received counter orders, and dispersed; some indulging in the most violent proposals, others resolved to mix no longer in such intrigues. The police was on the alert; the most inquisitorial means were employed; all kinds of seduction were had recourse to; Moreau, Pichegru, and Georges were successively arrested. When interrogated as to the project of assassination, the Chouan answered frankly, "I came to Paris to attack the first consul openly by force; by the same means, in short, which he takes to protect himself. We waited to act until a French prince arrived in Paris." This prince was, it seems, the Duke d'Enghien; and the voluntary confession of the Chouan sealed his fate.

Murder of the Duke d'Enghien.

But in the interval between the arrest and trial of Pichegru and his associates, Bonaparte struck a blow which stunned all Europe, and was no doubt intended to strike terror into the hearts of those who had so often plotted his destruction. We allude to the seizure and military execution of the Duke d'Enghien. This young prince, a son of the Duke de Bourbon, and grandson of the last Prince of Condé, inhabited the château of Ettenheim, belonging to the elector of Baden, and only four leagues distant from Strasburg, where he had lived for some time in perfect security. The proximity of his residence to the French frontier, the fact of which the consular government had received information that Dumouriez was at Ettenheim,[1] and, above all, the confession of Cadoudal that he and his brother conspirators only waited for the arrival of a French prince in order to commence operations, satisfied the first consul that the duke was not only aware of, but deeply implicated in, the counter-revolutionary movement which had been concerted in Paris; and this conviction was much strengthened by the reports of the police, all of which represented the conspiracy as having assassination for its principal object. "The air," said Fouché, "is full of poniards." The life of the first consul had already been attempted by means of the infernal machine; and although, on that occasion, he had escaped as it were by miracle, he could not always hope that the hand of the assassin would miss its aim, or that his machinations would fail of success. The law of self-preservation, which gives to every man, when his life is in jeopardy, the right of defending it by all the means in his power, seemed therefore to sanction the adoption of measures calculated not merely to ward off the present danger, but also to strike a salutary terror, which might in future prevent the renewal of such attempts. Accordingly a detachment of French gensdarmes, under the order of Captain Charlot, was directed by General Ordener to surprise the castle of Ettenheim, and carry off the Duke d'Enghien; whilst another expedition, under General Caulincourt, moved upon Kehl and Offemburg to seize some emigrants at those places.[2] But the gensdarmes advanced so rapidly, that on the night of the 15th of March the prince was seized in his bed, and hurried off to Strasburg. The tidings of his capture were immediately conveyed to Paris by the telegraph, and through the same channel orders were received on the morning of the 18th, in consequence of which the prisoner was rapidly transported to the castle of Vincennes, but without traversing the capital. He reached Vincennes at nine o'clock in the evening, much fatigued with his journey, and the same night was brought before a military commission, specially appointed to try, or rather to condemn him.

The charges brought against him were six in number; first, having borne arms against the Republic; secondly, having offered his services to England, the eternal enemy of France; thirdly, having received accredited agents of that country, facilitated their correspondence in France, and conspired against the internal and external safety of the state; fourthly, having placed himself at the head of a corps of French emigrants in the pay of England, which had been formed in the Brisgau and in Baden; fifthly, having maintained a correspondence in Strasburg, with the intention of raising the adjoining departments, and operating a diversion in favour of England; and, lastly, having entered into the conspiracy formed by that power for the assassination of the first consul, and held himself in readiness, in the event of success, to enter France with arms in his hands. Interrogated on each of these heads, the prince made the best defence which circumstances admitted of, oppressed as he was with fatigue, and exhausted from want of food and rest; but, after a sham trial, which lasted about three hours, he was found guilty upon all the counts, and condemned, although not a single document had been produced, nor a witness examined in evidence against him. It is said that the commission which so summarily tried and convicted the young prince, did so under the impression that the punishment of death would not be inflicted; but if they entertained any such belief, the event speedily showed that it was entirely groundless. The prince requested to see and speak with Bonaparte, and begged that this request might be communicated to the first consul. Savary, however, who had positive orders to see the judgment carried into execution, refused to grant any indulgence; and at daybreak the prince was conducted to the fosse of the château, where, beside a new-made grave, destined to receive his remains, he was shot by a party of gensdarmes, and died with a courage worthy of his race.

Whatever excuse Napoleon may have had for seizing and detaining the Duke d'Enghien as a hostage, he had none whatever for putting him to death; whilst the circumstances attending this tragedy, the rapid journey, the nocturnal trial, the shameful conviction without evidence, and the immediate execution of the sentence, gave to it the character of a premeditated assassination. In this light, accordingly, it was regarded throughout Europe, men of all parties uniting in execrating the deed as a foul midnight murder, only rendered more revolting by the mockery of justice with which it was accompanied. It has indeed been said, that in accelerating the catastrophe, and condemning the prince clandestinely by night, the fermentation which might have arisen had the procedure been prolonged was avoided; and that the circumstances which had created the necessity for a great example, also required that it should be promptly made. But is the policy of him who seeks to profit by a crime, any justification of the crime itself? or can mere expediency ever sanction a proceeding by which justice is trampled on, and the door shut against mercy? It is no doubt true that the life of the first consul was aimed at, and that the principle of self-preservation warranted him to take some measures for his own protection; but the law of self-defence requires of him who resorts to such a plea, proof that he has not exceeded the *moderamen inculpatæ tutelæ*, or, in other words, that the measures he had recourse to did not go beyond the necessity of the occasion. Had Napoleon confined himself to the seizure and detention of the prince as a hostage for his own safety, all Europe would probably have thought that he was justifiable in taking such a precaution; by acting as he did, he outraged the sentiments of justice and humanity, armed public opinion against him, and exhibited himself to the world in the light of a man capable of committing any crime, however dark and atrocious. Fouché was right, therefore, in pronouncing the murder of the Duke d'Enghien, a great political fault, which, in his estimation, was worse than a crime. Napoleon, in a laboured defence of his own conduct, dictated many years afterwards, endeavours to inculpate Savary, by charging him with precipitation; and affirms that if the request of the prince for an interview had been communicated to him, it would have been granted, and might have been followed by a remission of the capital punishment. But is it to be believed that in a matter of so much importance, a subaltern would have ventured to act as Savary did without positive orders? or that having such, he would dare to disobey them? On this point, indeed, the vindication of Savary is complete; for, whatever may be thought generally of the part which he acted in the affair, he has at least established this point, that he merely obeyed his orders.

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[1] This proved to be a complete mistake. The person whom the spies of the French police represented as General Dumouriez, was in reality the Marquis de Thumery, the German pronunciation of whose name had led them to confound him with General Dumouriez. (Montgaillard, *Histoire de France*, tom. vi. p. 47.) It moreover appears that, among the persons present at Ettenheim, was a Count Demoustier of Franche-Comté, the consonance of whose name approaches still more nearly to that of Dumouriez. (*Ibid.*)

[2] The minister of exterior relations, Talleyrand, in a letter dated the 11th of March, sent to the minister of the elector a notification of the intended arrest of the Duke d'Enghien, but it is uncertain whether this letter reached Carlsruhe before the seizure of the prince, which was so rapidly effected by the gensdarmes under Charlot. Talleyrand evidently desired to prevent the commission of a crime which, he foresaw, would arm public opinion against the new order of things established in France.

The French government had early intimation of the sentiments with which this crime was regarded in other countries. The emperor of Russia lost no time in instructing his chargé d'affaires at Paris to notify that he had learned with equal surprise and grief the event which had taken place at Ettenheim, the circumstances which followed it, and its deplorable result; and that the interest felt by his imperial majesty was the stronger, because he could in no way reconcile the violation of the territory of Baden with those principles of justice and humanity regarded as sacred by nations, and which alone protect their mutual relations. The Russian minister, at the diet of Ratisbon, also presented a note, in which he forcibly represented this violation of the Baden territory as endangering the peace and security of every state in Germany.[1] A long diplomatic correspondence ensued, without leading to any result; and on the 29th of August the Russian chargé d'affaires quitted Paris, after which all relations ceased between his country and France.[2]

eath of ichegru.

Some time after this tragedy, Pichegru, who had been confined in the Temple since the 28th February, was found strangled in his prison. The operation had been performed by means of a faggot-stick inserted between the neck and the cravat, so as to act like a tourniquet, or rather like what is commonly called a Spanish windlass. Wright, an English captain, who had landed Cadoudal upon the coast of Normandy, and had afterwards been taken prisoner, was also found with his throat cut. The French government published all the details relative to both suicides; but the recent catastrophe of the Duke d'Enghien had produced in all minds an impression so unfavourable to Bonaparte, that, without proof, and even without examination, the death of Pichegru, in particular, was at the first moment imputed to him. But time has demonstrated the injustice of this imputation. The circumstances of real evidence connected with the deed itself, the clear interest of Napoleon to bring Pichegru to a public trial, as he afterwards did Moreau, the situation of that unfortunate man himself, and, above all, the fact that, even after the fall of Bonaparte, not a particle of evidence was discovered to contradict the statement originally published by the government, or to warrant so much as a suspicion of foul play, all unite to prove that Pichegru died by his own hand. What possible motive could the first consul have to order this unhappy man to be privately assassinated? The evidence against him was complete. His negotiations with the Bourbons could not be disavowed; the agents of Louis XVIII. and of the English ministers, with whom he had corresponded, were detained as prisoners in the Temple; and that correspondence was about to be judicially authenticated by their respective depositions. Was it not for the interest of the first consul, and of the government of which he was the head, that all this should be clearly established in a court of justice, and that the man who had associated himself with assassins should also be proved to have been a traitor to his country? But Pichegru appears to have judged more correctly of his position in the Temple, than those who preposterously attempted to invest him with the honours of martyrdom. He saw himself undone without resource, and being unable to endure the ignominy of ascending the scaffold with brigands, chiefly known by their exploits on the highway, he put an end to his existence. Georges Cadoudal, and several of his more guilty associates, were soon afterwards brought to trial, condemned, and executed, without the slightest manifestation of public feeling in their favour.

Trial of Moreau.

The prosecution of Moreau commenced on the 10th of June. He was arraigned on a law which declared the concealment of proclaimed conspirators an offence punishable with six years' imprisonment in fetters; and the specific fact charged against him was the harbouring of Georges Cadoudal and his accomplices. His conduct on this occasion fully justified the opinion which we have previously pronounced as to his character. The public declared loudly in his favour; but he did nothing corresponding to the great interest excited in his behalf. Brave and decided on the field of battle, he constantly showed himself timid, and sometimes pusillanimous, on the political arena; nature, in giving him the bravery of the soldier, had denied him the courage of the citizen. He must indeed have been conscious that he was deeply compromised; but, on the other hand, never did a person accused find so many defenders in almost every class of society. The enemies of Bonaparte, and they were numerous, loudly expressed the interest with which Moreau had inspired them; a crowd of military men, who had served under his orders, prepared to defend him by open force, nay, even to rescue him from the tribunal; and the very gensdarmes appointed to guard him turned towards him the hilts of their sabres in token of their readiness to assist in his deliverance. But always feeble, and incapable of taking a decided part, Moreau had recourse to supplications addressed to the first consul, to whom, in a letter from his prison in the Temple, he presented the most humble excuses, at the same time imploring the "bienveillance" of the head of the government. Nor was his conduct less humiliating when brought before his judges. The exigencies of his defence imposed upon him the dire necessity of denying the statement which he had written to the Directory, and signed with his own hand, that "the proofs of the treason of Pichegru were as clear as day, but that he doubted whether they could be exhibited in a judicial form." Accordingly, after having repeatedly affirmed that "it was but too true that Pichegru had betrayed the confidence of the whole nation," he had now recourse to the most miserable shifts in order to invalidate all the accusations which he had presented against Pichegru, when the latter commanded the army of the Rhine and Moselle in 1795 and the beginning of 1796, as guilty of maintaining a correspondence with the Prince of Condé and the enemies of the Republic. But the force of public opinion had made itself felt even on the bench; and the recollection that he had gained thirty battles for the Republic, and saved two armies, created an interest in his favour which all his weakness and folly could not destroy. The culpability of Moreau was evident, and Bonaparte required that he should be condemned to death, or to some degrading punishment, intending, as is said, to have remitted the sentence, which would have effectually destroyed Moreau in public opinion. But in vain did he attempt to seduce or intimidate the judges. Out of twelve, seven feared not to resist;[1] and by a sort of compromise between the government and public opinion, Moreau was declared culpable, but excusable, and condemned to suffer two years' imprisonment, which was afterwards commuted into exile.[2] Of forty-six others who were at the same time arraigned, twenty were condemned to death, five to two years' imprisonment, and the rest acquitted, but not released. The Polignacs were spared at the intercession of Josephine, and Madame Murat, afterwards queen of Naples.

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[1] As a proof of the sentiments with which he professed to regard the murder of the Duke d'Enghien, the Emperor Alexander caused to be erected in the principal church of St Petersburg, a funeral monument in honour of the unfortunate prince, with a Latin inscription, in which the latter is described as a hopeful scion of the house of Bourbon, *quem Corsica bellua immaniter trucidavit.* Yet, four years later, we shall find the autocrat, who on this occasion professed so much hatred and contempt for Bonaparte, loading him with every mark of regard, priding himself on being acknowledged as a friend by the new emperor of the Gauls, and even exclaiming, in the words of a French poet, "L'amitié d'un grand homme est un présent des dieux." At Erfurt, the *Corsica bellua* of the inscription was held out, by this Greek of the lower empire, as little short of an angel of light.

[2] In replying to the first note of M. d'Oubril, the Russian chargé d'affaires, the French minister made a palpable hit: "Si lorsque les Anglais concertaient l'assassinat de Paul Ier., on fût venu avertir l'Empereur Alexandre que ses assassins n'étaient qu'à une lieue de la frontière Russe, ne se serait-il pas mis en devoir de les faire arrêter?" This was a home-thrust, which admitted of no riposte.

Civil code.

In the early part of this year a law was passed which decreed the re-union of the civil laws in a single code, under the title of *Code Civil des Français*. The advantage which a country derives from the establishment of uniform laws does not need to be proved; but, to appreciate the full importance of this benefit to France, it is only necessary to cast a glance at the state of the law under the old regime. It was divided into two principal systems; that of written law, and that of the countries governed by customs or common law. Both systems were subdivided into an infinite number of branches. There were about three hundred general customs, varying in the extent to which they prevailed; and these, again, were modified by a multitude of local usages. The number of commentators was immense. France was also governed by many other written institutions, such as ordonnances, edicts, declarations of the sovereign, and arrêts of the parliaments: each province, each diocese, each bailliage, each town, each corporation, had in fact its own usages and its own jurisprudence. "Besides the forty thousand Roman laws, of which some one is always cited at random," says Voltaire, "we have five hundred different customs, reckoning the small towns and burghs, which derogate from the usages of the principal jurisdiction; so that a person travelling post in France changes laws oftener than he changes horses, and an advocate who is very learned in one city is no better than an ignoramus in that next adjoining." This description is not in any respect overcharged. Never in any other country had chicanery and oppression so wide a field to expatiate in; never was there so urgent a necessity for substituting, in the room of conflicting usages and accumulated anomalies, a comprehensive and uniform system of laws.

The empire.

The failure of the royalist plot to overthrow the consular government, together with the exposure of the follies committed by Drake and Smith, the English residents at the courts of Munich and Stutgardt, materially contributed to advance the project which Napoleon had for some time cherished of assuming the imperial purple. A despotism for life is an absurdity; and besides it holds out a sort of premium for assassination. That the first consul's life had been aimed at, the infernal machine, and the conspiracy of Pichegru and Georges, placed beyond all doubt; that similar attempts would be repeated, as long as the hope remained that, by taking off a single individual, a counter revolution would be effected, was indeed most probable. According to the logic of the time, a necessity had arisen, not for abating the despotism, but for placing it on a more solid and permanent foundation; or, in other words, for declaring it hereditary in the person and family of the man who was already invested with absolute power. Thus reasoned the partisans of Napoleon, and, in their view of the question, correctly; because any thing was preferable to a government which might at any given instant of time be overthrown. Measures were therefore taken to effect the object which was now declared to be so necessary to the safety and happiness of France. On the 30th of April a motion was made in the Tribunate to confide the government of the Republic to an emperor, and to declare the empire hereditary in the family of the first consul Napoleon Bonaparte. This motion was made by an obscure member of the legislative chamber, named Curée, who concluded his speech on the occasion by declaring that the nation desired a chief as illustrious as its destiny. Ever since the 2d of August 1802, when, by an organic senatus-consultum, the members of the Tribunate were reduced to a hundred and fifty, Bonaparte had completely controlled the deliberations of that body; indeed almost all the tribunes were either sold or intimidated, and scarcely a shadow of representation remained. The proposition to confer upon Bonaparte the title of emperor was therefore adopted by the Tribunate; but the unanimity of that body was greatly troubled by the heroic opposition of Carnot, who on this occasion expressed the most noble and generous sentiments. "I voted," said he, "at the time against the consulate for life; I shall in like manner vote now against the re-establishment of the monarchy in France." He contended that the government of a single individual was any thing rather than a guarantee of stability and tranquillity. "The duration of the Roman empire," said he, "was not longer than that of the Republic would have been; the intestine disorders were still greater, and crimes more multiplied; republican high-mindedness, heroism, and all the masculine virtues, were displaced to make room for the most ridiculous pride, the vilest adulation, the most insatiable cupidity, and the most complete disregard of national prosperity. What evil, pray, was remedied or obviated by declaring the succession to the throne hereditary? Was not this in fact regarded as the legitimate inheritance of the house of Augustus? Was not Domitian the son of Vespasian, Caligula the son of Germanicus, Commodus the son of Marcus Aurelius?" He concluded a powerful address in the following words, the beauty and force of which we shall not impair or enfeeble by any attempt at translation. "La liberté fut-elle donc montrée à l'homme pour qu'il ne pût jamais en jouir? Fut-elle sans cesse offerte à ses vœux comme un fruit auquel il ne peut porter la main sans être frappé de mort? Ainsi la nature, qui nous fait de cette liberté un besoin si pressant, aurait voulu nous traiter en marâtre? Non, je ne puis consentir à regarder ce bien si universellement préféré à tous les autres, sans lequel tous les autres ne sont rien, comme une simple illusion; mon cœur me dit que la liberté est possible, que le régime en est facile et plus stable qu'aucun gouvernement arbitraire, qu'aucune oligarchie."

The vote of the Tribunate was communicated to the Conservative Senate, which, on the 4th of May, decreed, on the motion of the second consul, Cambacérès,[1] "that it is for the decided interest of the French people to confide the government of the Republic to Napoleon Bonaparte as hereditary emperor;" and fourteen days afterwards the same body, without waiting until the vain formality of obtaining the sanction of the people had been gone through, passed another decree, in which the first consul is styled "Emperor of the French," a title which, according to the mover, "is only the expression of an authentic wish already manifested by the nation." It appears, however, that the people were not in any shape consulted or referred to in the matter. For form's sake, they had been admitted to vote respecting the question of the consulate for life; but on the present occasion the experiment was not repeated, however advantageous it might have been to obtain at least a semblance of popular assent; and, what is not a little remarkable, this fact is established by the conclusion of the very discourse in which it is unblushingly affirmed that the assumption of the imperial dignity by Napoleon is only the expression of an authentic wish *already* manifested by the nation. "If it is in the principles of our constitution," says Cambacérès, in presenting the decree of the senate, "and already several examples have been given, to submit to the sanction of the people the part of the decree which concerns the establishment of an hereditary government, the senate nevertheless conceives that it ought to supplicate your imperial majesty to consent that the organic dispositions should immediately receive their execution; and, for the glory as well as for the happiness of the Republic, it proclaims, *on the instant even*, Napoleon emperor of the French." What, then, becomes of the assertion, so often advanced, as if it could not be contradicted, that "the wish of thirty millions of men had crowned the Emperor Napoleon?" By evidence the most conclusive it is here established that Bonaparte was created emperor by the senate, consisting entirely of his own creatures, and that the nation was not consulted or appealed to in the matter. An organic senatus-consultum next declared the imperial dignity hereditary in the direct, natural, and legitimate descendants of Napoleon, from male to male, in the order of primogeniture, to the perpetual exclusion of women and their descendants. It provided, however, that the emperor might adopt the children or grandchildren of his brothers, if he had no male offspring himself at the moment of adoption, and that the children who might thus be adopted should enter into the direct line of descent, but could only be called to the succession after legitimate and natural descendants. In default of an heir of Napoleon, the imperial dignity was to devolve upon Joseph-Napoleon and his descendants, and, failing the latter, upon Louis Bonaparte and his descendants. And thus expired the French Republic, surnamed indivisible and imperishable by so many orators and rhetoricians; and thus was monarchy re-established in France, with even greater facility than it had been overthrown eleven years before. Having passed through a course of representative government, they now hastened to submit to the government of one man invested with despotic power; like the ancient slaves, they voluntarily replaced themselves under the yoke which for a day they had entertained the design of for ever shaking off.[2]

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[1] These were, Clavier, the learned translator of Pausanias, Lecourbe, Martineau, Desmaisons, Rigault, Laguillaumie, and Demeuve. To an emissary who informed him that Bonaparte only desired the condemnation of Moreau in order to pardon him, Clavier replied, "Et qui nous la fera, à nous?" Who will pardon us?

[2] After the sentence had been pronounced, every facility of escape was afforded to Moreau; but, discovering the snare laid for him, he avoided it by returning alone to the prison of the Temple. At length a compromise was entered into, and, after having paid the whole expense of the prosecution, he retired through Spain to America. "En montrant un caractère moins indécis, moins pusillanime," says the Abbé de Montgaillard, "Moreau aurait trouvé de l'appui dans le sénat, dans l'armée, dans la population de Paris, et même dans la nation; mais son infirmité politique se montre ici tout entière. Il ne s'était fait une idée positive de la part qu'il pouvait et devait prendre dans ces grandes crises de Fructidor et de Brumaire; il ne sut se déterminer ni dans l'une ni dans l'autre de ces circonstances; patriote sincère, ami de l'ordre, de la justice, et de la liberté, il ne sent jamais que des velléités incohérentes d'imiter ces grands hommes qui se signalèrent contre les oppresseurs de la patrie." (Montgaillard, *Histoire de France*, tome vi. p. 125, 126.)

Measures of Napoleon to obtain the recognition of his new dignity.

Having assumed the title of emperor, which the obsequious senate had, by a sort of improvisation, bestowed on him, Bonaparte lost no time in exercising the powers belonging to his new dignity. On the 19th of May he created eighteen of his generals marshals of the empire. This was an act of homage to the army, the real basis of his power, and it was performed without even waiting until the senate had taken the oath of allegiance, which it did on the 27th. Addresses now flowed in from all parts of the hundred and eight departments into which the territory of the imperial republic was divided. The authorities, the functionaries, the magistracy, and the army, all brought to the foot of the throne assurances of the most profound devotion. Harassed with the convulsions of a long anarchy, the people now invoked the repose of servitude. The despotism of one man seemed to them a small evil compared with the tyranny of the factions. Of this disposition Napoleon took full advantage, and, accordingly, spent the remainder of the year in employing every means to get his new dignity confirmed and sanctioned both at home and abroad. The fact of his assumption of the imperial dignity was formally announced to all the states of Europe, Britain alone excepted, and negotiations were at the same time opened with a view to obtain its recognition. Austria was the first to acknowledge the new emperor of the Gauls; and the opportunity was even chosen by her sovereign for modifying his own title, to which he now added that of hereditary emperor of Austria. But the other powers either hesitated or delayed. The army, however, formed the true basis of Napoleon's power, and their sanction was essential to its stability. To obtain this with suitable eclat, he visited Boulogne in the course of the summer, and, soon after his arrival in the camp, ordered a grand review, during which he distributed to the military crosses of the Legion of Honour, which, created by the law of the 19th May 1802, had been solemnly inaugurated at Paris a short time before (14th July). Here, on the 16th of August, seated on a temporary throne in the midst of his numerous hosts, with the shores of England and its fleets before him, he received, as it were in presence of the enemy, the exulting acclamations with which the troops answered his claim to empire, and seemed, like another Clovis, raised on their bucklers, to be the founder of a new dynasty in France. From Boulogne Napoleon hurried to Aix-la-Chapelle, the ancient capital of Charlemagne, where the acknowledgment of his new dignity by the Emperor Francis II. awaited his arrival. Lastly, on the 1st of December, the Conservative Senate presented to him the plebiscitum, as it was called, which recognised the imperial dignity as hereditary in his family.

His coronation.

That nothing might be wanting, the church was required to give her formal sanction to the new dynasty. The Gallican clergy had already signalised their zeal by proclaiming Napoleon emperor, and in their discourses styling him

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[1] He who thus placed the crown on the head of an ambitious soldier was the same person who, in the night of the 19th January 1793, exclaimed, "Citoyens répresentans, en prononçant la mort du dernier Roi des Français, vous avez fait un acte dont la mémoire ne passera jamais, et qui sera gravé par le burin d'immortalité dans les fastes des nations...Qu'une expédition du décret de mort soit envoyée, à l'instant, au conseil exécutif pour le faire exécuter dans les vingt-quatre heures de la notification." In this cortège of senators was also the minister of justice who, on the 20th January, announced to Louis XVI. the sentence of death. "Jamais empéreur de Rome," says Montgaillard, "ne dut le diadème à de plus vils affranchis; posé par de telles mains, il eût souillé le front même de Titus." (*Hist. de France*, vi. 94.) In a word, these Conventionalists, who, in 1793, had shown themselves so eager to hasten the death of Louis XVI., were not less so, in 1804, to accelerate the enthronement of Napoleon Bonaparte.

[2] How well they verified the words of an Italian poet, the reader will judge:

Torna contento così
Schiavo, che uscì di pena,
Alla barbara catena
Che detestava un dì. (Metastasio.)

Moses and Cyrus, not to mention other impious absurdities.[1] In success they discovered divine right as well as legitimacy, and proclaimed the finger of God as the agent of his elevation. Nor was the successor of St Peter, and the vicar of God upon earth, less accommodating than the members of the Gallican church. At the command of Napoleon, his holiness made a journey to Paris, in order to place the crown on the head of the new Charlemagne, who had despoiled the church of the very possessions which had been bestowed on her by the pious emperor of the Franks. The sovereign pontiff who thus obsequiously consented to consecrate military usurpation, was no other than that Bishop of Imola who, in December 1797, exhorted his flock to follow the traces of the democratic revolution of France; but if the hearts of men are in the hand of the Most High, infallibility is of course an attribute of the papal tiara. The ceremony of the coronation took place in the church of Nôtre Dame on the second of December; and no labour or expense had been spared to give splendour and magnificence to the spectacle. But notwithstanding all the pomp and luxury displayed, few acclamations greeted the emperor on his way to Nôtre Dame, and still fewer awaited him on his return. No man said God bless him. The people generally remained passive and silent. During the ceremonial, Napoleon, impatient of its slow march, seized the crown, which he placed on his own head, and next he also crowned the Empress Josephine. The holy father then performed the triple unction on the head and the two hands, after which he recited the following strange formula of consecration: "Almighty and eternal God, who hast established Hazaël to govern Syria, and Jehu king of the Jews, in manifesting to them thy will by the organ of the prophet Elias; who hast equally shed the holy unction of the kings on the head of Saul and of David by the ministry of the prophet Samuel; shed, by my hands, the treasures of thy grace and of thy benediction on thy servant Napoleon, whom, notwithstanding our personal unworthiness, we do this day consecrate emperor in thy name." This formula explicitly announces the doctrine of divine right, a doctrine borrowed from the constitution of the Hebrews, and introduced into Europe at a period of the grossest ignorance, under the feeble Carlovingians, when the priesthood established the absolute power of kings over their people, and the absolute power of the pope over kings.

Character of Napoleon.

The man who had thus gathered up out of the wrecks of the Revolution the fragments of the sovereignty which it had broken to pieces, and with these materials, aided by his own genius, constructed a new empire in France, was, considering his character in its various aspects, the most extraordinary personage that any age or country has ever produced. Gifted by nature with all the general and efficient elements of greatness, but possessing few or none of those peculiarities which sometimes mar and sometimes adorn it, his powers differed from those of ordinary men not so much in kind, perhaps, as in degree. Great good sense, intuitive quickness, unquenchable energy, severe judgment, untiring perseverance; such were the general attributes of his mind, to which circumstances afforded full opportunities of development. He was not one of those men born to struggle against events, or to create occasions for the display of his own powers, and for the gratification of an aspiring ambition. He never anticipated the course of events, nor ventured forward until every accessory had been prepared, until all was ripe for consummation. His mind was essentially practical, and his supreme excellence consisted in a just appreciation of the true character of events, united with unexampled promptitude in availing himself of the favours of fortune, and in turning every propitious circumstance to the utmost possible advantage. But his energy was active, not passive; with the current of events in his favour, his audacity was boundless; when the tide turned against him, he evinced but little fortitude; in prosperity he seemed like a god, governing all things at his pleasure; in adversity he pined like a southern exotic under a northern sky. He was not fitted by nature to play the part either of Cæsar or of Cromwell, and he would never have descended to that of Catiline. He was in truth but a bad conspirator; for, as we have already seen, the revolution of the 18th and 19th of Brumaire was effected, in spite of his blunders and hesitation, by the firmness and intrepidity of his brother Lucien. Further, Napoleon was endowed with great and commanding intellect, but not with strong passions; he neither loved nor sympathised with freedom; and even his ambition seems to have been after-thought begotten of events. A little before the 13th of Vendemiaire, when accident first brought him into notice, his views were limited to the purchase of a country-house and farm, but not of confiscated property, so unstable did he then consider the Revolution. But he had that restless spirit, that craving activity, and that innate consciousness of intellectual power, out of which ambition springs. He was not without enthusiasm of a certain kind; but it never approached the generous warmth of inspiration, or betrayed him into any sallies which his judgment condemned; and hence his compositions and addresses, though full of force and vigour, are deformed by exaggeration, and devoid of natural feeling, the essential element of true eloquence. But the absence of passion and enthusiasm implies selfishness in the highest degree; and this again naturally produces the most depreciatory judgments of mankind. The character of Napoleon was deformed by both these vices in an eminent degree. Himself, his greatness, and that of France through him, became, if not a passion, at least the substitute for one; and, mistrustful of all pretensions to public virtue or disinterestedness, he regarded mankind as all governed by their immediate interests, and as ready to serve any cause by which these might be advanced. From this nullity of feeling, and strength of intellect, flowed the virtues and vices of the man. He was neither imposed on by the cant of the Revolution, nor in the slightest degree tinged with its fanaticism. Indebted for his promotion to the democracy, he adopted that side which threw command open to talents; he espoused the cause of the Revolution, and rendered it triumphant; but he imbibed none of its passions or prejudices against either the aristocracy or the clergy, both of whom he spared and even protected. He was not by nature cruel or implacable; but the supreme command of armies, and the habitual spectacle of fields of battle, had inspired him with a contempt of human life, and a disregard for destroying it. He had no immoral tendencies; but as he had derived from education no principle of religion, or, at least, as the Revolution annihilated any he might have originally imbibed, he was left free to adopt those untempered maxims of expediency, according to which prudence becomes the only regulating principle of human actions. Nor does he seem to have cherished any nice sentiment of honour, or in general to have possessed those habits and manners which are characteristic of a gentleman. The one would have inspired him with a respect for truth, and prevented an imperial bulletin from becoming synonymous with falsehood; and the other would have preserved him from that habitual rudeness, which at length left around him, not devoted servants, but servile instruments, alike incapable of delaying a guilty order or of hastening a generous one. As to war, Napoleon always found it made to his hand; if his system provoked it, which it unquestionably did, this never entered into his calculation, and he could not imagine why Austria, Britain, or any other power, should affect to feel any alarm at his aggrandisement. He had come in place of the Revolution; he was at once the representative and the guardian of all the interests and changes which it had created or effected; and yet, though but a Jacobin enthroned, he resented as an indignity and an insult the mistrust evinced by those very powers which had previously combined to crush the Revolution of which he was the representative. This was no doubt the grand misfortune of his position. He could not stand still, much less recede. His system was essentially of a progressive and an encroaching character; his policy was from necessity arbitrary and menacing. Wars followed; coalition after coalition was formed and destroyed; and whilst France only assumed the offensive in order to anticipate enemies which were preparing to strike her, victory attended her standards. But the very fruits of success, which no man knew so well as Napoleon how to gather up, soon accumulated to such a degree, that a further extension of his authority became inevitable. The obstinate hostility of England, which he endeavoured to overcome by means of what he chose to denominate the continental system, involved him in the Russian expedition, in which he assumed a directly aggressive character; and the consequences were unheard-of disasters and defeats. The elements warred against him, and in the snows of Russia were buried those formidable legions which had so often marched to victory. The tide of events now turned; and in the violence of the reflux Napoleon was, after a brief struggle, overthrown. When he crossed the Niemen to invade Russia, he had reached the culminating point of his destiny; when he recrossed that stream, the nations of Europe were already freed from his grasp. But though unable to control events, Napoleon was eminently calculated to rule over masses of men. If he deprived them of liberty, he at least secured to them equality; in all departments a boundless field was opened by him to talent and enterprise; and in pursuing his own schemes of greatness, he conferred the most substantial and enduring benefits on the nation which he governed. His was essentially a popular despotism; one which rested not on the narrow basis of castes, but leaned on the general mass. Yet his power, though it extended widely over the land, did not strike downwards, but, spreading its roots horizontally and superficially through the soil, wanted that firm hold which alone could have enabled it to resist the fury of the adverse blasts to which it was exposed.

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[1] The language of impious adulation in which the clergy indulged on the occasion referred to reflects eternal disgrace, if not on their order, at least on themselves. The following are specimens of the pious incense with which they endeavoured to regale the nostrils of Napoleon: "Le Dieu des dieux," said Cardinal Cambacérès, "et des rois, avait donné, et il avait repris; il n'a pas rendu, mais il a donné de nouveau, comme il avait donné le trône de Clovis à Charlemagne, et le trône de celui-ci à Saint-Louis...L'homme de la religion trouvera nos maximes dans l'Evangile." "Un dieu et un monarque," said the Archbishop of Turin, "comme le Dieu des Chrétiens est le seul digne d'être adoré et obéi; vous (Napoleon) êtes le seul homme digne de commander aux Français. Par-là cesseront toutes abstractions philosophiques, tout dépècement du pouvoir." "Qu'elle est grande," cried another dignitary, "qu'elle est admirable, cette divine sagesse qui établit les empires. Napoléon, que Dieu appella des deserts d'Egypte, comme un autre Moïse...Donnons pour garant de notre fidélité à César, notre fidélité à Dieu...Ne cessons de le dire, le doigt de Dieu est ici... Nouveau Mathathias, Bonaparte parut dans l'assemblée du peuple, envoyé par le Seigneur...Un nouveau Cyrus a paru...Généreux comme le pieux Onias...L'écriture nous trace, dans le règne de Josaphat, ce prince chéri de Dieu et des hommes, l'image du gouvernement accompli de Napoléon...La soumission lui est due, comme dominant surtout; à ses ministres, comme envoyes par lui pour proteger le bien et punir le mal, parce que tel est l'ordre de la Providence." It would be at once curious and instructive to compare this with the language held after the events of 1814, by some of the very men who thus profaned holy writ in order to offer incense to the Jacobin emperor.

New coalition against France preparing.

The events of 1804 prepared the way for a new coalition against France. The breach with Russia, resulting ostensibly from the seizure and execution of the Duke d'Enghien, had accomplished the first wish of Great Britain, which was to find a continental ally. Menaced with invasion, the mere threat of which, independently of any danger to be apprehended, was an evil, because an insult, that power, acting upon the most obvious principles of policy, naturally sought to find employment on the Continent for the legions which frowned defiance on the opposite shores of the Channel; and a prospect of accomplishing this object was unexpectedly opened in consequence of the event to which we have alluded. But this prospect was for a time overclouded by an unjustifiable aggression on the part of Britain. Spain had for several years been in close alliance with France, which she secretly aided with subsidies; yet the English government, though fully aware of the circumstance, pretended not to observe it, and had hitherto respected Spain as a neutral power. This policy, however, which, in the circumstances, was not less wise than cautious, the English ministry suddenly abandoned, and, by a most unjustifiable act of aggression, threw Spain into the arms of France. Without any declaration of war, or the least indication of a change in the system which had hitherto been pursued by England, several Spanish vessels, returning laden with treasure, were attacked by a superior force, and after a sharp action captured. This proceeding, stamped with all the characters of violence and treachery, was immediately followed by a declaration of war on the part of the Spanish government; and from this time Britain had not only to contend with the fleets of France and Spain united, but, in consequence of the gigantic schemes of Napoleon, became seriously exposed to all the perils and miseries of an invasion.

Proposal for peace.

Meanwhile, as the clouds of hostility were gathering around him, Napoleon addressed a letter directly to the king of Great Britain (14th January), containing overtures of a peace. "I attach no dishonour," said he, "to making the first advance. I have, I think, sufficiently proved to the world that I do not dread any of the chances of war. Peace is the wish of my heart. I conjure your majesty not to deny yourself the satisfaction of giving it to the world. A coalition will never have any effect but to increase the continental preponderance and grandeur of France." In any view, this was a politic proceeding. It served to conciliate public opinion in France, to throw upon England the odium of persisting in embroiling the Continent, to mask his real designs, and at the same time to parade his dignity by treating on a footing of equality with the proudest and most powerful monarch in the world. The reply of the English ministry was cold and repulsive. "His majesty is persuaded," said they in their reply addressed to M. Talleyrand, "that the object of peace can only be obtained by engagements calculated to provide for the future safety and tranquillity of Europe, and to prevent the recurrence of the dangers and misfortunes in which it has been involved. His majesty, therefore, feels that it is impossible for him to reply more particularly to the overture which has been made to him, until he has had time to communicate with the powers of the Continent." Both parties were equally insincere. Britain desired to abide by the fortunes of a third coalition; Napoleon pursued his schemes of aggrandisement, and on the 18th of March announced to the senate that he had accepted the crown of Italy, in conformity, as he said, with the wishes manifested by the Italian Republic. At Milan, where he was received with enthusiasm, he had exchanged his title of president of the Cisalpine Republic for that of king of Italy, and placed upon his head the iron crown[1] of Charlemagne, amidst the acclamations of a people charmed with the idea of a kingdom of Italy. This was followed by an act of a still more unequivocal character, namely, the incorporation of Genoa, lately the Ligurian Republic, with the French empire; a measure certain to alarm Austria, and to furnish Great Britain and Russia with a new and powerful argument for inducing that power to join the coalition against France.[2]

Napoleon's plan of invasion.

Many persons have thought, and some gravely maintained, that Napoleon was not serious in his menace of invading England. But the contrary has been proved by the most incontrovertible evidence. He was well aware, however, that without obtaining at least a temporary superiority of naval force, such a project would be impracticable; and accordingly all his efforts had, for some time past, been directed towards the accomplishment of this preliminary object. His plan was to distract the attention of England, by sending a powerful fleet to the West Indies, which, after threatening her possessions in that quarter, should suddenly return to Europe, effect a junction with the Spanish fleet, then disengage the squadron blockaded in Brest, and having rallied under its flag ships from other ports, enter the Channel with an overwhelming force of nearly sixty sail of the line. This project was admirably conceived, and most skilfully combined; and if the execution had at all corresponded with the design, or if Villeneuve had obeyed his orders, or if, even after his indecisive action with Sir Robert Calder, he had made sail for Brest, instead of going into Cadiz in the face of reiterated instructions, enforced even with menaces, it would beyond all doubt have succeeded. In this splendid conception, almost every contingency had been taken into the calculation, except the obstinate and infatuated disobedience of the admiral, which allowed England time to collect her means, and enabled Nelson to annihilate, by one decisive blow, the navies of both France and Spain. On this occasion fortune was on the side of England, which was saved from imminent peril, perhaps from a great national calamity, by a degree of infatuation in the commander of the combined fleets, far beyond all ordinary experience or reasonable calculation. If, after his action with Sir Robert Calder, Villeneuve had proceeded to Brest, according to his peremptory instructions, his force would have at once been increased to forty-five sail of the line, which, with the Rochefort squadron, the junction of which he could then calculate on, would have enabled him to enter the Channel with at least fifty sail of the line; a force amply sufficient to secure to France for the time the naval superiority required. And, in such an event, what would most probably have followed? The troops were in hand, almost on the very beach; the flotilla was kept in readiness to put to sea at a moment's notice; and in ten hours a hundred and fifty thousand men, with material and ammunition, might have been on their way to the opposite coast.[3] But providence willed it otherwise.

Third coalition formed.

Whilst Napoleon was thus menacing England with invasion from the heights of Boulogne, his looks were at the same time anxiously directed towards the east and north of Europe. He was by no means ignorant of the coalition which was forming against him; but as the position which he at present occupied enabled him at once to threaten England and observe Austria, he waited for the development of events in order to judge whether he should attack the former upon her own soil, or strike a blow at her in Germany. Prepared for instant operations, his principal object was to suffer the continental powers to anticipate him in declaring war, and then in turn to anticipate them, by promptly assuming the offensive, dashing into the very heart of Germany, overpowering Austria before she had time to concentrate her means of resistance, and thus destroying the coalition by, as it were, cutting off its head. And this plan, based on the most accurate prescience of events, was that which he ultimately carried into execution with the most astounding success. On the 8th of April a treaty of alliance was concluded at St Petersburg, between Great Britain and Russia, in which the contracting powers engaged to employ the most prompt and effectual means to form in Europe a general league, capable of constraining the government of France to consent to the re-establishment of peace, and of the equilibrium of power; and to attain this object, the force to be employed was fixed at five hundred thousand effective men, exclusively of the succours to be furnished by England. The special objects of the league were, the evacuation of Hanover and of Germany; the independence of Holland and of Switzerland; the re-establishment of the king of Sardinia in Piedmont, with a considerable extension of territory; the security of the kingdom of Naples; and the entire evacuation of Italy by the French. Sweden, having already decided against France, acceded to these stipulations. Prussia approved of their spirit, but temporised; and finally resolved to persevere in that neutrality by which she had already profited so much. Austria, anxious to redeem her defeats, and regain her ascendency in Italy, formally acceded to the treaty of St Petersburg (on the 9th of August), notwithstanding the strenuous opposition of the Archduke Charles, who, foreseeing the peril, earnestly counselled peace. She engaged not to lay down arms except with the consent of her allies, and was to receive from England a subsidy of three millions sterling during the current year, 1805, and of four millions during each of the following years. These negotiations did not long remain a secret from Napoleon, who had anxiously watched the gathering storm; and scarcely had Austria acceded to the third continental coalition, when the French army, assembled upon the shores of the Channel, was in full march towards the Rhine. Bavaria had previously been secured by a promise of territorial aggrandisement; the Russians were still in Gallicia; and Austria, as the Archduke Charles had foreseen, was thus left to contend single-handed with the whole power of France. In these circumstances Austria pushed forward her troops, and peremptorily demanded that the elector of Bavaria should abandon the alliance of France, and unite with her in maintaining the independence of Germany. The elector temporised, pleaded his engagements, gained time, and succeeded in drawing off his army. The Austrians then occupied Munich, thereby committing the very act of aggression which Napoleon expected and required.

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[1] This crown is called *iron*, from a nail of the true cross, which, it seems, is attached to it.

[2] Napoleon's object in seizing Genoa is announced in one of his letters to Lebrun, who had been appointed governor, and endeavoured, as far as possible, to mitigate the rigour of his stern orders. "In uniting Genoa to the empire, I was induced neither by the revenue, nor by the land forces she might contribute. I had but one object in view, viz. fifteen thousand seamen. It is, then, going against the very spirit of my orders to be lenient or backward in levying and raising this force. You are too mild, too merciful. How can you govern people without discontenting them? What would you do if you were charged with forcing the conscripts of a couple of French departments to march to the army? I tell you that, in matters of government, justice means force as well as virtue. (*Vous savez bien qu'en fait de gouvernement justice veut dire force comme vertu.*) As to the discontent of the Genoese, I am not the man to listen to such remonstrances. Think you I am decrepid enough to fear them? My answer is, seamen, seamen, still seamen. Govern but to collect seamen; dream but of them. Say what you will from me, but say that I will have seamen." The reason of this extreme urgency will immediately appear. As to the detestable maxim, that justice means force, it might with truth be converted into a general motto for the history of Napoleon's reign. With him the amount of force was ever the measure of justice and virtue.

[3] Dumas, *Précis des Evénemens Militaires*, tome xvii. *pièces justificatives.* Bourrienne reports a conversation which he had with Napoleon on this subject, and in which the latter is made to say, "Those who believe in the seriousness of my menace of invasion are fools. They do not see the thing in its true light. I can without doubt disembark in England with a hundred thousand men, fight a great battle, win it; but I must reckon on thirty thousand killed, wounded, or prisoners. If I march upon London, a second battle awaits me; suppose me again successful, what am I to do in London, with an army diminished by three fourths, without hope of reinforcements? It would be madness. Without naval superiority, such a project is impracticable." This merely shows either that Bourrienne did not understand the nature of the communication made to him, or that it suited the views of Napoleon to conceal his real intentions from the inquisitive secretary. That the menace was "serious" as long as a hope remained of obtaining, by the means already described, a superiority of naval force in the Channel, is proved beyond all doubt by the documents which General Dumas has inserted in the Appendix to his seventeenth volume, above referred to; and it seems equally certain that, if Villeneuve had obeyed his orders, the experiment, with all its attendant hazards, would have been tried.

Selfish and lundering olicy of England.

The great object which the English ministry had in view in forming a new coalition against France cannot be mistaken. But in thus precipitating Austria into hostilities before her allies had time to come to her assistance, in order to remove the French army from Boulogne, Pitt played into the hands of the very enemy whom he was so desirous to humble. From the cause already stated, namely, the failure of Napoleon's maritime combinations, through the incapacity of his naval commanders, a descent upon England had become impossible, and the danger, before so imminent, had by this time entirely ceased. It was already certain that France could not obtain even a temporary superiority of naval force in the Channel, without which such an attempt would have been worse than madness. To obviate a danger, therefore, which no longer existed, Pitt recklessly sacrificed the principal ally of England, contributed to extend and consolidate the colossal power of Napoleon, and enabled him to impose on Germany those fetters which it afterwards cost so much blood and treasure to shake off. The blunder of the English minister was indeed gigantic, and no wonder it cost him his life. He fell into the very snare which had been so skilfully laid for him; and by this fatal error placed Europe at the feet of the man for whom he may with truth be said to have paved the way to victory. Nor was the conduct of the campaign itself in any respect unworthy of the blind and infatuated policy which had hurried on the contest.

Var commenced; urrender f Ulm.

The Archduke Charles, finding his pacific counsels disregarded, had resigned the presidency of the war department, and refused to assume the general direction of a war which, he foresaw, would be attended with ruin to his house. The command of the Austrian army, therefore, was in an evil hour intrusted to General Mack, who, it is said, had been recommended by the English government; a mere pedantic tactician, without genius or energy, who, a few years previous to this, had failed to defend Rome with a numerous army, against General Championnet with only a few thousand troops; and who, though a tolerable staff-officer, was wholly unequal to the difficult and responsible situation in which he had been placed. Of this total incapacity he gave early and lamentable proofs. Conceiving that Napoleon must necessarily advance by the same road which had formerly been made choice of by Moreau, he took post at Ulm, and there awaited the approach of the enemy. The French emperor, however, had very different views. His preparations had been made with such rare ability, and the plan of the campaign so well digested beforehand, that towards the end of September the French grand army had arrived on the right bank of the Rhine. It was divided into seven corps, with a grand reserve of cavalry. The first corps was commanded by Bernadotte, the second by Marmont, the third by Davoust, the fourth by Soult, the fifth by Lannes, the sixth by Ney, the seventh by Augereau, and the cavalry by Murat, who had under his orders Nansouty, D'Hautpoul, Klein, Beaumont, and Walcher. Napoleon entered Germany at the head of about a hundred and sixty thousand men, including his guard.[1] By the 6th of October Bernadotte and the Bavarians occupied Weissemburg, twelve leagues south of Nuremberg; Marmont was in the vicinity of Neuburg; Davoust was at Oettingen, eight leagues north of Donawerth; Soult was at Donawerth; Ney was at Kenssingen, three leagues west of Donawerth; Lannes was at Neeresheim, two leagues north-north-west of Donawerth; and Murat with his cavalry was on the borders of the Danube. In thus placing himself in rear of the enemy, Napoleon accomplished two grand objects; he avoided exposing his flank to the debouches of the Tyrol; and by the rapidity of his march he had completely disconcerted the plans of the Austrians, whilst, by turning towards the north, he might cut off the Russians who were advancing from Gallicia towards the Danube. But in order to operate a prompt re-union of all his columns, it was necessary that Bernadotte, setting out from Hanover, and Marmont from Holland, should traverse the country of Anspach, belonging to Prussia. Napoleon had secured the neutrality of that power by the corruption of the Prussian ministry. But this violation of its territory wounded the self-love of the sovereign, as well as the pride of several distinguished military men, who, desiring to see an end put to the humiliation of their country, loudly demanded war against France. The indignation inspired by this insult had more effect on the cabinet of Berlin than all the efforts of England and Russia; and Prussia, when it was too late, renounced the neutrality which she had observed ever since the peace of Bâle, 5th April 1795, to engage single-handed in a contest with France.

The contest in Germany now advanced, with singular rapidity, towards a crisis. On the 8th of October a combat took place at Wertengen, four leagues south-west of Donawerth, in which Murat, supported by Lannes, enveloped an Austrian division, making a great number of prisoners. On the 9th the Archduke Ferdinand was defeated by Ney at Guntburg, six leagues east of Ulm, with considerable loss; and the same day Soult occupied Augsburg. On the 12th Bernadotte occupied Munich; and on the 14th Memmingen, a considerable place on the Iller, surrendered by capitulation to Soult, when four thousand Austrians were made prisoners. The same day a combat took place at Elchingen, two leagues north-east of Ulm, in which Ney signalized himself by the most chivalrous bravery. Three thousand Austrians were made prisoners. It had become necessary to obtain possession of the bridge and position at Elchingen, in order to isolate on the left bank of the Danube the mass of the Austrian army confined in Ulm. The bridge and the position, defended by six thousand men with four pieces of artillery, were twice carried by the bayonet, and as often recovered; but a third onset, made with the greatest impetuosity under Ney in person, proved successful. On the 15th the head of the first Russian column arrived on the Inn. The corps of Bernadotte was then in position between that river and Munich. At the combat of Langenau, three leagues north-east from Ulm, Murat, on the 16th, came up with the division of Werneck, which had escaped from Ulm, and made three thousand prisoners.

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[1] Massena, at the same time, assumed the command of sixty thousand men assembled in the north of Italy, and advanced towards the Adige, where, being reinforced by twenty thousand troops, who, under the conduct of Gouvion-Saint-Cyr, had evacuated the kingdom of Naples, he found himself in a condition to contend with the Archduke Charles, and prevent him from operating, through the debouches of the Tyrol, on the flank of the grand army. Three corps d'armée, intended as a reserve, were also assembled at Boulogne, Mayence, and Strasburg, and three flying camps of grenadiers were marked out at Rennes, in La Vendée, and at Marengo.

Thus, by the direction given to his army after the passage of the Rhine, and by the rapidity of his marches, Napoleon had, as it were, overwhelmed the Austrians, and reduced all their offensive plans to a defensive without method. Mack at Ulm was placed in nearly the same situation in which Melas had found himself before the battle of Marengo. Both had their retreat cut off; but Melas tried to break through the enemy in his rear, and had succeeded in his object, when an accident deprived him of the reward of his resolution; whilst Mack, closely invested in Ulm and its immediate vicinity, made no effort to force his way with his masses united, although continual rains favoured such an attempt, but preferred risking the escape of his divisions separately. Thus the Archduke Ferdinand, nominally general-in-chief, but placed under the tutelage of Mack, had left Ulm with part of the cavalry; whilst Mack, who had the title of quarter-master-general, still remained there. As already stated, he was the same person who, in the campaign of Naples, had lost his reputation as a tactician, without displaying any talents for execution; and who, on the 23d January 1799, had surrendered himself prisoner to General Championnet. His situation had now become desperate. The French occupied all the surrounding heights, and he had nothing left but to capitulate. General Segur, sent to demand his submission, found every thing in disorder, and the brain of Mack in a state entirely corresponding. This poor man had no clear idea of the state of things until the French themselves informed him; and he did not even know that Napoleon was his antagonist. He began by demanding eight days' truce, or death, and concluded by immediately capitulating. Ulm, with all its magazines and artillery, was surrendered to the French; and thirty thousand combatants became prisoners of war. The officers, including sixteen generals, were discharged on their parole; the sub-officers and soldiers were conducted into France. In less than fifteen days, the Austrians had lost above fifty thousand prisoners, two hundred pieces of cannon, many thousand horses, with about eighty colours and other trophies, and were now forced to shelter themselves behind the Inn. Never was triumph more rapid or more complete. The surrender of Ulm took place on the 20th October, and on the 21st was fought the battle of Trafalgar, in which Lord Nelson annihilated the combined fleets of France and Spain, and by the results of that glorious day counterbalanced to England the advantages which Napoleon had just reaped in Germany.

Prosecution of the campaign.

But the disasters which Austria had sustained at Ulm might have been repaired, and the fortune of the war changed, if Prussia, otherwise so well disposed towards the coalition, had even now struck in. By her hesitating and (as the result proved) ruinous policy, a heavy blow had fallen on Austria; but there was still time to check the advance of the French, and even to reduce them to the necessity of acting on the defensive. On the 25th of October an interview took place at Berlin, between the Emperor Alexander and Frederick-William III., and, at the tomb of Frederick II., these two sovereigns promised to unite their efforts to restrain the ambition of Napoleon. But this political and sentimental farce ended in nothing. The favourable moment thus allowed to escape could not be recalled; the king of Prussia was ere long at the feet of Napoleon; and the emperor of all the Russias became the friend of the man who had granted him his life upon the field of battle. Very different indeed was the course pursued by the French emperor. After reconducting his ally, the elector of Bavaria, to his capital, Napoleon advanced into the heart of the Austrian states, whilst his lieutenants continued to drive all before them. On the 1st of October he had crossed the Rhine; on the 20th Mack and his army were prisoners; and on the 15th of November he made his public entry into Vienna, which had capitulated on the 13th. The Austrian court and army had retired into Moravia; but in evacuating the capital they had neglected to break down the great bridge on the Danube, of which Lannes, by an act of unexampled audacity, now made himself master. The Emperor Francis had hoped that the Russians would arrive in time to act on the right bank of the Danube, and thus save his capital from occupation; but in this he was disappointed. The first Russian army under Kutusof having advanced higher up the Danube than Vienna, immediately fell back towards Brunn on receiving intelligence of the occupation of the capital. Justly apprehensive of having his communications with the second army intercepted, which in fact was the aim of Napoleon, the Russian commander felt himself compelled to execute this retrograde movement, which he did with all possible celerity. But being warmly pursued beyond Vienna, and attacked in the midst of his movement by Murat with the French cavalry, he proposed an armistice, with the sole view of gaining time to receive the reinforcements which were advancing from Upper Moravia, and to secure his retreat. Murat, who was already at Hollabrunn, fell into the snare, and accepted the artful propositions of the Russian commander, which, however, were immediately rejected by Napoleon. By means of this stratagem Kutusof saved his army from the imminent perils to which it was exposed, and on the 18th November effected a junction with the second Russian army under Buxhowden, at Wischau, six leagues from Brunn, the capital of Moravia, where he assumed the command in chief of the allied army. Kutusof's retreat was covered by Prince Bagration, who, with a corps of six thousand men, made a desperate stand at Juntersdorf against a greatly superior force under Murat, Soult, and Lannes, and, in spite of every effort that could be made to dislodge him, maintained his ground till night, when he withdrew with the remains of his corps. This encounter, which saved the army of Kutusof, raised the courage of the Russians; they were still the soldiers of Suwarof, and longed to measure swords, in an ampler field of battle, with an enemy whom that victorious chief had so often overthrown.

Situation of the French army.

The French now occupied Brunn, a strong place, well armed and supplied with munitions of war, which the Austrians had precipitately evacuated on the evening of the 18th November, and on the 19th Napoleon established his head-quarters at Wischau. Still the situation of the French army was one of imminent hazard. Hurried on by the ardour of success, it had arrived in the centre of Moravia, more than two hundred leagues from the frontiers of France; it had in its rear neither magazines nor strong places to serve as *points d'appui;* its line of operations was disproportionately long; and it was exposed in a space of about ninety leagues of hostile country. Bohemia was in a state of insurrection, and threatened the communications by the left. The warlike

Hungarians had risen in mass upon the right. The Archduke Charles, having escaped from Massena, whom the appearance of an Anglo-Russian fleet had retained in Italy, was within fifty leagues of Vienna, the numerous population of which was in a state of extreme fermentation. Prussia had secretly acceded to the coalition, and her minister Haugwitz brought to Napoleon an ultimatum, the rejection of which was to be immediately followed by an official declaration of war. In a word, all the probabilities were against the French army, which had no resource but in a prompt and decisive victory, and, without immediate prodigies of bravery and military science, could not hope to escape from the numerous enemies by whom it was about to be enveloped. What Napoleon most wanted, therefore, was a great battle; but, in proportion as this had become necessary to him, the clear interest of the allies recommended for the present a Fabian system of tactics, and at any sacrifice avoiding a decisive action, by the result of which alone could the French army be saved from destruction. But, in spite of the strong and urgent reasons for acting upon the defensive, it was nevertheless resolved at the head-quarters of the allied emperors to deliver battle.

Battle of Austerlitz.

On the 2d of December the three emperors with their troops were near Austerlitz, a village about two leagues south of Brunn. The Russian army, reinforced by a second corps (18th November), reckoned about eighty thousand effective combatants; and that of Austria amounted to about twenty-five thousand. The French army did not exceed eighty thousand men on the field of battle. The artillery on both sides was formidable, but the allies had the advantage in the number of cavalry. The allies no doubt desired to gain time, in order to await the arrival of a third Russian corps, now only eight marches distant; but the manœuvres of Napoleon, and, we may add, his artifices, induced, if not compelled them to accept battle. The immense accumulation of troops around Olmutz, resulting from the extraordinary rapidity of events, occasioned such a scarcity of provisions, that the general-in-chief, Kutusof, felt himself constrained to precipitate offensive operations. This determination had, without his knowledge, entered into the plan of Napoleon, who, three days before, had withdrawn his advanced guard, in order to fight upon ground which he had reconnoitred, and all the accidents of which were consequently known to him. The hesitation of Kutusof allowed a precious opportunity, and circumstances extremely favourable, to escape him. But not having attacked when the French forces were scattered, he ought to have continued his retreat, in order to engage them still more in advance, either by moving upon Hungary to operate a junction with the Archduke Charles, or upon Bohemia to communicate with Prussia, whose army was assembled and in a condition to act; in short, he ought to have temporised until the simultaneous co-operation, now close at hand, of all the members of the coalition had been obtained, in which case the retreat of the French army towards the Rhine would have been rendered impossible. But instead of acting in this manner, by which eventual success would have been placed almost beyond the reach of accident or fortune, he decided to risk the chances of a general battle, when the respective forces of the combatants were nearly equal.

Marshal Lannes, having under him General Suchet, commanded the left; Marshal Soult directed the right; Marshal Bernadotte commanded the centre; Marshal Davoust kept himself in observation before the left of the allies; Marshal Murat, with his cavalry, and twenty-four pieces of light artillery, supported the right under Marshal Lannes; and the reserve consisted of ten battalions of grenadiers under General Oudinot, flanked by ten battalions of the guard under General Junot, the whole being provided with forty pieces of cannon. The action commenced at sun-rise, and continued until night. The sun rose with unclouded brilliancy, and was long remembered as the sun of Austerlitz. Its first rays discovered the Austrians and Russians disseminated on, around, and behind the village of Austerlitz, where the allied emperors had taken post to observe the first efforts of the attack. This was directed against the French right, and sustained by Soult and Davoust with their wonted activity and skill, aided greatly by their positions, which were amongst flooded and marshy ground, where the ice was still too weak to support the weight of men or horses. All that Napoleon required of these officers was to maintain their ground for a certain number of hours, whilst with his left and centre he simultaneously attacked that portion of the enemy's force in front, which he proposed to cut off from the wing engaged. This was the decisive movement; but he delayed long in giving the signal for the premeditated attack, so little anticipated by the enemy, fearing lest they might recall their troops from their left, by which they proposed to assail the French. But as soon as he heard the sound of battle fully engaged in that direction, he gave the word; his generals hurried to their respective posts; and Lannes, Bernadotte, Legrand, St Hilaire, each at the head of a division, advanced. At this moment the allied columns were descending from the heights, and filing off in the direction of their left, where they expected to find the main strength of the battle. But it was nearer them than they imagined, even in their front, where, owing to their ignorance of the true position of the French army, they had not looked for any serious opposition. Surprised, and attacked during an oblique movement, by columns of equal or superior force to their own, the Russian line was intersected; and the French having gained the heights, drove their adversaries down into the defiles behind. But between the village of Austerlitz and the heights thus carried were the Russian reserve, consisting of chosen troops, including the imperial guard, commanded by the Grand Duke Constantine. These, too, were marching towards the left, when, to their astonishment, the French light troops, supported by cavalry, broke in amongst them. A scene of surprise and confusion ensued. But the emperor, aided by Kutusof, rallied the troops; the Russian guards, assisted by some other regiments, charged with great fury; the French, victorious a few moments before, were now driven back; and some regiments which had formed squares were broken by the impetuosity of the Russians. Napoleon did not observe what was taking place, Austerlitz being hidden from his view by the intervening heights; but his ear having caught sounds betokening any thing but victory, he instantly ordered General Rapp, one of his aides-de-camp, to advance at the head of the grenadiers *à cheval* of the French imperial guard. Rapp galloped off at the head of these superb squadrons, rallied the stragglers as he advanced, and on approaching the immediate scene of conflict, found the victorious Russians sabring the French as they were driven from the broken squares. Without hesitating a moment, he sounded the charge, broke through a superb regiment of the Russian imperial guard, and made Prince Repnin, one of its colonels, prisoner. This afforded the French time to rally; and, with their usual promptitude and intelligence, they quickly regained their order. Rapp returned to the charge, and overpowered the regiment of the Grand Duke Constantine, who was indebted for his safety to the swiftness of his horse; whilst General Gardanne, charging with a division of dragoons, completed the discomfiture of the enemy. From the heights of Austerlitz, the Emperors Alexander and Francis witnessed the defeat of the Russian guard. The Emperor Napoleon then directed his efforts to the right, where the enemy still continued to oppose a vigorous resistance; and the Russian corps, being at length surrounded and driven from all the heights, were forced back to the margin of a lake, where the French artillery made a terrible carnage. From fifteen to eighteen thousand Russians, attempting to escape over the ice, were drowned; two columns, each four thousand strong, laid down their arms; the whole Russian artillery was taken, whilst forty standards, including those of the imperial guard, also fell into the hands of the French; and the remains of the Russian army, without artillery, without baggage, in a state of the most frightful disorganization, and surrounded on all sides, must have surrendered at discretion had they been vigorously pressed. Even the life of Alexander was at the mercy of Napoleon, who ordered his artillerymen not to fire on the emperor of all the Russias, and, from motives of generosity or policy, allowed him to escape.[1] Such was Austerlitz, one of the most remarkable battles fought in modern times. It consisted of a series of manœuvres, every one of them successful, by which the Russian army, surprised in an oblique march, was cut into as many portions as there were columns directed against it. The loss sustained by the Russians, in killed, drowned in attempting to cross the lake on the ice, wounded, and prisoners, has been estimated at thirty-five thousand men; fifteen generals were either killed or taken; the general-in-chief, Kutusof, received several wounds; and a hundred and fifty pieces of cannon were abandoned. The French appear to have lost about ten thousand men, including a general of division and two colonels, who died on the field of battle. At Austerlitz, masses of the French cuirassiers charged, for the first time, the enemy's batteries; a bold manœuvre, which, being rapidly executed and courageously sustained, during nine hours, by the corps of Marshal Soult, contributed powerfully to the success of the battle. Marshal Bernadotte also took an active part in this mighty conflict. At the moment when the Russian guard was defeated, he advanced at the head of the centre of the army, and by means of his cavalry vigorously charged the enemy; whilst Marshal Lannes, who commanded the left, charged at the same instant, with rare intrepidity, and thus threw them into the most frightful disorder.

Consequences of the battle.

On the evening of the battle the emperor of Germany sent to demand an interview with Napoleon. It was arranged for the 4th of December, and took place within a few leagues of Austerlitz, by the fire of a bivouac. "I receive you," said Napoleon, "in the only palace which I have inhabited for two months." "You made so good use of this kind of habitation," replied the emperor of Germany, smiling, "that it ought to content you." Francis took Napoleon by the hand, and saluted him by the name of brother. From this moment the judgment of Napoleon, usually so clear, seemed to be bewildered; he changed, so to speak, his nature; and, in his desire to become at any price a monarch allied to an old dynasty, he ceased in future to be any thing but an emperor. The sovereigns remained two hours in conversation, during which the terms of an agreement appear to have been arranged.[2] Napoleon showed great forbearance and moderation. The emperor of Russia, to whom he afterwards restored the portion of his guard who had been made prisoners, was permitted to retire unmolested to his dominions, under the protection of an armistice; but although the czar professed great admiration of the man who had so generously spared both himself and the wrecks of his army, he declined to enter into any treaty, or even to acknowledge Napoleon as emperor of the French. The king of Prussia had a more difficult part to perform. He had been ready openly to join the coalition, to which he had secretly acceded; and his minister, Count Haugwitz, had arrived, prepared to employ the language of menace. But fortune had embarrassed all the calculations of Prussian policy; and Haugwitz, finding Napoleon successful, changed his tone, and complimented him on the victory which he had just gained. "This is a congratulation," said Napoleon, in reply, "of which fortune has changed the address." In proportion as he had shown forbearance to Austria, he gave way to his indignation against the duplicity and perfidy of Prussia, and so terrified Count Haugwitz that the latter concluded a treaty, accepting Hanover in lieu of Anspach and Bareuth, which were to be given up to France. The object of Napoleon, no doubt, was to embroil Prussia with Britain, and he thought this would be most effectually accomplished by an arrangement which imposed on the former power the odious task of seizing upon Hanover. Nor was this all. At the very moment when the transfer in question was concluded by Haugwitz, Hardenberg had required the assistance of Britain, conjunctly with Russia, in case Prussia should be attacked; and these incompatible agreements were, to its no small embarrassment, soon laid before the cabinet of Berlin. The difficulties thus created were no doubt great; but it endeavoured to escape from them in the best way it could, by accepting Hanover as a deposit, and by yielding up Anspach, together with Cleves, Berg, and Neufchâtel, as had been agreed to by Haugwitz. On the 26th of December, a treaty of peace was concluded at Presburg, between France and Austria. The ancient states of Venice, including Dalmatia and Albania, were ceded to the kingdom of Italy. The principality of Eichstett, part of the archbishopric of Passau, the city of Augsburg, the Tyrol, and all the possessions of Austria in Suabia, the Brisgau, and the Ortenau, were transferred to the elector of Bavaria, the Duke of Wirtemberg, and the Duke of Baden; and the independence of the Helvetic Republic was also stipulated. The Germanic constitution, so much damaged by the treaty of Lunéville, was now virtually dissolved by two of its members, the elector of Bavaria and the Duke of Wirtemberg assuming the title of kings, under the auspices of France, without the consent either of that body or of its chief. By this treaty, Austria likewise sanctioned all the partitions previously effected both in Germany and Italy, and lost a territory of eleven hundred thousand square miles, with a population of two millions six hundred thousand souls.

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[1] "Cette générosité," says the Abbé de Montgaillard, "doit être considérée, politiquement, comme une très-grande faute; Alexandre tué sur le champ de bataille, et l'armée Russe anéantie ou prisonnière de guerre, un grand soulèvement devait avoir lieu à Saint-Pétersbourg; il est difficile de présumer l'étendue des consequences d'un tel ordre de choses; mais elles ne pouvaient qu'être favorables au système et aux intérêts Français. Napoléon, chargé de fers à Sainte-Hélène, et proie à toutes les barbaries qu'ordonnent les cabinets de Saint-Petersbourg, de Vienne, et de Berlin, barbaries dont le cabinet de Saint-James s'est rendu l'exécuteur, Napoléon aura dû vivement regretter la magnanimité dont il use envers les deux empéreurs vaincus à Austerlitz. Cette magnanimité, il n'est pas permis d'en douter, est produite par le brûlant désir qu'a Napoleon d'être reconnu empéreur et roi; d'entrer dans le catalogue officiel des monarques d'Europe, et de s'entendre appéler mon frère par les deux plus puissans de ces monarques. Mais une bonne et sage politique demandait que les deux empéreurs, Alexandre et François, fussent faits prisonniers et aménés en France; la paix, une véritable paix, et non une trêve de quelques mois, eût été, selon toute apparence, le prix de la rançon des deux captifs, et l'Angleterre n'eût pas refusé d'y adhérer, pour peu que Napoleon eût borné son ambition à maintenir, pour la France, l'état actuel de possession. Que ne peut donc l'amour d'une vaine gloire, que ne peut l'orgueil impérial et royal sur l'esprit d'un parvenu de la Révolution Française? (Montgaillard, *Hist. de France*, tome vi. p. 179, 180.)

[2] Whilst the proceeding adopted by the emperor of Germany shows the deep impression made upon his mind by the battle of Austerlitz, following as it did so rapidly after the disaster of Ulm, it is at the same time clear, that the check which he had just experienced, though infinitely grave, was not so decisive and irremediable as to destroy all hope, or to be incapable of being repaired in the course of another campaign. The Archdukes Charles and John were advancing at the head of eighty thousand fresh troops, and had already put themselves in communication with Hungary, where the insurrection was becoming general; the losses sustained by the Russians were on the eve of being effaced by a considerable corps (the third army) which had arrived in Silesia; the inhabitants of Bohemia had commenced their levy in mass; a hundred and sixty thousand Prussians, Saxons, and Hessians, were under arms, waiting the order to advance; numerous corps of Prussians and Swedes menaced the northern frontier of Holland; a formidable diversion was on the point of being operated in the south of Italy; and, lastly, the army of Napoleon, sensibly weakened by its rapid marches and successes, was more than three hundred leagues from its reinforcements, and in fact only occupied the long narrow line which it had followed in its advance from the Rhine to Olmutz. A little more tenacity on the part of Austria would therefore in all probability have brought about the ruin of Napoleon and his army. But the Emperor Francis, dejected by his last disaster, threw away a thousand chances which had become favourable to him; he wanted the courage necessary to support the struggle when the tide was about to turn, or to prolong hostilities on the eve of a general change of circumstances, which could scarcely have failed to produce a great amelioration in his position, political as well as military; and, without waiting to calculate or deliberate, he came humbly to solicit an armistice, as Darius would have done after a defeat, and as Sapor would not. By a strange and inconceivable destiny, the emperor of Austria, without intending it, twice saved Napoleon, in the heart of his states, namely, at Austerlitz and at Wagram; on both occasions, the French emperor, having committed great military faults, found himself, after gaining two battles, exposed to have his communications with France intercepted, and was saved from this danger by an almost immediate suspension of hostilities.

Proceedings of Napoleon.

Napoleon declared to the French senate, as he had previously done to the emperor of Austria, that he had sought no aggrandizement for France. But this declaration was made in the true spirit of the Italian school of politics, which enjoins the observance of the letter of an obligation, but permits an infringement of its principle. If France was not aggrandized, all the states in dependence on her were so. Venice and Dalmatia were added to the kingdom of Italy. Naples, which an Anglo-Russian force had invaded, was occupied, and the reigning house expelled, as if by the mere word of command. Berthier and Murat were created German princes. The newly acquired provinces of Venice, Dalmatia, Istria, Friuli, Belluno, Feltre, Bassano, Vicenza, and Rovigo, were declared duchies, and assigned to the generals and civilians of the imperial court. Bavaria and Wirtemberg had already been aggrandized out of the spoils of Austria, and their rulers raised to the rank of royalty. This was Napoleon's first performance as king-maker. But his elder brother Joseph was now declared king of Naples, and his younger brother Louis, a man of mild and amiable character, king of Holland; whilst various matches were made, all having for their object at once to aggrandize and unite the new imperial family. Lastly, having done so much for those of his own house, Napoleon consented to receive the homage of his subservient legislature, which, after lavishing on him the most fulsome expressions of adulation, ordered to be erected, in one of the principal places of the capital, a column surmounted with a statue of the emperor, and bearing the inscription, "A Napoléon le Grand, la patrie reconnoissante."

State of affairs: prospect of peace.

The commencement of the year 1806 was brightened with a momentary prospect of peace. On the 23d of January, not two months after the battle of Austerlitz, where all his schemes had been overthrown, Pitt breathed his last. With the bitter exclamation, "Oh, my country," on his lips, he expired, leaving Europe in confusion, and England beset with difficulties. On the accession to power of Mr Fox and his friends, hopes of peace were entertained; and that statesman having opened a correspondence with the French emperor, by apprising him of an offer which had been made to assassinate him, negotiations followed. But serious obstacles unexpectedly arose, one of them relating to Sicily, which the French insisted should be conjoined with Naples. Talleyrand, however, pushed the conferences with great activity, and evinced the utmost anxiety to conclude a peace. With prophetic sagacity, he foresaw, that without a peace with England, every thing was problematical with the French emperor; that nothing short of a sequence of fortunate battles would consolidate his power; that this was a series of which the last term might perhaps be zero; that nothing could be safe where all was continually put to hazard; that one great reverse would overthrow the fabric which it had required many victories to rear up and establish; that, in short, the time had arrived to secure what had already been gained, and to realise, as it were, the glory which no disaster had as yet overclouded.[1] But all these efforts proved, unhappily, vain; nor in fact would any peace that might now have been concluded have proved lasting. Napoleon could not descend from the position to which victory had raised him; and England could not acquiesce in the continued exercise of an ascendant influence subversive of the general balance of power and the independence of states in Europe. Austria and southern Germany were under the dictation of the French emperor; Italy, from the Alps to the Gulf of Tarentum, was subject to his immediate sway; Spain had degenerated into a mere province of the French empire. The only independent power bordering on France was Prussia, and she was already marked out as the next object of attack. In such circumstances peace was unattainable, or, if nominally attained, would have only been a renewal of the truce of Amiens. Bonaparte was still in his ascending movement; and although wisdom would have counselled him to stop, and even to descend to a lower and safer level, ambition held different language, and urged him to go on.

Prussia.

Prussia, however, had acted a part equally imprudent and unworthy. We have already adverted to the two treaties, one concluded by Haugwitz with Napoleon, and the other by Hardenberg with England, in December 1805. Perplexed by the results of her own perfidy and double dealing, she derived advantage from neither. She naturally hesitated to accept of Hanover, and to shut her ports against England; but, on the other hand, as Anspach, Cleves, and Berg, ceded by Haugwitz, were already seized by the French, the desire of an equivalent prevailed over all sense of justice or regard even to decency, and this hesitation was overcome. On the 1st of April Hanover was annexed to the Prussian territory, in virtue of a proclamation which set forth that, since Hanover belonged to France by right of conquest, its legitimate possession had been transmitted to Prussia as an equivalent for the cession of three of her provinces to France. A more impudent and unblushing declaration was never made by any government, nor one more subversive of every principle of public law, justice, and morality. But the same cabinets which stigmatized Bonaparte as a usurper, recognised him as legitimate sovereign of France whenever they could profit by his political crimes, and when his spoliations suited their own interests and political arrangements. The conduct of Prussia, in this particular, met with loud and indignant reprobation in England. Mr Fox publicly denounced it as "every thing that was contemptible in servility, and all that was odious in rapacity." Nor was this all. Whilst Prussia had thus dishonoured herself for the sake of Hanover and the French alliance, she had the incredible mortification to learn, through the English papers, that Napoleon had offered to restore Hanover to Britain as the price of peace. She had sacrificed her character to obtain Hanover, and she had even dismissed her minister, Hardenberg, to please the French emperor; she had rendered herself an object of scorn to the government of England, and France now rewarded her abasement and humiliation with contempt. Never indeed was perfidy more severely and at the same time more justly punished. But Prussia had yet other and more severe mortifications to endure.

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[1] This proof of the profound sagacity of Talleyrand, whose political foresight has been so often exemplified in the course of the events of the last thirty years, is taken from the memoirs of his enemy the Duke of Rovigo. The words of Savary are, "M. de Talleyrand poussait les conférences avec activité; rien ne lui eût coûté pour faire conclure la paix avec Angleterre. Il disait, à qui voulait l'entendre, que, sans elle, tout était problème pour l'empéreur, qu'il n'y aurait qu'une suite de batailles heureuses qui le consolidérait, et que cela se réduisait à une série, dont le premier terme était A, et donc la dernier pouvait être Y ou zero."

Confederation of the Rhine.

A compact still more alarming to Prussia than any which had yet been formed was now entered into. This was the confederation of the states of the Rhine, which was concluded on the 12th of July, between the emperor Napoleon, and several princes of the south and west of Germany. These princes separated themselves, in perpetuity, from the territory of the Germanic empire, and united together in a new federation, of which the emperor of the French was declared the protector. The contingent to be furnished by each of the allies was determined; a great number of secularisations and annexations of territory in their favour were recognised and sanctioned; the old constitution of the Germanic body was dissolved; and Napoleon became, in fact, lord suzerain of a large portion of Germany. His object, indeed, seems to have been to make the confederation of the Rhine the centre and pivot of his future power. The notification of the treaty of the 12th July was made to the diet at Ratisbon on the 1st of August, when fourteen German princes declared their separation from the Germanic body, and their new confederation under the protectorate of Napoleon. The common interests of the confederate states were to be discussed in a diet which was to sit at Franckfort-on-the-Maine; and this diet was to be divided into two colleges. In the college of kings were to sit the representatives of the elector of Bavaria and the Duke of Wirtemberg, who had each assumed the title of king, together with those of the Grand Dukes of Baden, Berg, Darmstadt, and the prince primate; and in the college of princes were eight petty princes bearing inferior titles. The contingents were, for France two hundred thousand men; for Bavaria, thirty thousand; for Wirtemberg, twelve thousand; for Baden, eight thousand, &c.; making in all two hundred and sixty-three thousand men. Such was the confederation of the Rhine, which, in the course of six years, was augmented by all the sovereigns of Germany, old or new, with the exception of the emperor of Austria, the king of Prussia, the Dukes of Brunswick and Oldenburg, the king of Sweden as Duke of Pomerania, and the king of Denmark as Duke of Holstein.

Relations of France with Russia and Prussia

On the 20th July preliminaries of peace between France and Russia were signed at Paris. This was before the treaty of the confederation of the Rhine had transpired. When that organic compact had become known, the cabinet of St Petersburg refused (15th August) to ratify the stipulations which had been agreed to with France, upon the pretence usual in such cases, that its envoy had exceeded his instructions. The negotiations on both sides had, in fact, been entered upon with equal duplicity, with the same perfidy. The ambitious designs of Napoleon against the north of Europe had already become sufficiently manifest not to leave any room for doubt as to his real intentions; whilst the czar, anxious to obliterate the humiliation of Austerlitz, and to re-establish his preponderance in the west of Europe, had recourse to those artifices which have at all times been familiar to Russian diplomacy. The object of the French emperor was to mature his schemes, and augment his means of future aggression; what the Russian autocrat desired, was to gain the time necessary to prepare for another struggle. Meanwhile the situation of Prussia was every day becoming more and more critical. If she had cause for mistrust on discovering that Napoleon had offered to restore Hanover to England, this was not lessened by the organization of a powerful, and, from its very constitution, hostile confederacy on her most defenceless frontier. Napoleon, however, attempted to assuage her just suspicions by inviting Frederick-William to form in the north of Germany a confederation similar to that which he had established in the south and west, and also to assume the imperial dignity. But, in the circumstances, these propositions were no better than sheer mockery. The court of Berlin had received too many proofs of the slighting conduct, if not hostile intentions, of France, to repose any confidence in her offers. Injury had been exasperated and envenomed by insult, and the cry of the nation was now for war. Still the most obvious maxims of prudence should have induced Prussia to temporize until her allies were in a condition to take the field. Russia having refused to ratify the stipulations of the 20th July, was preparing to renew the struggle; all hopes of an accommodation between Britain and France were completely at an end; and Prussia, single handed, was not in a situation to contend with a power which had so recently overthrown Austria, even when assisted by Russia. But, neglectful of all this, the court of Berlin, passing from the extreme of caution to the extreme of temerity, gave full intimation of its intentions as early as the month of August, by increasing the army and calling out its reserves. Prussia was now destined to reap the bitter fruits of her selfish and equivocating policy. Had she, during the last coalition, united cordially with Austria before that power had received a stunning blow, Napoleon might have been compelled to receive instead of dictating the law; Austria would at least have been saved; and the confederation of the Rhine would never have been heard of. But selfish timidity kept her arms tied when every motive urged, nay when the strongest obligations bound, her to strike in; and now, when Austria was humbled and France aggrandised, when all the favourable chances had disappeared, and when a mighty army, trained to combats and flushed with victory, was ready to pour its veteran legions across her frontier, Prussia stepped forth alone, in her own strength, to encounter the gigantic force before which her more powerful neighbour had fallen. Her councils became smitten with that infatuation which is the sure forerunner of calamity.

War between France and Prussia.

If it was the height of imprudence in Prussia to decide upon a war in which Austria was no longer in a condition to take part, it was sheer madness not to have both secured and waited for the co-operation of Great Britain and Russia. Instead of this, however, when Lord Morpeth, the British envoy, spoke of Hanover, he was answered that its fate depended on a battle; plainly intimating that, if victorious, Prussia meant to retain it. The same indifference was manifested as to the aid of Russia; and the army, which, indeed, it was difficult to restrain, pushed forward into Saxony to compel the elector to join his forces to those of Prussia, and to induce Hesse to espouse the cause of the north of Germany against France. For the sake of these secondary objects, the blunder of Mack at Ulm was repeated. The French troops were already assembled. Napoleon left Paris in the end of September, and proceeded by Mayence and Würtzburg to Bamberg, the rendezvous of his army, where he arrived on the 6th of October. Proclamations, the usual preludes of war, now followed. The king of Prussia required the French to quit Germany, the soil of which they had no right to tread. Napoleon returned the bravado by some sarcastic remarks on the Prussian queen and court. "The queen of Prussia," says a French bulletin, "is with the army clothed as an Amazon, wearing the uniform of her regiment of dragoons, and penning twenty letters a day, in order to kindle flames on every side. One might believe her to be Armida out of her senses, setting fire to her own palace. Near her is the young Prince Louis, overflowing with valour, and expecting vast renown from the vicissitudes of war. Echoing these two illustrious personages, the entire court cries out for war. But when war shall have come, with all its horrors, it is then that each will vainly endeavour to excuse himself of the guilt of having drawn down its thunders upon the peaceful countries of the north."

Opening of the campaign.

The Prussian army, commanded by the king in person, and the old Duke of Brunswick, whom his campaigns against the French had not instructed in their new system of tactics, was scattered along the high road from Eisenach and Weimar. Having advanced so far, it should have assumed the initiative, and, by a great offensive effort, endeavoured to break through the enemy's line before his corps were in a condition to afford mutual support. But Brunswick was alike incapable of conceiving or executing such a plan of operation; he hesitated when he should have decided; marched and countermarched without object; and, worst of all, committed the fatal error of dividing his army when almost in presence of the enemy. The road by which the Prussians had advanced, and along which their magazines were established, from Weimar, in a north-easterly direction, to Leipsic, run obliquely to the line on which the French were now approaching from the south. Instead of attacking Weimar, where their main force was concentrated, Napoleon therefore resolved to throw himself on their communications, intersect their line of retreat, and cut them off from their principal magazines. And this he effected by one of those rapid and masterly movements which, executed by him, had so often decided the fate of armies. The only resistance which the French met with was at Saalfield, where, on the 10th of October, the division of Suchet, belonging to the corps of Lannes, was opposed by Prince Louis of Prussia, commanding the advanced guard of the corps of Hohenlohe. A fierce combat ensued; but the Prussians, being unsupported, were overpowered, the brave prince lost his life, and thirty pieces of cannon, with a thousand prisoners, fell into the hands of the French. The French now occupied the line of the Saale, with their backs towards Germany; whilst the Prussians, in order to face them, were obliged to turn theirs to France. The belligerents having thus, as it were, changed places, the main body of the French under Napoleon crossed the Saale at Iena; the interval between Iena and Naumberg was occupied by Bernadotte, who had orders to observe the Saale as far as Doernberg, by which he was to debouch, in order to cut off the enemy's masses from their reserves, and to fall upon their rear, in case they should move in force upon Naumberg or Iena; and Davoust, with three fine divisions of infantry thirty thousand strong, but weak in cavalry, was posted between Naumberg and Doernberg, on the right of the Saale, to guard the defiles of Koesen. To drive the French from these positions, and to restore the communications, was now the great object of the Prussians. Accordingly the king and the Duke of Brunswick, at the head of the main body of the Prussian army, marched to dislodge Davoust; whilst the remainder, under Prince Hohenlohe, advanced against the main body of the French army, commanded by Napoleon. In this way Davoust found himself in the presence of an enemy more than sixty thousand strong, one-fifth of whose force consisted of cavalry, in which arm he was disproportionately weak; whilst, on the other hand, Hohenlohe advanced to attack a force which outnumbered him in a still higher ratio, and was supported by the main body of the cavalry under Murat. Both parties appear to have had false notions of each other's movements; but Napoleon was evidently misled by the extraordinary proceeding of the Duke of Brunswick, in dividing his army on the eve of a great battle, an error which exceeded all ordinary calculation or experience.

Battles of Iena and Auerstadt.

The battles of Iena and Auerstadt were fought on the same day, the 14th of October, at the distance of six leagues, without contact or communication. That of Iena does not present any masterly or decisive manœuvre. It was decided by charges of the cavalry under Murat, who, supported by Augereau, completely routed the half of the Prussian force, and pursued the remains of it five leagues from the field of battle, indeed as far as Weimar. The action at Auerstadt was long and bravely disputed. Marshal Kalkreuth and General Blucher combated with vigour under the eye of their sovereign. But the invincible firmness of Davoust, supported by Generals Gudin, Friant, and Morand, triumphed over numbers, and this portion of the Prussian army was, notwithstanding its great superiority in numbers and in cavalry, also thrown into disorder, and driven from the field. The battle of Auerstadt, which was in fact the grand and decisive combat, reflects infinite honour upon Davoust. Surprised by the sudden apparition of the main body of the Prussian army, and denied all assistance by his colleague Bernadotte, who, from a narrow construction of his orders, and still more perhaps from an unwillingness to act a secondary part, withdrew his corps to continue a movement which had no longer an object, he was thrown upon his own resources, and, but for his great experience and inflexible tenacity, his corps, thus compromised, might have been overthrown and destroyed. Forming his battalions into squares, he received and repulsed the repeated charges of the Prussian cavalry led on by Blucher; and when the latter, disordered by the failure of their own efforts, were obliged to retreat, he attacked and broke through the centre of the enemy. The Duke of Brunswick and Prince William of Prussia again led the cavalry back to the charge; but in vain; nothing could shake the firmness of the French. A last effort to retrieve the fortune of the day was made by the king in person, with no better success. The centre being broken, the retreat of the wings became inevitable; and, as almost all the Prussian generals had been severely wounded, the troops, left in a great measure to themselves, fell into a state of the most frightful disorder. No rallying point had been fixed in the rear; no provision made for the contingency of a defeat. In fact, the idea of an eccentric retreat, that is, withdrawing on diverging lines, at this time possessed the Prussian tactitians; and the destruction which so rapidly overtook the remains of the Prussian army may in a great measure be ascribed to the circumstance of this absurdity being now reduced to practice. The extent of the disaster which had befallen the Prussian arms was only known when the troops defeated at Iena and Auerstadt mingled in their flight towards Weimar. In killed, wounded, and prisoners, the Prussians, including their Saxon auxiliaries, lost more than forty-five thousand men; whilst a hundred and sixty pieces of cannon, with immense magazines of provisions, fell into the hands of the conquerors. At Iena and Auerstadt the French had about twelve thousand men put *hors de combat*.

Consequences of these battles.

Frederick-William, in his flight, sent to demand an armistice, which was refused; and the following day, Erfurth, containing a hundred pieces of cannon, fourteen thousand men, and numerous magazines, was surrendered to Murat. The French now pushed on without intermission for Berlin, which Napoleon entered at the head of his guard on the 27th of October, amidst the silence and tears of the people. He had spent the 25th at Potsdam, in the apartments of Frederick II. for whose character and memory, both as a warrior and a sovereign, he professed the greatest veneration; but this feeling did not prevent him from taking away the sword and the order of the black eagle worn by Frederick, and sending them, with the colours of his guard, to the Hôtel des Invalides at Paris. Meanwhile the king of Prussia retired behind the Oder, in the hope of collecting the scattered remains of his army, and making a stand under cover of the strong places by which that line was defended. But fortress after fortress, though powerfully garrisoned and well supplied with ammunition and provisions, surrendered with a rapidity inexplicable on any supposition except that of treachery or infatuation. Spandau yielded almost without resistance; Magdeburg, the bulwark of the kingdom, capitulated after a short and irregular siege; Glogau, the strongest place on the Oder, likewise surrendered; and other places imitated their example. Blucher alone supported the national character amidst all these calamities. He executed a daring and masterly retreat amongst the French divisions, which pursued and frequently crossed his line of march; and, when at length obliged to take shelter in the free town of Lubeck, the desperate resistance which he opposed to the overwhelming masses of the enemy made them pay dear for the advantage they gained in storming the place. Thus, by two simultaneous battles, in which both parties fought on wrong principles and erroneous information, was the Prussian monarchy not only shaken, but destroyed. Napoleon had not only avenged the defeat of the French at Rosbach, but also the peril in which he had himself been placed by Prussia during the campaign of Austerlitz, and he now wreaked his vengeance with unsparing severity.

Proceedings of Napoleon; Berlin decree.

At Berlin Napoleon had once more to enter upon the task of organizing a new empire. The smaller states of Germany were compelled to join the confederation of the Rhine; Saxony was treated with politic leniency; Hesse-Cassel and Brunswick were doomed to expiate their loyalty by rigorous contributions; and the electorate of Hanover was seized in the name of France. The occupation of the free city of Hamburg, against which the emperor Napoleon had no assignable cause of war, immediately followed. On the 19th of November, Mortier took possession of the town in name of the French government, and the same day issued an order, enjoining the inhabitants to make known all funds and merchandise belonging to the English. This was part of his system. To strike a free commercial port with nullity, and thus to ruin a great city, gave him no concern, provided it was closed against England. A measure of a still more extraordinary character followed. On the 21st of November was issued an imperial decree, dated at Berlin, in which the British islands were declared in a state of blockade. By this decree all commerce and correspondence were interdicted; every subject of England, of whatever state or condition, who should be found in the countries occupied by the French or their allies, was to be made prisoner of war; the commerce in English merchandise was prohibited, and all merchandise, of whatsoever kind, proceeding from England, was declared lawful prize; lastly, all vessels coming directly from England or from English colonies, or having been there since the publication of the decree, were not to be received into any port. Such was the decree by which Bonaparte endeavoured to exclude England from the Continent at the expense of neutral and independent nations, and which he intended to enforce in all the harbours of Europe, from St Petersburg to Constantinople. But this scheme, although it no doubt occasioned, in the first instance, much mischief to British commerce, and tended to throw the principal carrying trade of Europe into the hands of the Americans, yet, like all prohibitory systems, it eventually recoiled on its author. For, in the first place, nothing tended so much as the severities of the continental system to alienate from Bonaparte the affections both of his subjects and his allies. Even the exhausting demands of the conscription were borne with less impatience than the rigours of a code which crippled one great branch of industry, and deprived all persons possessing only moderate fortunes of the customary luxuries of life. But, on the other hand, whilst the price of sugar, coffee, and other articles, rose to an exorbitant height, the contraband trade flourished; and whilst the vexations of the excise excited that state of chronic war between the government and the people which is the fruitful sources of disaffection, the object aimed at was in a great measure defeated. In spite of all restrictions, enforced by armies of douaniers, English merchandise found its way into the Continent; the smugglers were enriched, the regular traders ruined, and the people forced to pay many prices for articles which habit had rendered indispensable.

War between Russia and Turkey.

Towards the close of November, Russia declared war against France. About the same time the king of Prussia, who had retired to Konigsberg, made an attempt to negotiate; but as Napoleon demanded the cession of the whole country between the Rhine and the Elbe, Frederick-William, hoping that the power of Russia might yet give a check to that of France, refused to accept terms less severe than those which he was afterwards under the necessity of submitting to. But, unfortunately for this hope, war broke out at the same moment between Russia and Turkey. In a few days of successful intrigue, Sebastiani, whom Napoleon had sent to Constantinople, succeeded in putting an end to the amicable relations subsisting not only between Russia and Turkey, but also between England and the Porte; the invasion of Egypt by France, and its deliverance by England, were forgotten; French officers were seen directing works for strengthening the batteries of the Dardanelles, as well as training the Turks to serve the guns with which they were armed; and a war followed on the Danube, which occasioned a powerful diversion in favour of Napoleon, and crippled the exertions of Russia in the approaching struggle.

Poland.

Napoleon now advanced in pursuit of the Prussian monarch, and at Posen, the capital of that part of Poland acquired by Prussia, he, on the 11th of December, concluded a treaty of peace and alliance with the elector of Saxony, who acceded to the confederation of the Rhine, and assumed the title of king. From Posen he proceeded to Warsaw, which was evacuated on his approach. At the sight of the Russian and Prussian eagles retiring from the capital of their country, the Poles were in exultation. Their patriotism and national spirit revived; the youth crowded into the Polish regiments which were now formed to act in concert with the French; and the throne of Sobieski seemed already re-established. But Napoleon, though resolved to make use of their zeal, had no intention to reward it with that independence which they so ardently desired. "Quoique Napoléon, que sa méfiance et les dispositions de l'Autriche rendraient très circonspect, ne leur eût fait aucune promesse," says General Dumas; "il les avait pourtant excités à s'avancer pour reconquérer leur liberté et leur indépendance. Il leur avait donné un gouvernement provisoire créé des autorités civiles et militaires prises dans leur sein. Les Polonnais se flattaient avec raison que la restauration de la nation serait le juste prix du sang qu'elle avait versé pour la cause de la France, depuis les premières campagnes d'Italie jusqu'aux dernières batailles, dans lesquelles ils avaient vaillamment combattu. Devaient-ils croire que maître de reparer le scandale des démembremens de leur patrie, de venger la plus manifeste violation du droit des gens, le vainqueur laisserait

flétrir dans ses mains le plus beau fruit de sa victoire?"[1] With Napoleon these just expectations went for nothing. In his view all interests and all wills were to yield to his, as all resistance had yielded to his arms; but he lived to repent of his injustice to Poland, and discovered in adversity the extent of the error as well as of the wrong he had committed.

Rapid progress of the French.

By the first of December all northern Germany, excepting Königsberg, with the fortresses of Stralsund and Colberg, was either under the direct domination or under the immediate influence of Napoleon. Hesse, Brunswick, Hanover, the duchies of Oldenburg and Mecklenburg, and the Hanseatic Towns, were in his power. Prussia, which for half a century had been gradually rising to the highest rank amongst military powers, was overturned at the first shock. Hostilities commenced on the 9th of October, and on the 14th she received a mortal blow. In seventeen days, the French soldiers, having traversed the forests and defiles of Franconia, the Saale, and the Elbe, reached Berlin; and by the end of November they were beyond the Vistula. The overthrow of the Prussian monarchy in a campaign of six weeks, is one of those events the reality of which will hardly be credited by posterity. But the season of combats having reached its term, an able and prudent general, Frederick II. for example, would have stopped on the Oder, at least until spring, and employed the winter in establishing himself in a solid manner in Germany; in securing the immobility of Austria; in making himself master of the strong places in Silesia; in taking possession of Dantzick and Colberg before the arrival of the Russians; in reducing Stralsund, and recruiting, clothing, and re-arming his troops at the expense of the conquered countries; in forming a German army, which would have been an useful auxiliary; in negotiating with his enemies, in order to divide, deceive, or intimidate them; and, above all, in masking his ulterior projects. The history of the following years shows that the independence of Europe would have been destroyed, if Napoleon, yielding to the most obvious suggestions of prudence, had retarded a little his precipitate advance, in order to attain his grand object, the subjugation of Europe. But he did nothing which he could and ought to have done in order to consolidate his power, and he was ultimately ruined even by his own successes.

Re-commencement of hostilities.

Hostilities recommenced at Czarnovo, near the confluence of the Bug and the Wrka, on the 23d of December; but the Russians, though numerous and advantageously posted, were dislodged by the division of Morand of the corps of Marshal Davoust. A more important combat took place at Mohrungen, sixteen leagues south of Elbing, on the 25th. The Russian generals, observing that the French army had suspended its march, and was preparing to go into cantonments on the Vistula, came to the determination of attempting to cut off the left wing; and their design would probably have succeeded if Bernadotte had servilely executed the orders he had received the evening before to retire to Little Strasburg, seven or eight miles from Thorn. But having received information of the movement of the Russian columns, and foreseeing the disasters which would result from the execution of the orders he had received, he suspended his march; assembled his corps on the plains of Mohrungen, where the Russian column of attack arrived about noon; checked its advance, and, after a severe action, forced it to retire with considerable loss behind the Passarge. The determination of Bernadotte saved the head-quarters of Napoleon and the division of Ney, perhaps the French army itself, which, if the Russians had succeeded in their attack, would have been completely compromised. Alarmed at this bold movement, Napoleon, who intended to pass the winter on the Vistula, pressing the siege of Dantzick, and awaiting the arrival of eighty thousand conscripts of the year 1807, judged it necessary to clear his front, and, if possible, so to intimidate the Russians as to prevent a repetition of such enterprises. With this view Lannes, reinforced by a division of the corps of Davoust, attacked Beningsen at Pultusk, near the confluence of the Narew and the Orzye, on the 26th of December. A murderous conflict ensued, but the action remained undecided. The slaughter of the French was great, Beningsen having manœuvred so as to expose them throughout the day to a destructive fire of artillery. The Russians retired unmolested during the night. On the same day another action took place at Golymin, eight leagues north of Warsaw, between the corps of Augereau, supported by part of that of Davoust, with the cavalry of Murat, and a strong Russian division under General Buxhowden. This combat was maintained with equal tenacity; but the French, though dreadfully maltreated, ultimately succeeded in forcing their adversaries to retire. The extreme rigour of the season now determined the belligerent armies on the Vistula to take some repose, which both so much required. But this was destined to be of short duration.

Battle of Eylau.

Beningsen having leisurely retired from the field of battle at Pultusk, followed but not harassed by the French, moved northward, determined, after a short interval of rest, and concentrating all his disposable means, to resume offensive operations. Accordingly, having mustered his forces, and rallied the remains of the Prussian army under Lestocq, he formed the project of penetrating between the main body of the French and their left wing, which bordered on the Baltic, raising the siege of Dantzick, and thus turning all the positions of the enemy. In the end of January, Napoleon, having become aware of this design, assembled his army and marched northward, in the hope of anticipating Beningsen, and attacking him in the midst of his movement. But an intercepted letter addressed to Bernadotte apprised Beningsen of his danger, and he immediately fell back. Both projects thus failed; but nevertheless the French had the advantage of obtaining the lead. Napoleon, therefore, continuing his movement northward, came up with Beningsen at Willenberg, whence the two armies, the one retiring and the other advancing, traversed rapidly the country between the Alle and the Passarge. Irritated by the close pursuit, and the privations to which his soldiers were exposed, Beningsen resolved to turn on the enemy, and make a stand at the little town of Preussisch-Eylau, twelve leagues south of Königsberg. He first endeavoured to defend the place, and, during the evening of the 7th of February, Prince Bagration and General Barclay de Tolly made the most gallant efforts to keep back the enemy; nor were they dislodged from a cemetery in which they had intrenched themselves until late at night, and after a most sanguinary combat. On the morning of the 8th, the Russians, under cover of a tremendous fire of artillery, attacked with the greatest fury the French in Eylau and its vicinity. Divisions belonging to the corps of Davoust, Soult, and Ney, and the entire corps of Augereau, withstood the efforts, equally impetuous and unexpected, of the Russians, whose force was estimated at between sixty and seventy thousand men. The approaches to and the interior of the village of Eylau exhibited a terrible scene of carnage. The aim of each general was the same, namely, to overthrow his adversary's left. But Bonaparte having, in addition, sent strong columns against the Russian centre, these, during a heavy fall of snow, missed the proper direction, and penetrating between the centre and right of the enemy, were attacked on both flanks, whilst the Russian reserve charged them with great impetuosity in front. A dreadful scene of confusion and slaughter ensued; several generals were killed or wounded; and the twenty-fourth regiment of the line, three thousand six hundred strong, was annihilated. To extricate the troops thus compromised, Napoleon was obliged to order the cavalry, supported by his reserves, to charge; which increased the fury and indecision of the battle. Davoust having made a considerable detour, now arrived on the left flank of the Russians, which was refused as he advanced, and about to fall back in good order, when the Prussians under Lestocq came up, and this terrible battle was renewed. Davoust retreated in his turn; but Ney having by this time arrived with his division at the other extremity of the Russian line, the fury of the conflict was transported thither, where mutual charges were executed with headlong impetuosity. Order there was no longer any; masses alone, impelled by the instinct of combat, continued the desperate struggle. The Russians, though huddled together in a small space, determinedly maintained their ground; whilst the French, in equal confusion, were unable to bring up a force sufficient to decide the fate of the battle. The loss on both sides was enormous. That of the Russians was, by their own account, seven thousand nine hundred men killed and twelve thousand wounded; but Napoleon only acknowledged a loss of one thousand nine hundred men killed on the field of battle, and five thousand seven hundred wounded; an admission evidently as far below the truth as that of Ruschel, who stated the French loss at thirty thousand killed and twelve thousand wounded, was above it. The Russians remained on the field of battle; but as they had been dreadfully cut up, and as Bernadotte was advancing with his corps to reinforce Napoleon, Beningsen withdrew next morning, and retired behind the Pregel. Had he remained a little longer, the French would have left him indisputed master of the field. Napoleon had also contemplated a retreat; but, on the disappearance of the Russians, he kept his ground, remained an entire week at Eylau, and then retired to occupy the line of the Passarge, establishing his head-quarters at Osterode. This was the only circumstance which gave him a pretence for claiming a victory which most certainly he had not won.[1]

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[1] *Précis des Evenemens Militaires*, tome xix. p. 78.

Results of the battle; renewal of the campaign.

The tidings of a drawn battle, fought at the northern extremity of Prussia, filled the Parisians with apprehension and alarm. The good fortune of Napoleon had hitherto been so constant that people looked on the battle of Eylau as the breaking of the spell, and began to consider reverses as probable. Nor was this feeling confined to Paris, where it occasioned a considerable fall in the funds, and even shook public confidence. It prevailed also in the army, where more than one general officer counselled a retreat behind the Vistula. But Napoleon persisted in remaining on the Passarge, where he continued until the month of May, when Dantzick surrendered after a gallant defence. Reinforcements had in the meanwhile reached both armies, which were consequently soon in a condition to take the field. Napoleon, however, determined to leave as little as possible to chance, had opened negotiations, evidently with no other object than to gain time, and retard the commencement of operations until his utmost available means were collected for the decisive struggle. Accordingly, when all was ready, the negotiations were broken off; and, on the 5th of June, two Russian columns attempted to force the passage of the Passarge at Spanden, three leagues north-east of Guttstadt; but, after an obstinate combat, in which Bernadotte was severely wounded, they were repulsed. Another encounter took place at Heilsberg on the 10th, between the principal mass of the Russian army and the corps of Soult and Lannes, supported by the cavalry under Murat. The Russians disputed the ground inch by inch, whilst their artillery tore up the ranks of the French, who had several generals killed or wounded, and maintained themselves in close columns in their intrenchments, which they did not evacuate until the 12th. Both armies now moved northward, the Russians on the east, and the French on the west, of the Alle. But as Beningsen's object was to cover Königsberg, it became necessary to pass the river by the bridge at Friedland, on the road leading to the ancient capital of Prussia, and sixteen leagues distant therefrom.

Battle of Friedland.

As the French had but one division (that of Ney) immediately opposite Friedland, Beningsen brought up forces to attack it. Bonaparte was at Eylau, eight leagues distant, whence he hurried with the rest of his army to Friedland, where he found Ney making what resistance he could. It was the 14th of June, the anniversary of the battle of Marengo, and welcomed by the French emperor as betokening good fortune. Forming his columns in the woods, he allowed Beningsen to cross the bridge with the greater part of his army. When the Russian general thus heedlessly advanced, he little suspected that the whole French army were lying in wait for him; but dense columns issuing from the woods, and getting their cannon into position for the attack, soon convinced him that he would have to fight at a disadvantage, and without even the possibility of retreating in the event of sustaining a reverse. He drew out his line, however, with his left resting on the bridge, and prepared to receive the shock which was now inevitable. A considerable time passed in manœuvres, skirmishes, and partial combats; and it was not until five in the evening that the battle became general along the whole line. The principal attack, led by Ney, was of course directed against the bridge of Friedland, by which alone the Russians could retreat; but in his ardour to carry it he was repulsed, and the head of his column was broken. Supported by Dupont, however, he rallied his troops, and was preparing to renew the attack, when Napoleon, who had acquired some experience of Russian firmness and tenacity, judged it best to achieve the victory by means of his artillery. A battery of thirty pieces, commanded by General Senarmont, advancing four hundred yards a head of the columns, opened a destructive fire of grape on the Russian masses, huddled up as it were in a corner; heavy charges of cavalry filled up the intervals of the cannonade, breaking many of their squares; and towards evening the French infantry again advanced to complete the victory. The Russians had suffered much; retreat was inevitable; and as the bridge was swept by the enfilading fire of the enemy's artillery, they threw themselves into the river, where thousands perished in addition to those who had fallen in the field of battle. Such was the decisive victory of Friedland, which re-established the superiority of the French arms, which the battle of Eylau had brought into question, and which Napoleon had long desired, as the means of disposing Alexander to an accommodation. In this battle the Russians lost seventeen thousand men killed, drowned, or wounded, nearly as many prisoners, and seventy pieces of cannon. The loss sustained by the French was also great, and included a number of generals killed as well as wounded.

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[1] This horrible massacre, represented by Napoleon as a victory won by Murat, whose cavalry did not appear until towards the close of the engagement, produced great discontentment amongst some of the marshals, particularly Augereau and Lannes, who were disgraced for denying to Murat the credit which Napoleon had chosen to give him on this occasion. They disputed not Napoleon's title to order matters as he pleased on the field of battle, but they contended that he had no right to treat truth with the same contempt which he showed for mankind, or to dictate his sovereign orders to fame. Besides, they were sick of prosecuting war in such distant and inhospitable regions. Lannes, when asked by his chief if, with such soldiers as those who fought at Eylau, the conquest of Poland could be doubtful, replied, "All this country is not worth the loss of the humblest corporal in the army." In the sixty-fourth bulletin Napoleon thus describes the scene presented by the field of battle: "Qu'on se figure, sur un espace d'une lieue carrée, neuf ou dix mille cadavres, quatre ou cinq mille chevaux tués. *Tout cela avait plus de relief sur un fond de neige.*" What a picture is presented in these few words? "Ce spectacle (the bulletin continues) est fait pour inspirer aux princes l'amour de la paix et l'horreur de la guerre;" a natural reflection, certainly, however hypocritical and disgusting, as emanating from one who "commanded the bloody fray to rise," and who seems even to have contemplated, with something approaching to pleasure, the horribly picturesque spectacle presented by the blood-stained snow of this field of carnage. Napoleon's tactics made no account of human life. If the battle was gained, however dearly purchased, he felt no regret, provided enough of men remained for future consumption. He was, to use Kléber's expression, "a general of six thousand men a day."

Results.

But the results were eminently decisive. Königsberg surrendered to Soult. The last hope of Prussia was annihilated. Beningsen retired beyond the Niemen,[1] on the banks of which the French soon afterwards arrived. At Friedland was terminated the series of operations commenced at Spanden on the 5th; and in this campaign of ten days the Russian army had experienced enormous losses, and been forced to retreat within its own frontiers. The Emperor Alexander having now joined the army, an armistice was demanded and agreed to on the 21st of June; and, on the 25th, an interview took place between the emperors, in a tent raised on a raft in the Niemen, at Tilsitt, an open place of small importance on the left bank of the river. The meeting had as much apparent cordiality as if not a drop of blood had been shed or a life lost in their quarrel. One of the first words of Alexander expressed his resentment against England. This was politic, and eminently calculated to conciliate the conqueror, who in fact is said to have replied that, such being his sentiments, the terms of accommodation would be easily arranged. Besides, England had departed from the Pitt system of subsidizing largely, and the autocrat no doubt thought it hard that he should not be liberally paid for defending himself. At the second interview, which took place the following day, the king of Prussia was admitted, on the urgent entreaty of Alexander; and the half of the town of Tilsitt being neutralized, the two emperors established themselves there, and were soon upon terms of the greatest familiarity, if not friendship. Not so the unfortunate king of Prussia, who, having arrived as a suppliant, was treated with disrespect and severity. Even the czar, won by the attentions of Napoleon, or overawed by the ascendency of his genius and fortune, soon evinced a diminished sympathy for his unfortunate ally; nor could the presence of the beautiful queen of Prussia, with all her fascinations, overcome this influence, or soften the premeditated rigour of the French emperor. The latter had many grounds of resentment against Prussia. At Austerlitz she had held his destiny in her hands, and acted with perfidy, without, however, reaping the reward of her bad faith. She had besides deranged his favourite system of policy, which required the alliance of one of the three great powers of the north and east, especially of Prussia, whose central position gave to her peculiar advantages in this respect. He felt it as a great political evil that he had been reduced to the necessity of destroying a power which it was his interest to support, nay even to aggrandize; and as he knew that reconcilement could never grow up where wounds of deadly hate had pierced so deep, he resolved to avail himself to the fullest extent of the advantages which victory had given him, and to prevent Prussia from ever having the power to decide the fate of any future coalition.

Treaties of Tilsitt.

The terms granted to the king of Prussia were equally severe and humiliating, and were made to appear as concessions to Alexander rather than stipulations with Frederick-William. He was deprived of all his territories between the Rhine and the Elbe, and forced to abandon to Saxony almost the whole of Prussian Poland, which was erected into the duchy of Warsaw, as well as the circle of Cotbus, in Lusatia. Several military roads were also to be opened through the Prussian state, to form communications between the kingdom of Saxony and the duchy of Warsaw; all the countries which remained to Prussia were to be shut against the navigation and commerce of England; and these provinces were to be evacuated before the first of October 1807, provided the war contributions were discharged, which they were to be held to be whenever the intendant of the French army should have certified the validity of the securities offered. Under cover of this last provision, the fortresses of Custrin, Stettin, and Glogau were retained by the French long after the period stipulated for their restoration. The totality of the contributions imposed upon Prussia was fixed at 513,744,410 francs, or L.20,551,776, and of this enormous amount there had been collected, by the end of 1808, "tant en espèces qu'en fournitures," the sum of 474,352,650 francs, or L.19,174,106, leaving to be recovered even then a balance of rather more than L.1,500,000. These numbers show the frightful severity with which the law of the conqueror was applied to Prussia.[2] By the present treaty, that power lost more than the half of her territory, and nearly the half of her population; instead of ten millions and a half, which she possessed before the disastrous day of Iena, only six millions remained to her; whilst her territory, dismantled and laid open on all its frontiers, formed a long parallelogram, extending about a hundred and eighty leagues from west to east, but reduced to a breadth not exceeding forty. Modern history presents no other example of a power descending to such a degree of abasement and humiliation by means of a conquest so rapidly executed.[3]

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[1] The Russians showed much more firmness at Friedland than they had done at Austerlitz (2d December 1805); and their retrograde march, though performed under every disadvantage, can in no respect be assimilated to the *déroute* of the Prussians after the battles of Iena and Auerstadt (14th October 1806), to which, in fact, there is nothing in the annals of modern tactics that can be compared in point of ignominy. Beningsen was no mean adept in his art; and if he had been cordially seconded, instead of being thwarted, as he often was, by the native Russian generals (he was a Hanoverian), the result of the campaign might have been different. At all events, Napoleon had yet met with no antagonist who made him pay so terrible a price for victory.

[2] Dumas, *Précis des Evenemens Militaires*, tome xix. p. 85.

[3] The queen of Prussia begged hard for Magdeburg, but in vain. Napoleon, on one occasion, condescended to present her with a rose; she accepted it, saying with a winning smile, "at least with Magdeburg." "Madame," said Napoleon, assuming a look of great severity, "it is for me to give; you have only the trouble of accepting." Nor even when the sacrifice was consummated did he relax in his sarcasms and severities against the Prussian court; and whenever a deputation of Prussians presented themselves, he recurred to the painful theme of their monarch's imbecility and ingratitude. For all this, however, there is the apology either of resentment or policy. But none whatever can be imagined for the scandalous statements to which he gave currency at the time, and afterwards repeated to many persons at St Helena, respecting certain alleged improprieties in the conduct of the queen of Prussia. If true, it was undignified and unmanly to blazon such frailties; if false, detestable. It is but just to add, that, as far as we have been able to discover, the character of this beautiful and unfortunate woman was impeached by none except the deadly foe of her family; his statements and insinuations are unsupported by any other authority that we can find, and hence the fair presumption is that they are false and slanderous.

But the primary stipulations at Tilsitt were between Napoleon and Alexander, lords of the old world, the one from the Atlantic to the Niemen, the other from the Niemen to the Pacific. If the half of his dominions was restored to the king of Prussia, it was from regard to the Emperor Alexander; and the latter, equally complaisant, consented that the greater part of the ancient Polish territories should pass under the sovereignty of Saxony, and that Dantzick, with a radius of two leagues, should be declared independent, but with a garrison of French troops. Napoleon accepted, for form's sake, the mediation of Alexander with England; whilst Alexander, in return, recognised the confederation of the Rhine, and the three brothers of his conqueror, Joseph, Louis, and Jerome, as the kings of Naples, Holland, and Westphalia. The Russian troops were also to evacuate the principalities of Moldavia and Wallachia. The old barriers of Europe were thus broken down, and all the other powers plunged into a state of humiliating vassalage and uncertainty. In the policy of Napoleon we always find something gigantic, hazardous, incoherent, and unfinished; vast but ill-defined conceptions, bold experiments, and wildly capricious assortments. On this occasion, for instance, the Polish nation was most ungenerously sacrificed; whereas, by re-establishing the throne of Sobieski, with a better system of monarchy, he would have formed a stronger barrier against the ambition of Russia, and more effectually preserved Germany from the influence of Austria and Prussia, than by creating two feebles states under the denominations of the kingdoms of Westphalia and Saxony. But the grand object at present was spoliation. In the treaty of Tilsitt continental Europe was sacrificed to the ambition of the two emperors, who parcelled it out at their pleasure; the one adjudging to himself the south and the west, the other the east and the north. It appears, also, that, by a secret article, the expulsion of the Turks beyond the Bosphorus had been determined on. But if such a convention was actually agreed to, the Emperor Napoleon could not have seen far before him in politics, whatever may have been the extent of his genius in military and administrative affairs. For, to permit Russia to dismember the Ottoman empire, that is, to establish herself in a given time at Constantinople, was, in effect, to deliver up to her in a given time Italy and the Mediterranean, and, by a necessary consequence, to abandon Europe, before the lapse of a century, to the barbarians of the north. But the two emperors were mutually endeavouring to deceive each other; and although soon after the peace of Tilsitt Alexander prided himself on the friendship of Napoleon, as a gift of the gods, the latter repaid the compliment by observing of his imperial brother, "He is as fair and false as a Greek," thereby showing that he understood his man.

Attack on Copenhagen.

Be this as it may, however, the stipulations, whether avowed or secret, of the treaty of Tilsitt, were nothing less than a league to enchain the world. Prussia was annihilated; Spain and Sweden were directly menaced; Austria and Turkey were prospectively endangered; England was of course devoted to ruin. Denmark preserved a nominal neutrality; but, irritated by the violent and arbitrary nautical maxims of Britain, particularly in regard to the right of search claimed by her, and, moreover, placed in nearly the same relative situation to France as Holland had formerly been, that northern power was, by the force of circumstances, induced to adopt a line of policy adverse to the interests of England. But latterly her position had changed for the worse. The exigencies of Napoleon's continental system required that Denmark should be obliged to shut her ports against the commerce of Britain, and Holstein was already menaced by the French troops which occupied Hamburg and Lubeck; whilst, on the other hand, information received by the British government of what had secretly passed at Tilsitt gave them reason to suspect that an attempt would be made on the part of the French to occupy Denmark, and to appropriate its fleet. To prevent such a contingency, an expedition which had been fitted out for a different purpose was dispatched to the Sound, and, on the refusal of the Danish government to discontinue its relations with France, Copenhagen was attacked on the 7th of September. After a bombardment of three days, and the burning of six hundred houses, a capitulation was entered into, and the Danish fleet seized as a deposit, to be restored at the conclusion of the war. This proceeding upon the part of England was strongly censured at the time, and still merits severe reprobation. In point of injustice, it equalled the worst deeds with which Napoleon was reproached; and, in point of impolicy, it was not surpassed by the most stupid act of violence ever before committed. Denmark immediately closed her ports against England, declared war against that country, and soon afterwards (16th October) concluded a treaty of alliance with France. Russia, also, availed herself of the favourable opportunity thus afforded to announce publicly her adoption of the continental system, to which she had already secretly acceded, to break off all intercourse with England, to annul the convention of the 17th June, and to proclaim of new the principles of the armed neutrality.

Relative situations of France and England.

Napoleon was now in the zenith of his glory, victorious on every side, and possessed of a power by land which nothing seemed capable of withstanding. Against Britain, on the other hand, the whole civilized world was now arrayed in hostility. Russia, Austria, Prussia, France, Italy, Spain, were all in arms against her; even Turkey, her ancient ally, had proved ungrateful; and, excepting Sweden, which was misruled by a madman, and Portugal, which was governed by a fool, all Europe was forbidden ground. Even the new world was hostile from north to south; and, what was worst of all, a deep shade had been cast on the justice of her cause by the ill-timed attack on Copenhagen. At this time, too, the character of Napoleon stood fair; he had not misused victory beyond what the morality of the world indulges to a conqueror; and if he had abstained from aggression on the Peninsula, his power might, in a very few years, have acquired a stability which would at length have compelled England, however reluctantly, to sue for peace. His decline may be dated from the moment when he intermeddled with the affairs of Spain and Portugal, and endeavoured to convert these ancient and independent kingdoms into dependencies of France. The unjustifiable nature of the aggression, and the unexampled perfidy and profligacy with which it was prefaced and accompanied, destroyed him in the opinion of Europe; whilst the contest in which he soon became involved in the Peninsula preyed like an inveterate and daily spreading gangrene on the very vitals of his power.

Attack on Portugal.

The first object of attack was Portugal. On the 17th October, an army of about twenty-seven thousand men, under the orders of Junot, marched from Bayonne for Portugal. The professed object of this invasion was to enforce in that country the adoption of the continental system. But, on the 27th of the same month, a secret treaty was concluded at Fontainebleau, between the Emperor Napoleon and the minister of Spain, by which Portugal was to be conquered, and the province of Entre-Minho-e-Douro given to the king of Etruria in exchange for Tuscany; whilst the Algarves and the Alemtejo were to be bestowed in sovereignty upon Godoy, prince of the Peace, and favourite of the queen of Spain, and the remainder, including Lisbon, was to be retained in reserve until a general peace. This rapacious and unprincipled scheme, however, formed but a small part of Napoleon's design, which was to seize and occupy the entire Peninsula. Accordingly, another corps of forty thousand men was ordered to assemble at Bayonne, at latest by the 30th of November, to be in readiness to support Junot in case the English should send assistance to Portugal, or even menace an attack. Meanwhile that general continued his march to Lisbon, which he entered with his advanced guard on the 30th of November. After much irresolution, the court had at length determined to shut its ports against the English, in the hope that this concession would stop the march of Junot; but, as might have been expected, it proved wholly unavailing. Conquest, not concession, was the object aimed at; the *Moniteur* announced that the house of Braganza had ceased to reign; and the royal family hastened to fulfil the declaration, by abandoning the country which they were incapable of defending. The invaders had advanced with such rapidity along difficult roads, and were in consequence so greatly harassed and disorganized, that a few thousand resolute troops would have knocked them all on the head; but the court thought only of flight, not resistance, and the country was meanly surrendered to a parcel of toil-worn conscripts, without a single blow being struck in its defence. The escape of the family of Braganza, however, may nevertheless be considered as the first check which the fortune of Napoleon received on the Continent. The odious nature of this enterprise exceeded even the iniquity of the invasions of Switzerland and Egypt; two acts of aggression executed without any previous declaration, and directly contrary to the faith of treaties.

Milan decree

We have already noticed Napoleon's Berlin decree. Another dated from Milan, the 17th of December, contained new measures against the commerce and maritime system of Great Britain. After reference to certain orders in council, issued by the British government, in virtue of which the vessels of neutral powers were not only subjected to search by the English cruisers, but also made liable to detention and to an arbitrary impost, it decreed, first, that every vessel, of whatsoever nation, which should have undergone search by any English cruiser, or performed a voyage to England, or paid a duty to the English government, became thereby denationalised, in other words, lost the protection of its flag, and became English property; secondly, that all such vessels were good and lawful prize of war; and, thirdly, that the British islands were in a state of blockade by sea as well as by land, and that every vessel, of whatsoever nation, which had cleared out from ports in England, or entered into any of these, might be lawfully captured. It was added, that the dispositions contained in this decree would become null whenever England adopted as the rule of her conduct the principles of the law of nations, which were also those of justice and humanity. It must be confessed that this decree embodied a measure of retaliation which, in the circumstances, was allowable. In discarding the maxim that neutral bottoms make neutral goods, England could appeal to no other sanction but that of force. In the law of nations, the maritime sovereignty, which she seems to have considered as an acquired and incontestible right, found no support; and the code which she adopted was viewed by other countries as a system of organized piracy, differing but little in principle from that exercised by the buccaneers and the Algerines. It was never before maintained that the law of war, and the right of conquest thence derived, extended to peaceable and unarmed citizens, to private habitations and properties, to merchandise of commerce and the warehouses which contained or the vehicles which transported it, to unarmed vessels which plied upon the rivers or navigated the seas; in a word, to the persons and properties of private individuals. But in giving it this unprecedented and unjust extension, Great Britain necessarily exposed herself to retaliation, and the avowed principles of her maritime policy left her without the smallest right to complain of such measures as those embodied in the Berlin and Milan decrees.

Invasion of Spain.

Napoleon had now realised one part of his scheme respecting the Peninsula. Portugal was occupied by his troops, and it now remained to complete his design by seizing on Spain. With this view a second army, under Dupont, crossed the Pyrenees about the same time that Junot entered Portugal, and a third followed on the first days of 1808. In fact, all the disposable troops of France were secretly pouring into Spain. In a short time San Sebastian, Pampeluna, Figueras, and even the forts of Barcelona, were in the hands of the French; who, by a mixture of artifice and audacity, easily contrived to dispossess the imbecile governors and invalid garrisons to whom these fortresses had been confided. As if by magic, the whole line of defence which covered the Pyrenean frontier fell into the hands of the French. The imbecility, not to say profligacy, of the rulers of Spain, had afforded not only a pretext, but an occasion for this unexampled aggression. The prince of Asturias, indignant at the influence possessed by Godoy, had secretly addressed himself to Napoleon, and, as a pledge of his sincerity, solicited a wife of the Bonaparte family; whilst, on the other hand, Charles IV., on discovering the machinations of his son, complained to the French imperial court of his undutiful conduct. Napoleon, thus constituted a sort of umpire in the quarrel, gave promises to both parties, sent a splendid present to the king, and at the same time issued orders to his generals to seize the principal fortresses in the north of Spain. This last proceeding opened the eyes of Charles, and even of Godoy; but it was already too late. The keys of the kingdom were in the hands of the French; and those worthless personages who, only a few months before, had plotted with Napoleon the dethronement of the house of Braganza, were now, by a righteous retribution, reduced to seek safety in flight. Preparations were accordingly made for retiring to Cadiz, and the royal party were ready to commence the journey to that port, when the population of Aranjuez, raised by the partisans of Ferdinand, stopped the carriages, and prevented the flight. But matters did not rest here. The tumult thus excited swelled into an insurrection; Godoy's house was attacked, in the hope of sacrificing the hated favourite as a victim to popular vengeance; and Charles was compelled to abdicate in favour of his son, who was proclaimed king by the style and title of Ferdinand VII. Charles, however, protested against the act as void, because compulsory, and sent his protest to Napoleon, accompanied by a letter from the queen; but as this letter passed through the hands of Murat, who, with a body of troops, had advanced as far as Burgos, that officer immediately marched upon Madrid. The affair now became complicated. Ferdinand reckoned on the support of the French; the abdicated monarch did the same; whilst the people, delighted with the fall of Godoy, hailed the new king as the deliverer of his country, and as a sovereign destined to revive its ancient splendour. Raised to the throne by an insurrection, the popularity of Ferdinand was unbounded. Nothing, in fact, could exceed the favour and enthusiasm with which he was regarded by the nation, except the innate worthlessness of the object on which it was lavished. But, in every view, Ferdinand was not a monarch suited to the purposes of Napoleon, or calculated, even as a tributary, to advance his views. It became necessary, therefore, to remove him from Madrid, where the loyal frenzy of the population gave him force, and then to decide according to circumstances in what way he and the other members of his family should be disposed of. With this view Savary was sent to entice him to Bayonne; and Ferdinand, more willing to rely on the French emperor than on the Spanish nation, resolved to propitiate Napoleon by giving him the meeting, which, he was led to believe, would take place within the Spanish territory. In this, however, he was deceived. Filled with hopes of meeting Napoleon at every post, he was enticed on until he had crossed the Bidassoa, when his eyes were at last opened. Napoleon did not receive him as king of Spain. But he was now in the snare, and escape impossible. Charles and his queen also arrived at Bayonne, where Napoleon was about to decide the quarrel of the Spanish royal family in his own favour. Their mutual recriminations were alike disgusting and disgraceful; the queen impeached the legitimacy of her son in the presence of her husband; and Ferdinand retorted by applying to his mother epithets which her unblushing immoralities but too well merited. All this had probably been foreseen and calculated on. At all events, pretending to identify the nation with its rulers, Napoleon, taking advantage of the degrading exhibition made by the latter, resolved to set aside the reigning house, and to substitute a new one of his own in its stead. But in the mean while the news of the insurrection of Madrid, on the 2d of May, had reached Bayonne, and the French emperor saw that no time was to be lost. Through the influence of Godoy, Charles was induced to resign his crown in favour of Napoleon; threats overcame the stubbornness of Ferdinand; and the Spanish royal family having played the part required of them, were sent off, the old king and queen to Fontainebleau, and the princes to Valençay. A hundred and fifty Spanish nobles, who had been mostly gained over to the French interest, were then summoned to assemble at Bayonne, where they met in June, assumed the name of the Spanish Cortes, and submissively received Joseph Bonaparte as king of Spain and the Indies. The events which followed the consummation of this detestable juggle belong partly to the history of Spain and partly to that of Britain, to which heads, accordingly, the reader is referred. The nation had been no party to these infamous transactions, by which its honour was insulted, and its independence assailed, if not destroyed. A patriotic spirit burst forth; the insurrection of Madrid produced similar movements all over the country; the nation roused itself from the lethargy in which it had been long sunk; the aid of Britain was solicited and obtained; and in a little time that contest commenced, which was destined to terminate in the deliverance of the Peninsula, and the overthrow of Napoleon himself. See the articles BRITAIN and SPAIN.

Character and progress of the insurrection.

The invasion of Spain, wild and desperate as it at first appeared,[1] soon assumed a shape which left no doubt that it would operate as a serious drain upon France. The proclamation of the intrusive King Joseph was the signal for the general outbreaking of the spirit of resistance, which, as in almost all popular commotions, displayed itself in acts of sanguinary vengeance. The French were assailed and massacred in most of the towns; the soldiers made common cause with the people; and those commanders who sought to resist the general will were mercilessly sacrificed. The flower of the Spanish army had been marched to the north of Europe; but the void was soon filled up, and in a few weeks insurgent armies made their appearance in all parts of the Peninsula. In the first encounters, indeed in most general actions, the French, as might have been expected, were successful; and the defeat of Blake and Cuesta at Rio Seco seemed the battle of Almanza to the new dynasty. But Lefebvre, though successful in the field, was repulsed from Zaragoza; and Dupont, after an unsuccessful attempt to reach Cadiz, was intercepted in his retreat across the Sierra Morena, and obliged to surrender at Baylen. These successes kept alive the national spirit, and encouraged the Spaniards to hope that their efforts would ultimately be crowned with success. Meanwhile the flame of insurrection had spread to Portugal, where the inhabitants rose against Junot, and united with the Spaniards in asserting their independence. The British government availed themselves of the opportunity thus offered. In the end of July 1808, Sir Arthur Wellesley landed at the mouth of the Mondego, to the north of Lisbon, with about fifteen thousand men; and, after a short but brilliant campaign, terminating in the battle and victory of Vimiero (21st August), Portugal was, in virtue of the convention of Cintra, cleared of the enemy.

Austria.

The court of Vienna now began to show signs of returning spirit, and, encouraged by the events in Spain and Portugal, armed, increased the regular force, and organized a landwehr. At a public levee held in August, Napoleon took the opportunity to reproach Metternich, the Austrian envoy, with these preparations; but the intelligence received from the Peninsula, together with certain appearances of the commencement of a re-action, gave hardihood to German independence. Resolved openly to insult, if not to menace Austria, Napoleon, in September, held a meeting with the emperor of Russia at Erfurth, where, as at Tilsitt, great European interests were discussed, and Austria was again excluded as a secondary power. On the part of the French emperor this was the consummation of that foolish insolence which is begotten of success. Being thus insulted, trampled on, and despised, Austria determined, though alone, and opposed instead of being supported by Russia, to renew the struggle with France; but her effort was reserved for the year 1809. Napoleon foresaw the storm which was gathering, and, that he might be prepared to meet it with undivided means, made preparations to extinguish by one grand effort the insurrection in Spain, and to settle the government of that country. From Erfurth he issued orders to his veterans to march to the Pyrenees, and by the beginning of November he had himself crossed these mountains, and established himself at Vittoria. Napoleon was now in the midst of the Spanish armies, with a greatly superior force; and as they were disseminated on a lengthened and irregular line, so as to be incapable of acting in concert or affording mutual support, his plan was to crush them one after another, by means of rapid movements executed with overwhelming masses. Accordingly, from the central position of Vittoria, he attacked and defeated Blake at Espinosa, overthrew Belvedere near Burgos, and totally routed Castaños at Tudela; so that whilst the English were slowly advancing into Spain, one column by a circuitous route, the armies with which they had expected to co-operate were completely swept from the field. Napoleon now pushed forward to Madrid, which, after a vain stand made in the passes of the Somosierra, and a show of resistance when he approached the walls, he entered in the beginning of December. Here, however, he remained but a short time. Having passed some decrees intended to conciliate the liberal Spaniards, having abolished the Inquisition, suppressed the convents, and made a variety of judicious and salutary regulations, he turned his arms against the English, whose principal force was assembled in the neighbourhood of Salamanca; crossed the Guadarama range in the depth of winter at the head of eighty thousand men; and advanced with incredible velocity upon Astorga, the strategic point, in order to cut off their retreat. But his skilful combinations and rapid execution were defeated by the masterly retreat of the English general Sir John Moore; and Napoleon, finding that the enemy had escaped him, left Soult to continue the pursuit, galloped back to Burgos, and thence hurried to Paris. The preparations of Austria, of which he had received fresh intelligence whilst proceeding against the British, required his immediate presence in the capital to watch the movements of that power.

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[1] The spirit of a people is often shown in their pasquils. Soon after the affair of the 2d of May, the following epigram was attached to a proclamation affixed by the French to the walls of Madrid, and addressed to the Spaniards:

En la plaza hai un cartel,
Que nos dice en Castellano,
Que Joseph, rey Italiano,
Muda a Madrid su dosel.
Y a leer esa cartel,
Dice un maja a su majo,
Manolo ponlo mas abajo
Que me cage en en esa ley
Que no sabe decir carajo.

It is not necessary to subjoin any translation of this national epigram; but, to give our readers some idea of the means employed to stimulate and perpetuate a hatred of the French, we shall give in English an excerpt from a catechism generally circulated in Spain about this time, and which parents were enjoined to teach their children. "Tell me, my dear child, who are you? A Spaniard, by the grace of God. What do you mean by that? A person of respectability. Who is the enemy of our happiness? The emperor of the French. Who is he? A wicked man, the source of all that is evil, the destroyer of all that is good, and the centre of every vice. How many natures has he? Two, the human and the diabolical. How many emperors of the French are there? One Veritable, in three deceitful persons. What are the names of these persons? Napoleon, Murat, and Manuel Godoy. Which of the three is the most wicked? They are all equally so. Of whom is Napoleon derived? Of Sin. Murat? Of Napoleon. And Godoy? Of the fornication of the other two. What is the spirit of the first? Pride and despotism. Of the second? Rapine and cruelty. Of the third? Cupidity, treachery, and ignorance. Who are the French? Men once Christians, who have become heretics. What punishment does the Spaniard deserve who fails in performing his duty? The death and infamy of traitors. How ought the Spaniards to conduct themselves? According to the maxims of our Lord Jesus Christ. Who will deliver us from our enemies? Mutual confidence and arms. Is it a sin to put a Frenchman to death? No, father; he will gain heaven who shall kill one of these dogs of heretics." A people who would teach their children such a manual of doctrine as this might easily be expected to begin by exemplifying in their own actions the precepts which are here inculcated.

Fifth coalition; successes of the French.

A fifth continental coalition had already been formed. Availing herself of the diversion occasioned by the events in the Peninsula, Austria had armed; whilst in France new conscriptions were ordered, and the imperial guard, hastily recalled from the pursuit of the British, marched against the Austrians on the Danube. The war seemed interminable; and Talleyrand's prediction was in course of being realised. The court of Vienna had made incredible exertions, and an army of nearly two hundred thousand men, commanded by the Archduke Charles, menaced France and Italy; whilst another, in Gallicia, was intended to oppose whatever forces Russia might bring into the field to support her new ally. On the 9th of April the Austrians crossed the Inn at Brunnau and at Scharding, and the Salza at Burghausen; the Archduke Charles declaring to the commandant of the French troops stationed in Bavaria that he was about to advance, and would treat as enemies all who should resist him. On the 15th hostilities also commenced in Italy, and the following day the French under Eugene Beauharnais were completely defeated at Pordenone, on the Tagliamento. Napoleon, on receiving the first tidings of the advance of the Austrians, hurried from Paris, and at Dillingen met the king of Bavaria, who had been forced to abandon his capital. The French, in fact, were quite unprepared for the adoption of such a vigorous offensive on the part of the Austrians; and the corps of Davoust, which Berthier had stationed at Ratisbon, was so much in advance as to be seriously compromised. But Davoust took upon himself the responsibility of executing a flank march from that city upon Abensberg; checked the advance of the Austrian army at Tann; gave his hand (as the military phrase is) to the Bavarians; and thus prepared for Napoleon, who was on the point of arriving, the means of penetrating the enemy's line, and beating in succession the two great Austrian corps under the Archdukes Louis and Charles. Upon the 20th Napoleon defeated, at Abensberg, the corps under the orders of the Archduke Louis and General Hiller, after an engagement of only an hour and a half. Great advantages resulted from this success, which, upon the following day, forced the Austrians to abandon nine thousand prisoners, thirty pieces of cannon, six hundred ammunition waggons, three thousand vehicles of various sorts, and three pontoon trains. On the 22d, the archduke directed his efforts against Davoust, who was in position at Eckmuhl; but the portion of the army under Napoleon, which had followed to Landshut the corps defeated at Abensberg, rapidly countermarched, and having appeared on the left flank of the Austrians, compelled the archduke to abandon his position and cross the Danube. Thus, after a campaign of a week, on almost every day of which a victory had been gained, the French emperor was enabled to send forth one of his astounding proclamations, announcing the capture of a hundred pieces of cannon, fifty thousand prisoners, and forty stand of colours. Davoust, to whom the last success had been mainly owing, was created Prince of Eckmuhl on the field of battle.

Affair of Ebersberg; occupation of Vienna.

The archduke having crossed the Danube at Ratisbon, retreated into Bohemia, no doubt in the hope of drawing the French after him in pursuit; but Napoleon preferred marching along the right bank towards Vienna. This, however, was not effected without opposition. At Ebersberg, a large town situated upon the right bank of the Traun, three leagues from Lintz, there occurred, on the 4th of May, one of the most sanguinary combats on record. The French generals, acting under the eye of their chief, attempted to carry this strong position at the first onset, and without hesitation sacrificed five thousand men, who were either drowned in the torrent, destroyed by the musketry, overwhelmed amidst the rubbish, or consumed by the flames of the houses, to which the enemy set fire on beating a retreat;[1] a carnage as useless as it was horrible, seeing that Marshal Lannes had already turned the position, and rendered the retreat of the enemy inevitable. On the 13th of May, exactly a month after the Austrians had commenced the war, Vienna was occupied for the second time by the French army, though not until it had stood a bombardment of thirty-six hours. The resources in munitions of war found in the Austrian capital were sufficient for a campaign. The imperial family and the court had, as before, abandoned the city to its fate. Meanwhile the Archduke Charles had, by a circuitous march through Bohemia, reached the left bank of the Danube opposite Vienna. More prudent than in 1805, the Austrians had destroyed every bridge on the river; and, on the other hand, it became necessary to the French to cross the stream and put an end to the war by victory, ere insurrections could be organized in their rear, or the want of subsistence should compel them to retreat. But how was this to be effected in presence of an active and vigilant enemy?

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[1] "Figure to yourself," says an eye-witness of this horrid spectacle, "all these dead, baked by the fire, trodden under the feet of the cavalry and the wheels of the artillery, all forming a mass of mud, which, as it was removed by shovels, emitted an undescribable odour of burned human flesh, and caused a sensation horrible even amongst the every-day horrors of war." In passing Cohorn's Corsican regiment, which had headed the attack, Napoleon inquired respecting its loss. "We have just one more charge left," replied the officer, pointing to the surviving half of the regiment. "A ce jour," says the Abbé Montgaillard, "l'espoir d'un grade, d'une dotation, fait dépasser toutes les bornes de l'audace guerrière, et méconnaître aussi les inspirations de l'humanité." (*Hist. de France*, tome vi. p. 391.)

Battle of Essling.

The river Danube, which now separated the hostile armies, is divided below Vienna into three unequal arms or branches. From the right bank to the first island, which is about a mile in circumference, the distance is two hundred and forty toises; and from this to the great island, where is the principal current, the canal is in width about eighty toises. The great island, called In-der-Lobau, is about seven miles in circumference, and the canal which separates it from the left bank is nearly eighty toises in breadth. Napoleon having thrown bridges, by means of which his troops were enabled to pass from the right bank into the islands, and thence to the left bank, attacked the Archduke Charles in position behind the villages of Gross-Aspern and Essling, about three leagues north of Vienna. After several murderous attempts in a confined space, where the French maintained an obstinate struggle against superior forces and a formidable artillery, the assailants were repulsed; and about the same moment the bridges were carried away by a sudden rise of the river, thus leaving them without ammunition, or the means of sheltering themselves from the fire of the enemy, which now plunged incessantly into their disordered ranks. But the tenacity of Massena saved the wrecks of the French army, which in the night operated its retreat into the island of Lobau, the bridge between which and the left bank had been temporarily repaired. This terrible battle, which lasted during the greater part of two days, was fought on the 21st and 22d of May. The loss of the French was enormous. Lannes was mortally wounded; three generals fell, a hundred and twenty-eight officers and six thousand soldiers were killed; thirteen generals, seven hundred officers, and eighteen thousand soldiers, were wounded; fourteen officers and three thousand soldiers were made prisoners. The loss sustained by the Austrians was by no means so great.

Results.

After the battle of Essling the reputation of Napoleon as a general and a man of resolution was much diminished; for he had not taken any adequate precaution against the contingency of retreat, and at the moment when the danger was most imminent he quitted the left bank of the Danube in a miserable barque, accompanied by Berthier, and Czernicheff, aide-de-camp to the emperor of Russia, in order to get under cover on the right bank. The news of his defeat also spread the flames of insurrection, and gave the first impulse to that spirit of resistance by which he was a few years afterwards overthrown. The Tyrolese rose against the Bavarians; associations, under the denomination of the Tugenbund, were formed for working out the independence of Germany; and the adventurous enterprises of the young Duke of Brunswick and of Major Schill afforded abundant evidence of the hostile disposition by which the people of the north and east were animated towards their oppressors; although the climate of Germany, and the character of its inhabitants, as well as the force and centralization of government, rendered the Spanish system of resistance impracticable in that country.

Battle of Wagram.

The French, forced back to the right bank of the Danube by their defeat at Essling, established themselves in the great island of Lobau; and both armies, separated only by the northern branch of the Danube, sixty yards wide, remained in observation during six weeks, carefully retrenching their respective positions. At length, on the night between the 4th and 5th of July, the French having constructed bridges lower down the stream, crossed to the left bank, where a warm combat ensued with the left wing of the Austrian army, posted near the small town of Enzersdorff, which was reduced to ashes. The archduke had fortified his position and made preparations to oppose the French, on the supposition that they would attempt to cross by the original bridge opposite Essling, which Napoleon had ordered to be repaired. But these repairs had only been made by Napoleon to deceive his antagonist; and by crossing lower down the river he rendered all the preparations and batteries of the archduke unavailing; for, instead of fronting the Danube, the latter was now obliged to extend his line perpendicularly to the river, from Aspern to Wagram, a village situated five leagues north-north-east of Vienna, and thence to a small river on his extreme left. The 5th was spent in manœuvring, and in fruitless attempts to dislodge the French from the village of Enzersdorff. Both armies slept on the field, and on the 6th at day-break commenced the famous battle of Wagram. The Austrian centre was posted on the high ground near the village, which the archduke believed to be too strong to be forced; and accordingly he threw the greater part of his force into his wings. This error lost him the battle. The Austrian right attacked and overthrew Massena, who commanded the French left, driving him back with such fury that his four divisions were crowded into one. Davoust opposed a firmer resistance to the Austrian left; but still he had great difficulty in maintaining his ground. In this situation Napoleon resolved to allow his wings to resist as they might, and to bring the whole of his disposable force to bear upon the Austrian centre at Wagram. Lauriston accordingly advanced against it with a hundred pieces of cannon; Macdonald followed Lauriston with the infantry; and Bessières supported the attack with the cavalry of the imperial guard. This combined effort succeeded. The artillery made breaches in the Austrian line; the French, aided by a diversion on the extreme right, rushed into the openings; the centre was forced; and the corps victorious over Massena, being now taken in flank, was also obliged to retire. The different portions of the Austrian army being thus separated from one another, the archduke withdrew from the field; but the French had suffered far too much to follow him. In fact, the battle of Essling had damped the courage of the French; and at Wagram they fought faintly, except when urged on by some bold and determined leader. The loss on both sides was enormous; that of the French exceeding thirty-five thousand men killed and wounded. Wagram was therefore a victory, but not such a victory as that of Marengo or Austerlitz. The hostile army was defeated, but neither destroyed nor intercepted; and the Archduke Charles, still formidable in force, withdrew into Moravia to await the arrival of his brother's army, repair his losses, and prolong the campaign.

Peace.

Napoleon therefore deemed it prudent to make peace. His power was in fact shaken. Most of the veterans of the Italian wars had perished; the army of Essling and Wagram was no longer that of Austerlitz; and this alarming truth had been spoken out even at the imperial head-quarters. Accordingly an armistice was concluded about the middle of July, and conferences with a view to peace having soon afterwards commenced at the palace of Schönbrunn, near Vienna, were continued until the 14th of October, when a treaty was signed, by which Austria ceded, in favour of the sovereigns of the confederation of the Rhine, Saltzburg, Bergtolsgaden, and part of Upper Austria; to the French, Gorice, Montefalcone, Trieste, the circle of Villach in Carinthia, and all the countries situated on the right of the Saave, as far as the frontier of Turkish Croatia; to the grand duchy of Warsaw, all western Gallicia, with Cracow, as well as the circle of Zamosc in eastern Gallicia; and to Russia, a small territory in the most eastern part of Gallicia, containing a population of four hundred souls. The emperor of Austria also recognised all the changes which had already been made or might subsequently take place in Spain and Portugal; he adhered to the prohibitive system adopted by France and Russia against England; and he engaged to discontinue all commercial relations with "the enemy of the Continent." The memoir writers of the day are pleased to imagine that Napoleon was terrified into making peace by the discovery of a design upon the part of a fanatical young German to assassinate him. But his views were at once more manly and more profound. Even in his proudest day of power he had acknowledged the necessity of having one great ally attached to his interests; and this was what he now sought to obtain. Prussia had played him false, and forced him to destroy her; Russia was evidently not to be depended upon; Austria yet remained to be tried, and this trial was now made. Napoleon had no heir of his body; an adopted son of his brother Louis had died; and his proposal to a Russian princess had been received with a coldness amounting to disdain, which proved to him the insincerity of Russian alliance. At Schönbrunn the same idea was now suggested with respect to Austria; and the Emperor Francis, appreciating the advantage of such a connection, acceded to the proposal. Accordingly Josephine was divorced to make way for a bride of the house of Hapsburg, and, on the 10th of March 1810, the Archduchess Maria Louisa became the new empress of the French.

Events of 1810.

In what remains of the history of France we must confine ourselves to a mere abridgment of events which are not of very great importance, this branch of the general article having already exceeded its due proportion; but what is omitted here will be found under the other heads to which reference is made. The occurrences of 1810 and 1811 are chiefly important with reference to an approaching struggle with Russia. On the 6th of January 1810 a treaty of peace between France and Sweden was signed at Paris. On the 7th of February the convention of marriage between the Emperor Napoleon and the Archduchess Maria Louisa, daughter of Francis I., emperor of Austria, was concluded. On the 17th the Roman states were, by a decree of the senate, incorporated with the French empire. On the 19th April the provinces of Caraccas, Cumana, Barinas, Margarita, Barcelona, Merida, and Truxillo, in Spanish South America, formed a federative government under the name of the American Confederation of Venezuela, but without separating themselves from the mother country, although this first step necessarily led eventually to such a result. Early in July, Napoleon, having made a declaration against the government of Holland, which he accused of having converted the Dutch ports into entrepôts of English commerce, recalled his brother Louis, and, by an imperial decree, ordained the incorporation of Holland with France. On the 21st of August, Bernadotte, prince of Ponte Corvo, was named hereditary prince royal of Sweden, by the states-general of the kingdom, convoked in an extraordinary diet for the election of a successor to the throne, to which, upon the abdication or rather expulsion of Gustavus IV. the Duke of Sudermania had been raised by the title of Charles XIII. Towards the latter end of September Sicily was threatened with invasion by a force under the orders of Murat, the new king of Naples; but the threat ended in a mere demonstration, having for its alleged object to draw English troops into the island. On the 13th of December a hundred and sixty thousand men of the conscription of 1811 were placed at the disposal of the government. The relations of France with Russia had, in the opinion of Napoleon, rendered this measure necessary. On the 29th of December the state renounced the successions of the emigrants which had devolved to it during so many years; and thus the revolutionary laws of the 28th March 1793 and the 28th April 1795 were abrogated. For the events which occurred in Spain during the years 1809, 1810, 1811, and the following years, the reader is referred to the articles BRITAIN and SPAIN

Events of 1811.

Napoleon, when in St Helena, asserted that the origin of his quarrel with Alexander, which led to the invasion of Russia in 1812, was his opposition to the czar's views upon Turkey; views, it may be added, which the autocrat of all the Russias had been led to entertain at Tilsitt; and Bignon confirms the statement of Napoleon. "From the conferences of 1807," says that historian, "sprung the germ that was to be fatal to Napoleon. To force England to make peace conformably to the alliance of Tilsitt, Russia was to act against Sweden, and France against Portugal; or, to translate more freely the ideas of the two emperors, Russia left to Napoleon full liberty of action over the south of Europe, France abandoning to Alexander similar liberty in the north with respect to Sweden, and moreover allowing him a certain measure of tolerance on the side of Turkey. In consequence of these reciprocal concessions, France found herself engaged in the horrible Spanish war; Russia in one of which the dangers were insignificant, the acquisition being Finland. Napoleon then imagined that Finland might content Alexander; but he was deceived. For a moment Napoleon had admitted the possibility of partitioning the Ottoman empire. This contingency Alexander assumed as a certainty; and his constant demands were on the subject of this partition. But Napoleon constantly refused, and from a double motive; the first political, because the lot of France, magnificent as it appeared, was but a source of peril and embarrassment, whilst that of Russia had proved all substantial and positive value; the second military, because he looked on the Turkish empire as a morass which prevented Russia attacking him on his right." And hence, it is said, arose the gradual coolness between the two emperors. But there were other sources of grievance. In the campaign of Wagram, Napoleon had perceived the lukewarmness of Russia; whilst the aggrandisement of the duchy of Warsaw, which might swell out into an independent kingdom of Poland, made Alexander tremble for Lithuania. The occupation of the duchy of Oldenburg, belonging to a prince nearly allied to the emperor of Russia, formed another cause of complaint and recrimination. On the other hand, Alexander, who had already relaxed in his observance of the continental system, which had destroyed the trade of his subjects, abrogated it in part towards the close of 1810, and thereby snapt asunder the last remaining tie between France and Russia.

Preparations of Napoleon.

The seeds of war being thus freely sown, preparations were made on both sides for the struggle which had now become inevitable. Those of Napoleon were immense. From France he drew every soldier the utmost rigour of the conscription laws would supply; Italy on the one side, and Holland on the other, were required to contribute their legions; the contingents of the confederated states of the Rhine were ordered to be in readiness; Austria consented to furnish forty thousand men; and Prussia, however willing to throw her remaining strength into the scale of Russia, was forced by dire necessity to yield up the remains of her army, her fortresses, and even her very capital, to the French forces. All continental Europe in arms seemed about to pour upon Russia; whilst Poland, expecting her independence, was calling upon Lithuania, the spoil of Catharine, to welcome the host of invaders. On the other hand, by the mismanagement of Napoleon, Sweden, though smarting under the loss of her fairest province, Finland, was thrown into the arms of Russia; and, through his neglect, British influence so far prevailed at Constantinople, that the sultan was induced to abandon the tempting opportunity, of which he might have taken advantage, when Russia was hard pressed by a powerful antagonist, and even to conclude a peace with the ancient and inveterate foe of the Ottoman name. The fact is, that about this time Napoleon began to be very ill served in the civil and diplomatic branches of affairs. Talleyrand and Fouché were both in disgrace, and he in vain endeavoured to supply their places with statesmen of his own creation. Men of their approved talents and experience, with clear heads, penetrating discernment, and cool sagacity, were not every-day productions. In diplomacy, where the essential requisites are knowledge of mankind and of courts, together with superiority of address, and an almost intuitive insight into affairs, Napoleon felt and lamented this deficiency; and he himself owned, that had he retained Talleyrand in his service, the Russian (he might have also added the Spanish) war would have been avoided. In high views of policy, and conceptions worthy the head of a great state, Napoleon was alike eminent; he also foresaw the perils of an insurrection in the Peninsula, should it become general, and the unseasonableness as well as necessity, circumstanced as he was, of a war with Russia; but want of tact in his subordinate agents hurried on both these calamities. The rashness and precipitation of Murat, whilst at Madrid, embroiled Spain; and negotiations carried on through generals and aides-de-camp marred all hopes of reconciliation with Russia. Sensible of this, Napoleon made choice of the Count de Narbonne, a noble and a liberal emigrant, to proceed on a mission to Russia; and with the same feeling, probably, he selected and sent to Warsaw the Abbé de Pradt, archbishop of Malines. But men qualified for such high and responsible diplomatic situations cannot be produced even by an imperial improvisation; and it would be difficult to say which proved the more unsatisfactory envoy, the archbishop or the aide-de-camp.

Declaration of war.

After two years of preparation, the rupture became imminent. On the 24th of March 1812, a treaty of alliance was concluded between Russia and Sweden, by which Norway was promised to the latter, and the prince-royal, Bernadotte, agreed to take the field with a Russian corps under his orders; and to this treaty Great Britain acceded in the beginning of May. On the 24th of April the emperor of Russia left St Petersburg to join his army, then in position upon the western frontier of Lithuania; and on the 9th of May Napoleon set out from Paris for Dresden, which had been fixed upon as the rendezvous of his allies. Professions of peace, as usual, preceded the commencement of hostilities; and at the same time that Napoleon quitted Paris for Germany, the Count de Narbonne was sent to the head-quarters of the Emperor Alexander. Meanwhile, the court assembled at Dresden was such as Europe had never before witnessed. The emperor of Austria and the king of Prussia were amongst those who, on this occasion, waited upon Napoleon; whilst kings and princes of inferior rank crowded the antechambers, and jostled one another in the saloons of the conqueror. Here the representative of the French Revolution found in attendance at his levees those sovereigns who had combined to crush it; and the new Charlemagne, whose title to the imperial purple had been consecrated by victory, seemed in a fair way of realizing his own prediction, that his family would soon be the oldest of Europe. It appears as if fortune, before abandoning him, had indulged her spoiled favourite with this parting pageant. Napoleon awaited at Dresden the return of the Count de Narbonne, who arrived on the 28th of May. The latter had seen the Emperor Alexander, and had found him inflexible, but neither elated nor despondent. The czar considered the cause as that of the independence of his nation, and conceived that in maintaining it defeat would not be inglorious. On receiving these tidings, Napoleon quitted Dresden, proceeded to join the army, and, on the 22d of June, declared war against Russia, from his head-quarters at Wilkowiski, near Gumbinen, in Eastern Prussia. "Soldiers," said he, "the second war of Poland has commenced. The first terminated at Tilsitt. At Tilsitt Russia swore eternal alliance with France, and eternal war against England. She has now violated her oaths. Russia is hurried on by a fatality; her destiny must be accomplished. Does she suppose us degenerated? Let us advance, cross the Niemen, and carry the war into her own territory. The second war of Poland will be as glorious to the French arms as the first."

Forces of France and Russia respectively

The army of Napoleon, at once the finest and most formidable which France had ever sent beyond her own territory, amounted to nearly five hundred thousand combatants, with about twelve hundred pieces of artillery. This army was divided into ten corps. The first corps, composed of five fine divisions of infantry and one of cavalry, was under Marshal Davoust; the second was commanded by Marshal Oudinot; the third was under the orders of Marshal Ney; the fourth, known under the name of the army of Italy, was commanded by Eugene Beauharnais; the fifth consisted of the Poles, under Prince Poniatowski; the sixth was composed of the Bavarians, under General Gouvion-Saint-Cyr; the Saxons formed the seventh, under General Reynier; the eight consisted of the Westphalians, effectively commanded by Junot, who had been placed as the Mentor of Jerome Bonaparte, a young man without talents and consideration; the ninth, not yet completed, but with a division twenty thousand strong, was allotted to Marshal Victor; and the tenth, composed of the auxiliary contingent Prussians, with a reserve of a division and some companies of artillery, was under the orders of Marshal Macdonald. The old guard was commanded by Marshal Lefebvre, and the young guard by Marshal Mortier. The reserve of cavalry, under the orders of the king of Naples, Murat, formed four corps under Generals Nansouty, Montbrun, Grouchy, and Latour-Maubourg. The cavalry of the guard acted apart, and an Austrian corps under Schwartzenberg marched separately. The grand total did not therefore fall short of four hundred and fifty thousand combatants, of whom twenty thousand were Italians, eighty thousand belonged to the confederation of the Rhine, thirty thousand were Poles, thirty thousand Austrians, and twenty thousand Prussians; so that the French alone formed an effective force of about two hundred and seventy thousand bayonets or sabres. On the other hand, the Russian troops were divided into the first and second armies of the West, under Generals Barclay de Tolly and Bagration, and the army of reserve under Tormasof; making altogether, including different detached corps of irregular cavalry, about three hundred and sixty thousand combatants. But two other corps were formed; one in Lithuania, from Mozyr to Bobenisk on the Berezina; and the other at Riga and at Dwinaburg; whilst reserves were established on the

Willia, and between Wilna and Swentziany; and a vast intrenched camp was formed before Drissa, in a sinuosity of the Dwina.

Invasion of Russia.

On the 24th of June the French army crossed the Niemen, and on the 25th the emperor of Russia issued a proclamation announcing the commencement of hostilities, invoking the name of God, the protector of the Greek faith, in whom dwells truth, and calling upon his serfs to defend liberty and their country. In crossing the Niemen, the French met with no opposition; a solitary officer of Cossacks being the only enemy who appeared to challenge them. The plan of the Russians was to retreat within their own territory, to avoid a decisive battle, to draw on the French as far as possible from their resources, and at last to fall on them when famine, fatigue, and the rigours of a northern climate, had abated their enthusiasm and exhausted their strength; a plan devised by Barclay de Tolly, the commander-in-chief, and executed with an ability and determination which eventually proved the salvation of the Russian empire. On the 28th of June the French troops made their entry into Wilna, the ancient capital of Lithuania. The Russians fell back at all points. After having exchanged some cannon shots, they repassed the Willia, burned the wooden bridge at Wilna, and set fire to the immense magazines of provision, clothing, arms, and munitions of war, which had been collected at that place. On the same day the diet which had assembled at Warsaw proclaimed the re-establishment of the kingdom of Poland. This generous nation ardently desired and invoked the recomposition of its dismembered provinces; it implored the assistance of France; and, for twenty years, its warriors had shed their blood for the interests of that country in Italy, in Germany, in Spain, wherever, in short, their services were needed or required. Since the peace of Tilsitt, which had consummated the humiliation of Prussia, the policy of France required the reconstitution of the monarchy of Sigismond and Sobieski; and powerful considerations should have determined Napoleon to sanction a measure which, independently altogether of its political justice, would have raised up a formidable barrier between Russia and Germany, attached to his interests a brave and generous nation, strengthened his hands in the actual contest with Russia, and, in the event of reverses, rallied a whole people to cover his retreat. But, either from an apprehension of exciting the jealousy of Austria, who would no doubt have readily accepted an indemnity for Gallicia on the side of Italy, or, which is more probable, from a desire to keep the door open for an accommodation with Russia, Napoleon evaded the recognition which was so earnestly solicited of him by a deputation from the diet, and thus lost an opportunity of strengthening his power which could never be recalled.[1]

Advance of the French.

When Napoleon advanced upon Wilna with the main body of the army, Macdonald with a strong corps moved along the Baltic, and formed the left; whilst the Austrians, under Schwartzenberg, entered Volhynia, and protected the right flank of the French. Immediately before Napoleon, the Russians, as already stated, composed two armies; the principal of which, under General Barclay de Tolly, had retired from Wilna, to Drissa on the Dwina, where an intrenched camp defended the road leading to St Petersburg; whilst the other, under Prince Bagration, remained at Grodno, and was consequently separated, by the advance of the French, from the main army under Barclay. This was a great, and might have proved a fatal blunder. But, happily for the Russians, Napoleon, who saw the full extent of the error, and did every thing in his power to take advantage of it, was, on the present occasion, ill served by his lieutenants. Some were tardy, others inapt; Junot was incapacitated for command by the effects of former wounds; Davoust was paralysed by the obstinacy and stupidity of King Jerome; jealousies and misunderstandings prevailed among others. Precious time was thus lost; Bagration made good his retreat; and Barclay, warned by the peril which he had just escaped, took good care to afford the enemy no second opportunity of beating him in detail. From Wilna Napoleon advanced to Witepsk, which he entered on the 28th of July, being still in hopes of preventing the junction of the two Russian armies, which, by a masterly movement, he had disunited. Lithuania was now conquered, and the end of the war seemed already attained; but in the estimation of Napoleon, whom ordinary advantages did not satisfy, it had scarcely commenced. His eye was fixed upon Moscow, and, calculating on the faults of the Russians, he was eager to strike a blow commensurate in magnitude with the enterprise in which he had embarked. In vain, therefore, did Berthier, Lobau, Caulaincourt, Duroc, and Daru, demonstrate the necessity of stopping at Witepsk, more especially as henceforward the favourable dispositions of the inhabitants could not be reckoned on. Murat and Davoust gave opposite counsel, and Napoleon resolved to advance.

Smolensk.

Whilst Napoleon remained at Witepsk, where he spent the first two weeks of August, the Russian armies had united at Smolensk, a large town situated on the Dnieper, surrounded with ancient and massive constructions, to which had recently been added works fortified with extreme care, and forming the bulwark of Russia upon the frontier of Poland. In this strong position Barclay resolved to make a stand. It had formed part of the plan of Napoleon to get to Smolensk before the enemy, intercept their retreat, and thus force them to accept battle at a disadvantage; but, owing to innumerable faults of execution, and the unaccountable though perhaps necessary delay at Witepsk, this project had failed. It now only remained, therefore, to carry the place by main force; and for this purpose the French, with Napoleon himself at their head, advanced to the attack, which was made at all points and with unimaginable fury. The Russians, protected by the ramparts, held out during the day; but on the approach of night they abandoned all their positions, after having set fire to the town, which contained immense magazines. They retired in solid squares, with such admirable steadiness and order, that the utmost efforts of Murat, at the head of his fine cavalry, proved unavailing against the stability of their formation; in fact, each square seemed a blazing ball of fire. The Russians lost about twelve thousand men in killed, wounded, and prisoners; the French somewhat less than half that number. But the system of defence adopted by the Russians had deprived the French of nearly all the advantages which they might otherwise have derived from their victory; and where they expected to meet with good quarters and the sight of human habitations, they found only a heap of smoking ruins. Still, even amidst these ruins Napoleon might have halted, brought up provisions and reinforcements, reorganized his army, and waited to complete the subjugation of Russia in another campaign. This was what almost all his generals counselled, including even Murat; and the results of the campaign completely vindicated the prudence of this advice. But to stop short in the month of August within eighty leagues of Moscow, the term of his enterprise, and without having achieved any thing calculated to maintain the illusion in favour of his invincible and overwhelming power, was too much for Napoleon. The principles of his strategy were fully developed in this campaign. He was not insensible to the difficulties and even dangers attending an advance, or of the advantages which would result from placing his army in cantonments at Smolensk, and there preparing for another and decisive campaign; with him every thing, even audacity itself, was matter of calculation; but, having estimated all the chances, he concluded that as the Russians would certainly risk a battle to save the ancient capital of their empire, he would gain the battle, penetrate to Moscow, and thus conclude the war in Russia as he had twice before done in Germany. For these, and other reasons which appeared to him equally cogent, Napoleon determined to advance.

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[1] The deputation, which appeared at the head-quarters of Napoleon at Wilna, said to him, "the general diet has constituted itself into a confederation of Poland. Say, sire, that the kingdom of Poland exists, and this decree will to the world be equivalent to the reality." But, persisting in the idea of not sacrificing Austrian Gallicia, in order not to be under the necessity of giving up Illyria, which the cabinet of Vienna anxiously desired to recover, Napoleon replied, "Poles, I would have thought like you in the assembly of Warsaw; the love of one's country is the first duty of civilized man. In my situation I have many interests to conciliate, many duties to fulfil. If I had reigned during the first, the second, and the third dismemberment of Poland, I would have armed my people to defend that country. I love your nation. I authorize the efforts which you desire to make. It is only in the unanimity of the population that you can hope for success. I ought to add, that I have guaranteed to the emperor of Austria the integrity of his dominions." This language was not misunderstood. But if the hopes of the Poles were blasted, their disappointment was speedily avenged.

Further advance.

Nor was he wrong in two main points of his calculation. Although the Fabian tactics of Barclay had unquestionably saved the Russian army, and with it the empire, all voices, amongst which that of Prince Bagration was loudest, clamoured for battle; and, in obedience to this cry, the able tactician was superseded by the old Muscovite general Kutusof, the same who lost the battle of Austerlitz. Before quitting the command, however, Barclay signalized himself by a brilliant feat of arms. Resolving to leave no trophies to the enemy, he made a stand at Valoutina, to preserve some baggage and cannon; and as Junot, who should have taken the Russians in flank, hesitated at the critical moment, he succeeded in repulsing Ney with considerable loss. It was not thus that Napoleon had been served in Italy and Germany; but, mindful of former times, and unwilling to disgrace his earliest protegé in the face of the army, he still continued Junot in the command of his division. The vanguard, commanded by Murat and Davoust, was continually in contact with the enemy; but as the overboiling and impetuous valour of the former assorted ill with the stern methodical genius of Davoust, who blamed his colleague severely for sacrificing the cavalry in encounters which led to no result, these officers were at open variance, and their quarrel contributed in no slight degree to increase the difficulties and embarrassments of Napoleon. The accession of Kutusof to the command of the Russian army, in the room of Barclay, was equivalent to an announcement of a determination to fight. This was known to the French, who, accordingly, on the 6th of September, came in sight of the Russian army posted upon a series of eminences extending southward from the village of Borodino, on the Moskwa; the position selected by Kutusof whereon to fight a battle in defence of the capital, which he had solemnly promised to cover, and at the same time to annihilate the French army. This position was covered by redoubts and intrenchments, announced in the official reports as inexpugnable; and the Russians were animated by the predictions of their priests, and by the sight of a miraculous image of the Virgin, which was carried through their ranks. Kutusof also prophecied victory. "God," said he, "is about to combat the enemy with the sword of St Michael, and before the sun of to-morrow shall have descended below the horizon, you will have written your faith and your fidelity, in the fields of your country, with the blood of the aggressor and his legions." On reaching the ground, Napoleon drove the Russians from an advanced redoubt, established his line opposite to theirs, and made the necessary preparations for the conflict of the morrow. But he refused to manœuvre on the enemy's flank, or make any movement to intercept them, lest such an operation should induce them to withdraw, and thus put off the long-wished-for battle.

Battle of Borodino.

The sun of the 7th September rose in peaceful splendour on the mighty hosts arrayed for conflict, and was hailed by the French as the sun of Austerlitz, an omen of victory. Before daybreak Napoleon was on horseback, and with the first light of day the following address was read at the head of each regiment in the French army. "Soldiers, here is the battle you have so much desired. Victory must now depend upon you. It will secure you abundance, good quarters, and a speedy return to your native country. Conduct yourselves as at Austerlitz, at Friedland, and at Smolensk. Let people say of each of you with pride, 'He was at the great battle fought on the plains of Moscow.'" The corps present were, besides the old and new guard, those of Marshals Davoust and Ney, of the viceroy of Italy, Eugene Beauharnais, and of Prince Poniatowski; and the four large corps of cavalry, commanded respectively by Generals Nansouty, Montbrun, Grouchy, and Latour-Maubourg, were all under the superior direction of the king of Naples. In the Russian army, Barclay de Tolly, dispossessed of his functions as general-in-chief, commanded the right, Beningsen held the centre, and Bagration commanded the left. Redoubts strongly armed, and numerous batteries, covered the front and the wings. The respective numerical force of the hostile armies has not been satisfactorily ascertained. It appears, however, that the French army exceeded one hundred and thirty thousand combatants of all arms, and that the Russians were even more numerous. The latter had also the advantage of position, and were animated both by religious and patriotic feelings; but they were about to contend with soldiers equally intelligent and brave, led on by consummate generals, and all under the direction of the greatest master in the art of war whom modern times had produced. At six in the morning the fire of a French battery gave the signal of battle; and General Compans, belonging to the corps of Marshal Davoust, commenced the attack. The intention of Napoleon was to carry the first batteries on the Russian left, and then to take in flank and reverse a great redoubt in the centre. Hence, although the action commenced along the whole line, the weight of the attack was directed against the batteries just mentioned. But, as might have been anticipated, the assailants were met by a gallant and determined resistance. Compans, who commanded the leading division, was wounded; Rapp, who succeeded him, was also wounded; and Davoust himself received a hurt from the fall of his horse, which was killed under him. For a moment the attack faltered; but victory came from a quarter where it was least expected. Instead of holding back, according to his orders, the viceroy of Italy, perceiving the relaxation in the attack, pushed forward to the village of Borodino, which he carried in the most gallant manner; and improving his advantage, he dashed across the river to attack the great redoubt. The corps of Davoust now redoubled its efforts, drove Bagration from his batteries, and before midday, after more than four hours close combat maintained with extraordinary tenacity, three redoubts had been carried by Prince Eugene and Marshals Davoust and Ney, whose corps formed the right wing, and were prolonged towards the centre. The road to victory being thus opened, it was necessary to follow it up; but Murat, Ney, and Davoust, exhausted by their exertions, stopped, rallied their troops, and sent to Napoleon to demand reinforcements. Segur, who describes this celebrated battle in a pompous and affected style, gives long details respecting the alleged hesitation and uncertainty of Napoleon, as well as the orders and counter orders which he is said to have issued to his generals. It is certain, however, that he retained the young guard in a state of inaction, not thinking it necessary to order it to advance, notwithstanding the urgent solicitations of Murat to that effect. To those who pressed him to accede to the instances of the king of Naples, he replied, that he wished to see better how matters stood; that his battle was not yet commenced; that it was necessary to wait; that time entered into every thing; that it was the element of which all things were composed; that nothing had as yet been sufficiently cleared up. Then he asked the hour, and being told it, added, " That of the battle has not yet come. In two hours hence it will commence." The event proved that Napoleon judged more wisely than his impetuous lieutenant. To have ordered up his guard and brought forward his reserves whilst the state of the battle remained uncertain, would have been to risk all upon one throw of the dic. Accordingly, in the afternoon, a second, or, as Baron Fain calls it, a third battle commenced; all the Russian batteries were successively attacked and taken; the most formidable of their redoubts, that in the centre, was carried by a charge of cuirassiers; and the Russians, defeated at all points, were forced to abandon the field. The result of this day was such as might have been expected from an army like that commanded by Napoleon. Notwithstanding the boasting of the Russian generals, their army, with all its advantages of position, had been totally defeated; and the shades of night, which descended too late for the vanquished, but too soon for the victors, in this bloody field, concealed the retrograde movements of Kutusof, who now took the direction of Moscow.

Occupation and burning of Moscow.

At the same time this battle was, without contradiction, one of the most obstinate and bloody recorded in military annals. The loss of the Russians exceeded thirty thousand men killed, wounded, or prisoners; that of the French was considerably above twenty thousand. On the side of the Russians, Prince Bagration fell in the battle, and fifty general officers were either killed or wounded; on that of the French, two generals of division and six generals of brigade were killed, whilst Compans, Nansouty, Grouchy, Latour-Maubourg, Rapp, Morand, Friand, and La Houssaye, were more or less severely wounded. But although the victory remained with Napoleon, his prospects were still sufficiently gloomy; and in the bivouacs of the army discouragement prevailed. Seven or eight hundred prisoners, and about a score of broken cannon, were all the trophies he had won. Subsistence also began to fail, and to the torments of hunger were joined the rigours of a cold and rainy night. But with the return of day the natural vivacity of the French revived; preparations were made for pursuing the enemy, who had been suffered to retire unmolested from the field of battle; and on the 14th the inhabitants of Moscow, whom Kutusof had taught to believe that he had just gained a great victory, beheld the Russian columns in full retreat, and the French advancing to occupy their city. But the governor, Rostopschin, had taken measures for rendering the possession of Moscow useless to the French. When the latter entered, on the 14th of September, the ancient capital of Russia remained in all its original splendour; and Napoleon took up his abode in the Kremlin, anciently the residence of the czars. But a new and unlooked-for enemy suddenly appeared. On the very day of occupation fires appeared in different quarters of the city; but, in the bustle and confusion incident to the arrival of a great army, they were neglected. On the 15th and 16th vigorous measures were taken to arrest the progress of the flames, which, however, were incessantly renewed; on the 17th the conflagration, fanned by a high wind, spread rapidly; on the 18th the city presented the sublime and appalling spectacle of a vast ocean of flame; and by the evening of the 20th nine tenths of Moscow had been reduced to ashes. The Russians, with their habitual duplicity, endeavoured to cast on the French the odium of an act unexampled in history, and one too which the latter had every imaginable interest, if possible, to prevent; but there no longer remains a vestige of doubt that the burning of Moscow was the result of a premeditated plan, and that it was effected by incendiaries, employed for the purpose by the Russian authorities, acting, no doubt, under the sanction of the Emperor Alexander himself. Of this the proof is abundant and conclusive. Inflammable materials, deposited in a great number of deserted houses, were fired at the same instant; to all the public establishments, nay even to the hospitals, the torch of the incendiary was likewise applied; the flames broke out in many different places at once; and, independently of all testimony to the fact, every circumstance connected with the conflagration showed design and premeditation. On the other hand, it must be equally evident that no officer in the empire, however elevated in rank, would, without positive orders, have taken on himself the responsibility of such an act; that, in short, the terrible resolution to destroy the ancient capital of the empire must have formed part of the defensive policy of the philanthropic autocrat of all the Russias, and that Rostopschin was merely an executive instrument in carrying this resolution into effect. We may add, as illustrative of this desperate and unwarrantable sacrifice, that no provision whatever had been made for sheltering the miserable population, who were driven to seek an asylum in the neighbouring woods, and that more than twenty thousand sick and wounded perished in the flames.

Position and plans of Napoleon.

The grand object of the mighty expedition against Russia had been attained; the country had been overrun; a great battle had been fought and gained; and Moscow, or rather its ashes, had been occupied by the French. But yet no messenger of peace came to the head-quarters of Napoleon; no sign of submission appeared; no sinking of confidence showed itself. The Russians were evidently prepared to sacrifice all that is most esteemed or valued by a nation; and when the campaign was considered as terminated, peace had yet to be conquered. By the destruction of Moscow, Napoleon had been deprived of the fruits of the victory which he had so dearly purchased, namely, winter quarters for his army, and a position where he might at once collect means for further aggression, and assume the language of a conqueror. His situation had become eminently critical. What course ought he to have followed? His instant conception was to march to St Petersburg, cut off Wittgenstein, and then effect a junction with Macdonald. The project was a magnificent one; and though it would have required gigantic efforts to carry it into execution, success would, in all probability, have crowned the daring enterprise. There was, in reality, no time for hesitation. Prudence counselled immediate retreat, which, however, had many disadvantages, particularly from the influence it would exert upon public opinion. Genius suggested a bolder scheme, which, if successful, would have ensured, not only safety, but victory; and, in extreme peril, the excess of audacity often becomes a dictate of wisdom. But without the concurrence of the chiefs such an enterprise was impossible; what Napoleon might plan, they alone could execute. These men, however, were no longer the devoted and enthusiastic soldiers of the Republic. War had enriched them; and from the enjoyment of riches they had become tired of campaigns. Throughout the whole of the expedition they had been churlish, discontented, and quarrelsome; and hence, instead of seconding the bold proposition of the emperor, they counselled retreat by a new and circuitous route to the south. Napoleon could not persist in a project which his officers refused to execute; their plan was equally obnoxious to him; and between these conflicting opinions precious time was irrecoverably lost. This was the fatality which ruined all. Instead of deciding either on immediate retreat, or on following out the emperor's splendid project, they loitered in a state of indecision at Moscow, as if waiting to be devoured by a Russian winter. In these circumstances, Napoleon had recourse to the only expedient left him; he sent Lauriston with proposals of peace, and vainly waited in the Kremlin, which the conflagration had spared, an answer never to return. The course of events had so far changed as to justify Alexander in declining to negotiate with an enemy in the heart of his dominions. The destruction of Moscow, and the inactivity of the French, had rendered their retreat matter of absolute certainty; whilst the re-establishment of peace with the Ottoman Porte having enabled the army of the Danube to quit Moldavia, and effect a junction at Lutsk in Volhynia with the army of reserve under General Tormasof, a powerful force was thus accumulated upon their only line of retreat. In consequence of the treaty with Sweden, the troops employed in Finland had also been withdrawn, and disembarked at Riga to join the force destined to act against Macdonald. In a word, every day was improving the situation of the Russians; every hour was adding to the embarrassments which beset the invaders. At length the affair of Winkowo decided Napoleon. On the 18th October, Kutusof, desirous to prevent the junction of Marshal Victor, who had set out from Smolensk, attacked the king of Naples, who covered Moscow with the advanced guard of the army, and completely defeated him.

Retreat from Moscow.

On the 19th of October, after an occupation of forty days, Napoleon evacuated Moscow with the main body of his army, leaving Marshal Mortier, with the rear-guard, to blow up the arsenal, the magazines, and the Kremlin. In ordinary seasons the frost did not set in until after the middle of November, and hence a month of open weather might still be reckoned on. Sufficient time, therefore, remained to enable the French army to arrive at Smolensk, and there establish itself in winter-quarters; further retreat was not contemplated. But instead of choosing the direct road, Napoleon now adopted the plan originally proposed by his officers, and retired by the southern or old Kalouga road. His reasons were, that a retrograde movement along this route had not the appearance of retreat; that it led through provinces which had been wasted neither by the Russian system of defence nor by the actual presence of war; and that this circuit would afford time to the rear-guard to evacuate Moscow. He therefore manœuvred, in the hope of concealing his design from Kutusof, and then suddenly advanced in order to anticipate the enemy, and occupy the important town of Kalouga. But the Russians somehow received information of his intention, and reached Malojaroslawitz, thirty leagues south of Moscow and fourteen north of Kalouga, in time to oppose the march of the French. A sanguinary engagement now ensued (20th October) between the advanced guard, seventeen thousand strong, under Prince Eugene Beauharnais, and the Russians, about four times that number, under Kutusof; but the success of the French was decided and confirmed by the arrival of Generals Gérard and Compans, belonging to the corps of Marshal Davoust. The Russian general, in his official report of the battle, admits that he was repulsed, but states that the town was taken and retaken eight times. The action, which lasted from five o'clock in the morning until ten at night, cost the Russians from eight to ten thousand, and the French more than five thousand men *hors de combat*. This unexpected rencontre, and the violent efforts made by the enemy, convinced Napoleon that his enemies were far from being enfeebled or discouraged; he therefore abandoned his project of retiring on Smolensk by the old Kalouga road, and fell back on the direct route leading through a ravaged and deserted country. It is not a little singular that Kutusof, afraid of a renewed attack, had also at nearly the same moment issued orders for a retreat. At Wiasma, fifty-six leagues west of Moscow, the French rear-guard, on the 3d of November, repulsed the enemy after an obstinate and bloody action, supported by Prince Eugene, Marshals Davoust and Ney, and General Compans. The French ranks were thinned to the extent of four thousand killed and wounded, and, in continuing their retreat, they were obliged to abandon several broken cannon, and nearly all their baggage. On the 7th of November the French army, which had been fifteen days in full retreat, and continually harassed on its flanks by parties of Russians, reached Smolensk.

Retreat from Smolensk.

The cold had already set in with excessive severity. The fluid in the thermometer of Reaumur, which during the first days of November had stood at eight or ten degrees below zero, now descended to eighteen; sombre vapours obscured the sun; and violent tempests of wind drifted the snow which, covering the soil, filled up all the inequalities of its surface, and thus added new dangers to the horrors of this dreadful winter. The horses, perishing by thousands in the bivouacs, were no longer sufficient to drag the artillery. Nor was the condition of the troops in any respect less disastrous. After the affair of Malojaroslawitz, the strength of the men utterly failed. Their privations, painful at Moscow, became every day more cruel. Destitute of biscuit, and provisions of every kind, the army had traversed about a hundred leagues of country entirely ruined, in which it had never fought except by the light of conflagrations; the horrors of devastation extended six leagues on either side; and it was incessantly assailed by clouds of Cossacks. Its disasters augmented at each step, and in frightful progression; and all were attributable to its head, who, by an inconceivable blindness, had foreseen nothing, calculated nothing, employed none of the most ordinary precautions which a general is bound to take for the support of his troops, and whose improvidence devoted them to still more deplorable calamities. The magazines nearest Moscow were at Smolensk; but these afforded only a momentary relief, and all transport had become impossible. Nor was this all. Wittgenstein, reinforced by new levies, had defeated Saint-Cyr on the Dwina, and taken Witepsk, thus cutting off the retreat to Wilna; whilst Tschitchagof, commanding the army of the Danube, had orders to advance from the south, seize upon Minsk, and thus bar the only other practicable road to the westward. To remain at Smolensk was therefore out of the question. The least retardation of the retreat would inevitably have led to a general battle, which the army was not in a condition to risk, owing to the impossibility of connecting the centre with the wings. The excessive cold which set in on the 6th had disabled and destroyed a great number of men and horses. The army could neither procure information nor defend itself; its only resource, therefore, consisted in marching without intermission in order to reach Minsk (the great depôt of munitions and provisions), or at least the Berezina, before the enemy, who, being master of the country, was now advancing in the opposite direction, and extending his corps on the flanks. Yet in these frightful circumstances, when the French were simultaneously assailed by famine, disease, winter, and hostile armies, Napoleon tarried seven days at Smolensk, which was only evacuated on the 14th November. Nevertheless he took one good measure, in rallying under a single officer the wrecks of the cavalry. Of thirty-seven thousand horsemen present at the passage of the Niemen, there now remained little more than eight hundred mounted, the command of whom was given to Latour-Maubourg. The old and young guard had no more than ten thousand bayonets, with two thousand horses mounted; Davoust had under his orders nine thousand men, Ney five thousand, Prince Eugene five hundred, Poniatowski from eight to nine hundred, Junot seven hundred, Latour-Maubourg (including the remains of the cavalry) fifteen hundred, with about a thousand light horse, and five hundred dismounted dragoons; in all thirty-six thousand men, the miserable remnant of about four hundred thousand combatants, French, Poles, Italians, and Germans, who had crossed the Niemen at Kowno.

Affair at Krasnoi.

With the retreat from Smolensk commenced a new series of disasters. On the 16th November, Minsk, with all its magazines, having been uncovered by Schwartzenberg, who suddenly retired behind the Bug, fell into the hands of General Lambert, commanding the advanced guard of the army from Moldavia; and the only refuge of the French was thus cut off. Upon the same day Kutusof attempted at Krasnoi, ten leagues west of Smolensk, to intersect the French columns on the great road leading from Smolensk to the Berezina. He advanced with seventy thousand infantry and thirty thousand cavalry; the French mustered only twenty-five thousand effective combatants, who had lost many of their cannon, and three-fourths of their horses. But Prince Eugene and Marshal Davoust stood their ground with admirable firmness; whilst General Roguet, commanding a division of the young guard, charged the Russians with such fury that he drove them back at the point of the bayonet into their camp, which he entered pell-mell along with them, scarcely allowing them time to throw their arms into a neighbouring lake, and set fire to their huts. This shock suspended the movement of the Russian army for twenty-four hours. On the 19th, Marshal Ney, left in command of the extreme rear-guard, with six thousand combatants, found himself attacked by enormous masses of the enemy, which intercepted his march. Finding himself unable to break through, he retired before them, surprised the passage of the Dnieper, forced his way amidst clouds of Cossacks, and rejoined the main body of the army, from which he had been two days separated. On the 21st the Russian generals Lambert and Langeron took possession of Borisow on the Berezina, and by the occupation of this point cut off the body of the French army, which was still five or six marches to the eastward. But on the 23d Marshal Oudinot, who, since the abandonment of the positions upon the Dwina, immediately preceded the army in retreat, retook this important post, and maintained it in spite of every effort that could be made to dislodge him.

Passage of the Berezina.

At Borisow, which had thus been regained by Oudinot, the passage of the Berezina, the principal difficulty in the march of the French towards the Niemen, could alone be effected. But their situation was perilous, not to say desperate. The line of the Dwina had been forced; Schwartzenberg, whose defection was no longer disguised, had retired behind the Bug; no difficulty of position arrested the enemy in his decisive operations; the whole country was in his hands, whilst the French had only the narrow line upon which they retreated. The former lived in abundance, the latter suffered almost every privation. The teams of the Russian artillery were in good condition; the horses of the French were dying of cold and hunger, or, from being unfrosted, could not support themselves on a soil entirely congealed. In a word, the remains of the French army seemed about to find a grave in the marshes of the Berezina, the ice of which had suddenly thawed, as if to swallow them up. Kutusof pursued them with a fury augmented by each humiliation inflicted on his unskilful pursuit. Pressed on their right flank by Wittgenstein, and on their left by Tschitchagof, who also took them in reverse; with an artillery and a cavalry greatly reduced; extenuated by hunger and fatigue, as well as benumbed by cold; they held out only in the hope of at length reaching the term of so much evil and suffering. A last effort of their courage was therefore their last resource. The different corps of the French army which assembled at Borisow from the 26th to the 28th of November still presented a mass of about eighty thousand men, with a tolerably numerous artillery. They were not yet disorganized. The soldiery, at least that part which came from Moscow, though exhausted by the fatigues of forty days' march over a devastated country, assailed by swarms of Cossacks, overwhelmed with privations, and suffering half-naked the excessive rigours of the climate, recovered their ardour at the sight of the enemy, who now awaited them in the presumption of victory. The corps coming from Moscow also saw themselves supported by those of Marshals Victor and Oudinot, and by the Polish division, which had suffered but little from want of provisions and the rigour of the cold. But it was necessary, first of all, to overthrow sixteen thousand Russians advantageously posted in the debouché of Borisow, on the right bank, and belonging to the army of Tschitchagof, before the junction of Wittgenstein, who closely followed the rear-guard of Victor upon the left bank above Borisow; and also before Kutusof, who marched with the main body of the Russians upon the left flank of the French head-quarters, had time to recover three marches which had been gained on him. Two bridges were accordingly thrown at Weselowo, a village four leagues and a half above Borisow, whilst dispositions were made which seemed to indicate that the passage was to be effected by the bridge of Borisow. The rapid construction of these two bridges, in such terrible circumstances, presents a marvellous instance of what may be effected by the union of bravery and science. At Weselowo, the Berezina, at this time covered with ice, is two hundred and fifty toises broad, and the opposite side extends into marshes, which are traversed by a long and narrow jetty; but, on the other hand, the Weselowo bank is elevated; and hence the difficulty of throwing bridges across such a river would, under any circumstances, have been very great.

On the 28th the intrepid Oudinot, who commanded the rear-guard, having been wounded in repulsing Tschitchagof, whose forces were grouped on the right bank, Marshal Ney assumed the command in the midst of the action, and, at the head of the second, third, and fifth corps, compelled Tschitchagof to renounce the combat. On this occasion, so important for the general safety, Ney, already surnamed the bravest of the brave, displayed a courage which astonished even the most valiant soldiers; and all acknowledged that their safety was due to his invincible tenacity, as well as to the extreme promptitude of his dispositions. Upon the same day, Marshal Victor, who had been left with the rear-guard on the left bank, supported with great firmness the attack of the army of Wittgenstein, and maintained a prolonged resistance, notwithstanding the extreme disproportion of numbers; for, after the capture of the division of Parthouneaux, which on the preceding day had been surrounded and taken, the French had only twelve thousand men, whilst the Russians had upwards of forty thousand. The ninth corps was then obliged to repass the bridges, which were immediately blown up; the artillery, the baggage, and a great number of unfortunates, almost all non-combatants, who had not been able to pass, being abandoned on the other bank. The plain before Weselowo, which is one of considerable extent, presented in the evening a spectacle the horrors of which exceed all description. It was covered with carriages, the greater part overturned and broken, and thickly strewed with the dead bodies of non-military individuals, amongst which were those of many women and children, who having followed the army to Moscow, had also accompanied it in its retreat, and now met with death in different ways. The fate of these unfortunate creatures, in the midst of the mêlée of the two armies, was either to be crushed under the wheels of the carriages or the feet of the horses; struck by the balls and bullets of both parties; drowned in attempting to pass the bridges with the troops; or stripped by the Russian soldiers, and thrown naked on the snow, where the cold soon terminated their sufferings. Besides, the Russians made nearly twenty thousand prisoners, took a hundred and fifty pieces of cannon, being all the artillery that remained except a few pieces, and captured the baggage, amongst which were found the riches and the trophies carried away from Moscow.

Retreat continued. From the Berezina the country is a wooded plateau, converted by the waters into a vast marsh, which the army now traversed on three consecutive bridges three hundred toises in length, astonished that the enemy had not destroyed them, constructed as they were of resinous pines. By accelerated marches the troops reached Malodetchno on the 3d of December, and on the 5th arrived at Smorgoni, twelve leagues west of Willika, where Napoleon conferred on the king of Naples the command of the remains of the army, and set out furtively for Paris, accompanied by Caulaincourt, duke of Vicenza. His apparition at Warsaw is related in lively terms by the Abbe de Pradt. In this capital his conversation was a sort of lengthened discourse, in which he represented his reverses as still capable of being repaired; but by often repeating the maxim, " From the sublime to the ridiculous there is only a step," he showed how deeply sensible he was of the magnitude of his fall. On the 18th of December Napoleon arrived in Paris, where, for many reasons, his presence had become indispensably necessary.

Immediately after his departure from the army the disorder became general; the flight of the chief proved the signal for dispersion; and the greater part of the corps, which had hitherto maintained an appearance of organization, now altogether disbanded themselves. Meanwhile, as the cold continued about twenty-five degrees below the zero of Reaumur's thermometer, a great number of soldiers had their hands and feet frost-bitten; and the horses of the artillery having perished in their harness, the pieces were abandoned. Sixty thousand men had crossed the Berezina, and twenty thousand recruits had since joined; but of these eighty thousand men, nearly the half perished in the four days between Malodetchno and Wilna. The immense magazines collected at Wilna were abandoned for want of means of transport, and the deplorable situation to which the cold had reduced the army prevented it from there taking up a position. The retreat was therefore continued on the 16th, Marshal Ney as usual being the last to retire; indeed, his conduct throughout, in the command of the rear-guard, where he continually exposed himself to protect the life and cover the retreat of the last soldier in a condition to march, displayed an heroic fortitude and generous self-devotion, which, considering all the circumstances, has no parallel either in ancient or modern times. We shall not, however, prolong these painful details, but content ourselves with simply observing, what indeed must be sufficiently obvious, that the disasters sustained by the French in this retreat were mainly caused by the climate, not by the Russians, who have nevertheless taken credit for results in producing which their talents and bravery had no share. The elements did almost everything; and, as is vulgarly said, even in Russia, " It was not General Kutusof who killed or dispersed the French; it was General Morosow (Frost)."

Aspect of affairs. The aspect which affairs presented to Napoleon on his return to Paris was not altogether discouraging. Wellington, victorious at Salamanca, had failed before Burgos, and Madrid remained in the hands of the French. The army, which he had left at Smorgoni, might rally on the Niemen, and, supplied from the unexhausted resources of East Prussia, check the advance of its pursuers. At home a daring conspiracy, which had nearly succeeded when the emperor was believed to have perished in Russia, fell to the ground of itself as soon as the falsehood of the report was discovered. The senate, the court, and the capital, though dismayed by the reverses sustained in the Russian campaign, still appeared loyal and obsequious. The conscription of 1813 had been called out; the powerful artillery of the marine was placed at his disposal; and he calculated on speedily taking the field at the head of a formidable army, sufficient at least to check the advance of the Russians. But this was only a momentary and delusive brightening; a faint gleam of sunshine in winter, which was quickly absorbed in the dark clouds that suddenly collected in all parts of the political horizon. Tidings of evil came crowding in thick and fast. Macdonald having been deserted in presence of the enemy by the Prussian auxiliary corps under Yorck, which constituted his principal force, had with great difficulty, and after a most painful retreat, reached Dantzic, where his troops were left with the governor General Rapp. To think of maintaining the line of the Niemen was therefore out of the question; and even the position upon the Vistula, occupied by the corps composing the grand army, or rather the wrecks of these, confusedly distributed, was menaced by the defection of the Prussians, and also by the conduct, so perfidiously equivocal, of the Austrians under Schwartzenberg, who, having retreated as soon as he received intelligence that the French army had reached the Berezina, had re-entered Gallicia, where his doubtful attitude excited the distrust and apprehensions of the French. Murat, commanding in chief, was little capable of remedying so great disasters, or of warding off so imminent dangers; his military merit consisted in a chivalrous bravery worthy the ages of romance; in the talents and moral tenacity of purpose requisite in situations of extreme difficulty he was entirely deficient. Poland was evacuated, and Germany destined to become the theatre of war. Abandoning the line of the Vistula, as they had previously done that of the Niemen, the French now fell back as far as the Warta and the Oder. Instantly the tocsin of insurrection resounded from the Oder to the Rhine, and from the Baltic to the Julian Alps; and the whole tribe of secondary sovereigns, awakened from their lethargy by the patriotism of their subjects, and dispossessed of the royal delirium generated by their own cupidity and the poisoned gifts of Napoleon, now crowded to join its standards, and to have each a bite at the sick lion. By a proclamation dated from Warsaw, 10th February 1813, the Emperor Alexander invited the Germans, particularly the members of the confederation of the Rhine, to throw off the yoke of France; and, by another dated the 22d February, he called upon the people of Germany to rise *en masse* against Napoleon. In the uncalculating enthusiasm of the hour, when despotism had the art or the good fortune to rally on its side the feelings of nationality and patriotism, the call was obeyed, and the defection became universal. Austria, indeed, still preserved an equivocal and suspicious neutrality, waiting merely until events had more fully declared themselves. But Prussia, taking a more decided part, signalized her defection by the flight of Frederick-William from Pottsdam to meet the Emperor Alexander at Breslau, and still more by concluding at Kalisch (on the 1st of March) a treaty of alliance with Russia, the initial act of a sixth continental coalition against France. The line of the Oder having thus become indefensible, was abandoned by the French for that of the Elbe, where, by great exertions, they still hoped to maintain themselves against all their enemies. Amongst these must now be included Bernadotte, who, by a treaty concluded with England at Stockholm, on the 3d of March, engaged to raise his banner against the country of his birth, and to take the field against his former chief with a corps of national troops at least thirty thousand strong.

Preparations of Napoleon.

The efforts of Napoleon were commensurate to the crisis which had arrived. A decree of the senate, dated the 3d of April, placed at the disposal of the government a hundred and eighty thousand combatants, viz. ten thousand horse-guards of honour, equipped and mounted at their own expense; eighty thousand men, called from the first ban of the national guards of the years 1807, 1808, 1809, 1810, 1811, and 1812, and destined to reinforce the hundred cohorts levied in execution of the decree of the senate of 13th March 1812; and eighty thousand conscripts of 1814, exclusive of the hundred and fifty thousand granted to government by the decree of the 11th of January, and destined for the defence of the frontiers and the coasts. An imperial decree of the 5th April also instituted thirty-seven urban cohorts for the particular defence of maritime places. Decrees, however, though they called forth men, could not create soldiers, who are only formed by discipline and experience.

Campaign in Germany.

On the 15th of April Napoleon left the capital to join the army in Germany, and on the 28th removed his head-quarters from Erfurth to Ekhartsberg. His army, more formidable from the mass than the quality of troops composing it, exhibited an incomplete organization. On the 29th the two French armies formed a junction between Naumburg and Merseburg; that under Napoleon amounting to a hundred and twenty thousand men, including the imperial guard; whilst Prince Eugene Beauharnais had under his orders about forty thousand combatants. It was on the banks of the Saale, where the French eagles had triumphed in 1806, that the veterans of Moscow gave their hands to the young conscripts who had been sent to defend their country in Germany; and on the very day when the junction was effected, Napoleon assumed the offensive. At Weissenfels, five leagues south-west of Leipsic, some Prussian corps were attacked by the divisions of Souham, Gérard, and Marchand, under the orders of Marshal Ney, supported by the emperor in person. Twelve pieces of the guard were placed in line, and, under the orders of General Drouot, opened a close fire of grape, which soon thinned the ranks of the enemy, and forced them to retire; thus rendering unnecessary the reinforcements detached from the army of Prince Eugene as soon as the noise of the cannonade was heard. To prevent Napoleon following up this advantage, and occupying Leipsic, the allies advanced, on the 1st of May, with the intention of giving him battle, and on the 2d the hostile armies met at Gross-Goerschen, near Lutzen, the scene of the last victory and of the death of Gustavus Adolphus.

Battle of Lutzen.

Napoleon did not wait to be attacked in the position which he occupied, but advanced from Lutzen to Gross-Goerschen, where the conflict actually took place. The general dispositions made at the commencement of the action were bad; but their defects were speedily repaired by the promptitude, intrepidity, and experience of Prince Eugene, Marshals Ney, Mortier, Macdonald, Marmont, and Generals Compans, Ricard, Souham, Drouot, and Latour-Maubourg. In checking the impetuosity of the Prussians, and, as it were, compelling fortune to declare in his favour, Napoleon performed prodigies. His unexpected appearance on the field of battle produced an effect equally rapid and extraordinary upon the troops. In an instant the enthusiasm of glory animated the features of the young conscripts, who had been somewhat astonished by their first interview with the enemy; the action recommenced with the greatest fury; and for more than four hours the troops on both sides fought under the eyes of their respective sovereigns. Marshal Macdonald and General Bertrand now arrived with their corps, which, having formed a junction, entered into line. Perceiving that the crisis of the battle had arrived, Napoleon advanced sixteen battalions of the young guard, ranged in a second line six battalions of the old guard, and established a battery of eighty pieces of cannon. The infantry immediately attacked; the artillery thundered on the formidable position of Kaya, on which depended the fortune of the day; and victory, which had long hovered with doubtful pinions over this field of carnage, at length settled on the standards of her ancient favourite. The battle of Lutzen was gained principally by artillery, in which arm the French had a great superiority; but success was dearly purchased, the victors having, by their own account, lost in killed and wounded about ten thousand men. Nor was the victory productive of any brilliant or important results. The want of cavalry prevented Napoleon from pursuing the enemy while in disorder, and the fruits of success were therefore confined to the possession of that part of Saxony which is situated on the left of the Elbe. Still the battle of Lutzen deserves to be considered as one of the greatest achievements of Napoleon. With a mass of raw and scarcely half-disciplined conscripts, the greater part of them mere boys, aided by a few thousand experienced troops, he had defeated the whole Prussian army, assisted by a corps of Russians, and protected by a numerous and greatly superior cavalry.

Battle of Bautzen.

Instead of confining his views to Leipsic, Napoleon now occupied Dresden, and prepared to pursue the allies across the Elbe. Having thrown a bridge across that river, he accordingly marched to attack the Austrians and Prussians at Bautzen, where they were drawn up in a position of great strength, upon the range of hills forming the natural boundary of Silesia. Napoleon forced the passage of the Spree in their front, and occupied Bautzen. The whole of the 20th May was spent in manœuvres and partial combats, the object of which was to enable him to get within reach of the enemy. On the 21st the battle was fought. It commenced by simultaneous attacks directed against both flanks of the enemy; but, owing to the great development of their line, which extended along many leagues, and was intersected by hills, Napoleon found it alike impossible to watch these movements, or, until assured of their success, to order the troops under his own immediate command to advance. He therefore held back the centre, in the midst of which he remained during the cannonade, and being overcome by fatigue, fell fast asleep. At length, upon hearing fresh sounds of artillery in the distance, his attendants awoke him. By the direction of the sound he knew that his wings were victorious, and instantly ordered forward his centre, supported by the imperial guard. This attack proved decisive of the fate of the battle. The allies were beaten, and obliged to abandon their line of defence, which covered Silesia, and to retire into Bohemia. But, as at Lutzen, they retreated without precipitation or disorder, leaving neither cannon nor prisoners in the hands of the conquerors. This negative advantage they owed partly to their superiority in cavalry, and partly also to their position. At Bautzen the Prussians fought well, the Russians indifferently. With the former the quarrel had long become national; the latter were far from their homes, and careless whether they advanced or retreated. The victory of Bautzen uncovered Silesia, and opened to the French a passage to the Oder. Glogau was relieved, Breslau occupied, and Berlin itself menaced. The Russian and Prussian armies were obviously unable to cope with the young soldiers of France; and hence, in retiring into Bohemia, the allies renewed their instances with Austria, to induce her to join the coalition. Accordingly, on the day after the battle of Bautzen, a message reached the French head-quarters, proposing an armistice. We shall immediately see how Napoleon was first deceived, and then insulted, by a power on whose neutrality he had too hastily calculated.

Subsequent operations.

At Goerlitz, in Lusatia, the French were severely handled, and lost several cannon. This affair took place on the 22d of May. The enemy, however, continued their retreat towards the Oder, followed by Napoleon, who had astonished Europe by the spontaneous creation of a new army, and whose late success had re-established his renown. On the 30th Hamburg was retaken by Marshal Davoust and General Vandamme, who thus recovered the territory situated on the right bank of the Lower Elbe, which had been annexed to the French empire by a decree of the senate dated the 13th December 1810. On the 4th of June an armistice was concluded at Plesswitz in Silesia, between Napoleon and his enemies. The French were only to occupy a small part, and that the least fertile, of Silesia; their line was not to extend to the Oder, except in a space extremely confined; and Breslau was to remain free between the two armies; so that the French were, in some sort, pressed into a country devastated, burned, exhausted, and menaced with famine. In subscribing conditions so extremely disadvantageous, Napoleon was no doubt influenced by the hope of seducing his enemies, or disuniting their formidable coalition, and also by the desire to gain time in order to repair his losses by means of very considerable reinforcements which he expected from France, and by means of which he would be enabled to act with larger masses. Victory had again returned to his standards, and he confided in the power of his genius for repairing every disaster, and obtaining new triumphs. The enemy were also guided by the same desire of augmenting their forces, without wishing, however, that the armistice should be followed by a peace. They reckoned on a general rising in Germany; on the defection of the confederation of the Rhine; on popular movements in Holland, Switzerland, the Tyrol, Italy, Dalmatia; on the progress of Wellington in the south of France, since the departure for Germany of part of the troops who had been opposed to him. They also calculated upon disturbances in France; and, above all, they hoped to see Austria, already under arms, take an active part in this war, which, even from the geographical position of the theatre of operations, could scarcely fail, if she took part in the contest, to become fatal to the French.

Negotiations; Austrian perfidy.

Napoleon, therefore, could not disguise from himself that the politics of all the continental powers seemed on the eve of experiencing great alterations; but still he endeavoured to persuade himself of the contrary. On the 14th of June a treaty was concluded at Reichenbach, twelve leagues from Breslau, by which England agreed to grant Prussia a subsidy of L.666,666 sterling, to enable her to continue the war; and, by the same treaty, a subsidy of L.1,333,334 sterling was also granted to Russia for the same purpose. Austria now offered her mediation, which, by a convention signed at Dresden upon the 30th June, was accepted by Napoleon. The professed object of this mediation was the accomplishment of a general peace, or, if that could not be effected, a continental pacification. With this view a congress was to be opened at Prague on the 5th of July; and, in the mean time, the armistice of Plesswitz was prolonged until the 10th of August. In signing this preliminary act, Metternich commenced that course of duplicity for which he has since become so deservedly famous in Europe, and Austria remained faithful to her oblique system of policy, even more so indeed than to that of temporising, which she has at all times followed. At this moment her only aim was to profit by all the chances; in transporting, or rather hawking, her alliance from camp to camp, she had but one view, namely, to be always on the side which should obtain the division of the spoil. As Russia desired Poland, and Prussia Saxony, so Austria had her eye continually fixed on Italy. Her mediation, therefore, was neither more nor less than a manœuvre to gain time and enable her to watch events. The peace was altogether a pretext of the allied cabinets, to mask their real views. The opening of the congress of Prague on the 12th of July, to which day it had been postponed, clearly indicated the objects which were aimed at. In the absence of one of the two French envoys, the ministers of Austria, Prussia, and Russia, commenced the conferences, and promptly decided that Germany should remain independent; they, however, consented to leave Napoleon in possession of the French empire, with the boundaries of the Rhine and the Alps. This was not negotiation, but dictation; not an attempt to conciliate or adjust interests, but to give the law. Italy was disposed of by an implication, in the absence of the principal French negotiator; the confederation of the Rhine was annihilated; and Napoleon, though victorious, was called upon to accept of terms which would have been sufficiently harsh and humiliating after defeat. But this was merely insulting. Perfidy followed. The armistice expired upon the 10th of August; and it was not until the 7th of that month that the Austrian minister at Prague brought forward the conditions definitively fixed by his court as necessary to the pacification of the Continent. He demanded, first, the dissolution of the duchy of Warsaw, and its partition between Russia, Austria, and Prussia; secondly, the re-establishment of the towns of Hamburg, Lubeck, &c. in their independence; thirdly, the re-construction of Prussia, with a frontier on the Elbe; fourthly, the cession to Austria of all the Illyrian provinces, including Trieste; fifthly, a guarantee that the state of the powers, great and small, such as it might be fixed by the peace, should not be altered except by common consent. The question of the independence of Holland and Spain was at the same time brought forward; but the plenipotentiaries of the allied powers seemed inclined to consent that it should be adjourned until a general peace. The answer of Napoleon, containing certain proposed modifications, was promptly returned, and, by incredible expedition, it reached Prague in the night between the 10th and 11th; but the confederate powers, impatient to appeal to arms, broke up the congress on the very hour when the armistice expired on the 10th, and absolutely refused to receive or consider the answer which had been returned. On the 12th of August Austria declared war against France, and notified officially her adhesion to the alliance of Russia and Prussia.

Resumption of hostilities.

The allies had derived great advantages from the armistice. By maintaining themselves in Silesia, they had secured time for the arrival of the Swedish army under Bernadotte, and the Russian corps under Sacken, as well as for the organization of the Prussian troops, and the formation of the army of Beningsen in Poland. The armistice had covered Berlin; it had also been of great use to Austria, in enabling her to complete her armaments, as well as to render more active her negotiations with the states of the confederation; whilst Napoleon derived from it no real advantage except that of fortifying his line of operations on the Elbe, which it was his object to maintain. Placed *à cheval* on that river, with the head of his army at Dresden, and the rear at Hamburg, he supported himself on all the fortified points which secure the possession of that large and beautiful valley, namely, Konigstein, Dresden, Torgau, Wittenberg, Magdeburg, and Hamburg, with its dependencies on the Elbe, and Merseburg, Erfurth, and Wurtzburg, which connect the Rhine with the Elbe. But he lost upon the Oder the garrisons of Kustrin, Stettin, and Glogau, and upon the Vistula those of Modlin, Thorn, and Dantzick; garrisons which absorbed more than sixty thousand men. The grand French army, divided into fourteen corps, in which the Italian, German, and Polish auxiliaries were incorporated, was inferior to that of the allies with which it was now about to contend, in the proportion of two to five. These corps were generally weaker than during the preceding campaigns, and, united, they did not exceed two hundred and eighty thousand effective combatants, of whom the half were recruits who had never been in fire. The allies, on the other hand, had under arms five hundred and twenty thousand men, of whom about four hundred and fifty thousand were on the principal theatre of operations, viz. Austria, a hundred and twenty thousand men, including the forces sent to Italy, and the reserves; Russia, a hundred and thirty thousand; Prussia, a hundred and eighty thousand, exclusive of the *landsturm* or levy *en masse;* and Sweden, thirty thousand, including the Mecklenburg and Hanseatic troops; making the total as above mentioned. The French army was therefore inferior to that of the allies by two hundred and twenty thousand men; yet, notwithstanding this inferiority of force, Napoleon resolved to maintain his position at Dresden, and to try the fortune of arms upon the Elbe. On the 11th the Austrians effected a junction with the Prussians, in the hope of anticipating Napoleon; but, as we shall immediately see, they were themselves anticipated.

Preliminary operations.

Having divined the plan of the allies, which was to direct their forces from three points upon Dresden (viz. from Berlin on the north, Silesia on the east, and Prague on the south), and there concentrate them to make a combined attack on that position, Napoleon calculated that before their grand army, debouching from Bohemia, could arrive under the fire of the redoubts constructed around Dresden, he would have time to execute a combined operation by simultaneously attacking Berlin on the north, and projecting his army of Silesia towards Breslau on the east. With this design, he first executed a military march in Lusatia on the 16th of August; on the 18th he advanced as far as Görlitz, near the frontier of Silesia, threatening to throw himself upon Blucher, who commanded a powerful army; then, abruptly changing his direction, he turned towards Bohemia, in order to ascertain if it might still be possible to prevent the junction of the forces in Silesia with the Austrians. But, although Napoleon was still ignorant of the fact, neither of them had waited till the 16th to commence the development of their hostile manœuvres. He however marched with the second and eighth corps under Victor and Poniatowski, supported by the first and fourth corps of cavalry under Lefebvre-Desnouettes and Kellerman. Debouching from the environs of Zittau, these troops passed the frontier, advanced by the defiles, and occupied Reichemberg on the Neisse, and Friedland on the Willich. But having received information that the enemy, apprised of his departure from Dresden, were pouring their masses in that direction, Napoleon, calculating that they would require eight days to assemble under the walls of that place, countermarched, and, like an arrow shot from a bow, flew to attack Blucher, and drive him beyond the Bober. On the 21st of August he crossed the Bober, on the 22d he repulsed the enemy on the bank opposite to Katzbach, and again defeated them on the 24th. Three days had sufficed to inflict two defeats on the enemy, and to re-establish his eagles in advance in Silesia. But as it was now time to return to Saxony, into which the great mass of the allied army had, on the 20th, descended from the mountains of Bohemia, he faced about, and leaving seventy-five thousand men under Macdonald to keep Blucher in check, he arrived at Dresden on the 26th. But the effect produced by this bold and brilliant operation was in a great measure lost by the failure of Oudinot, who was charged with the execution of one of the three great parts of the campaign, namely, the attack upon Berlin. Brave in the advanced guard, Oudinot was deficient in the strategic ability necessary for conducting great operations. Instead of advancing promptly, he hesitated, lost precious time, and allowed the enemy to penetrate his design, and also deprive him of the lead. He was beaten at Gross-Beeren; Berlin was saved; and the combined armies had now the facility of advancing into the heart of Germany, and operating their junction in the plains of Leipsic.

Ascendency of Napoleon's genius; reverses.

Wherever Napoleon appeared personally, his ascendency was instantly manifest. But his lieutenants had neither his genius nor his foresight, and were as inferior to him in activity and energy as in talent and capacity. Near the Bober, a tributary of the Oder, and the Queiss, a tributary of the Bober, Marshal Macdonald, in full retreat from Silesia after his defeat on the Katzbach (26th of August), was again, from the 27th to the 29th, discomfited in a series of actions at the passage of these two rivers, which the rains had swollen and converted into rapid torrents. By the results of this isolated and accessory campaign of a few days, the French army lost fifteen thousand men, and a hundred pieces of cannon. The defeat and surrender of Vandamme followed. Wishing to drive the allied army which had fled from Dresden into the defiles of Bohemia, Napoleon sent eastward, by circuitous roads, the first, sixth, and fourteenth corps, with a numerous cavalry, to threaten their flank, and force them back into the mountains. Vandamme commanded the column on the left, Saint-Cyr and Marmont that of the centre, whilst the king of Naples, with the cavalry, formed the right. On the evening of the 28th the imperial head-quarters had scarcely been established at Pirna, when Napoleon was suddenly seized with violent shivering, followed by vomiting. The persons around him were seriously alarmed, but he himself felt more disquieted by the consequences which might result from an accident so unexpected, than even by his illness, which was the effect of exposure to cold and rain during the late battle. Profuse perspiration, induced during the night, afforded him immediate relief, and in the morning he found himself almost entirely recovered; but, unable from weakness to continue with the troops, he returned to Dresden. This accident detained the guard at Pirna; whilst the two corps forming the columns of the centre, having experienced great difficulties in ascending the mountains and penetrating the defiles, made little progress during three days. But Vandamme having on the 28th dislodged an enemy's corps from the position of Peterswalde, descended next day as far as Kulm, and advanced into that deep valley, in the hope of seizing Töplitz, the rendezvous of all the enemy's columns scattered in the mountains. His advanced guard had approached within half a league of Töplitz, and he only waited for his reserves to force the last obstacles, when all of a sudden the enemy, ceasing to give way before him, stood firm, and made the most determined resistance. The enterprise being thus checked, Vandamme, instead of persisting, ought to have renounced it, and, profiting by the night, regained the position of Peterswalde. He did the contrary; and the enemy being powerfully reinforced, he was soon attacked both in front and flank, by at least sixty thousand Austrians and Russians. For several hours, however, he resisted all their efforts, retrograded without being broken, evacuated Kulm, and prepared to ascend to Peterswalde; but Kleist and his Prussians having escaped from Saint-Cyr, and found the position evacuated, had just occupied it. In vain did the French, by the most gallant efforts, endeavour to break through the enemy, which now cut off their retreat; in vain did the cavalry, clearing their way with their swords to the very crest of the escarpment, seize the whole artillery of Kleist; the cannon were promptly abandoned, and, overwhelmed by hosts of enemies before and behind, the greater part were either taken or dispersed in the mountains. Vandamme, severely wounded, was made prisoner, dragged in triumph to Prague, and subjected to every species of insult, in retaliation of certain acts alleged to have been committed by him in the countries conquered by the French. Nor did the misfortunes of Napoleon's lieutenants stop here. On the 6th of September, Ney, who had been sent against Berlin, with his own corps and those of Oudinot, Reynier, and Bertrand, was defeated at Dennewitz by Bernadotte, and lost two thirds of his artillery, his ammunition, his baggage, and more than twelve thousand men. This disaster was occasioned by the misconduct of two Saxon divisions, whose fidelity had already been shaken.

Position and views of Napoleon.

Although the victory of Dresden had disconcerted the first plan of offensive operations adopted by the allies, it no longer exercised any influence on the campaign. The anterior defeat of Oudinot at Gross-Beeren on the 23d of August, that of Vandamme at Kulm on the 30th, and the grave checks received by Macdonald on the Katzbach and the Bober from the 26th to the 29th, enabled the allies to pour three hundred thousand men into Saxony. The route of Ney rendered the position of the French army still more critical, inasmuch as the right wing of the enemy, arriving on the Elbe, was in a situation to intersect its communications with Leipsic and Franconia. Immediately after the battle of the 27th, Napoleon had marched with the old and young guard, and other reinforcements, to succour Macdonald; but the news of this disaster recalled him to Dresden. From this central position, which certainly had many advantages, he hoped to direct his operations in such a manner as to repair all the faults committed by his lieutenants; he confided in the power of his own genius, and never perhaps was its ascendency more conspicuously displayed. Every thing, in fact, gave way before him. Blucher, who had defeated Macdonald, durst not commit himself against Napoleon; Wittgenstein, who had made an irruption into Saxony, was driven back into Bohemia; and similar attempts repeated by each of those generals met with the same fate. In fact, the operations around Dresden resembled what Homer recounts of the siege of Troy. When Achilles rushed forth, the enemy were instantly routed and put to flight; when he retired, they took courage, and failed not to gain some advantage. The plan of Napoleon was magnificent, and though bold even to temerity, he had fully estimated all the chances. So far from entertaining any apprehension of being cut off from France, he waited at Dresden until the allies had so far committed themselves as to be no longer able to avoid a general and decisive battle. His delight was to be surrounded by enemies, with his army, which he knew so well how to direct, compact and in hand. But his generals shrunk from such daring warfare. Brave and skilful as lieutenants, they had none of that boldness and grasp of mind which distinguished their illustrious chief. But the expected crisis was now approaching. On the 7th of October Napoleon quitted Dresden, leaving in that place Saint-Cyr with about thirty thousand men under his orders. After having manœuvred on the banks of the Mulde, so as to intercept the communications of the armies of the north and of Silesia, he attacked them on the 11th, 12th, and 13th, and forced them to retreat. It is even said that he proposed allowing the allies to place themselves in the interval between the Elbe and the Saale, and, covering himself by the fortified places on the Elbe, of which he was master from Dresden to Hamburg, to establish the war between that river and the Oder. On the 14th the imperial head-quarters were still at Düben on the Mulde, when Napoleon received intelligence of the defection of Bavaria, and of the treaty of Ried concluded on the 8th; but on the 15th they were removed to Leipsic, where Napoleon arrived early in the day, hoping that he would only have to do with Schwartzenberg. In this, however, he miscalculated.

Battle of Leipsic.

On the 16th of October the allies approached; Bernadotte and Blucher from the north, and Schwartzenberg from the south. Napoleon opposed himself to Schwartzenberg, and during the entire day kept him in check upon the verge of the hills which border the plain of Leipsic. Ney was less fortunate on the north, where the Prussians under Blucher fought desperately, and at length obliged him to retire with loss behind the Partha. But on the western side of Leipsic Bertrand drove back General Giulay, and thus cleared the road towards France. During the 17th the allies, notwithstanding their superiority in numbers, hung back, awaiting the arrival of Beningsen's army; the day was accordingly spent in partial combats, and in preparations on both sides for the inevitable conflict of the morrow. On the 18th the battle commenced to the north, east, and south of Leipsic, in the vast plain extending beyond Lutzen and Weissenfels, villages celebrated as the scenes of mighty deeds in arms. Leipsic is surrounded with suburbs, excepting in the part towards the west, contiguous to hollows, and facing a plain watered by the Pleiss and the Elster, which are divided into canals, and several times intermingle before their definitive junction. Half a million of men, crowded together on a surface of three square leagues, now engaged with extreme fury in the work of mutual destruction. The disproportion of numbers, however, was enormous. Those of the confederate armies were as follow: Army of Bohemia, Schwartzenberg, 140,000 men; army of the north, Bernadotte, 65,000; army of Silesia, Blucher, 85,000; army of Poland, Beningsen, 40,000; total 330,000 men. The French army was composed of the second corps, Victor; the third, Ney; the fourth, Bertrand; the fifth, Lauriston; the sixth, Marmont; the seventh, Reynier; the eighth, Poniatowski; and the eleventh, Macdonald; together with the imperial guard and the cavalry. Its numbers were as follow: Infantry of the line, 130,000; imperial guard, 30,000; cavalry, 15,000; total 175,000. In numbers, therefore, the allied army exceeded that under Napoleon by no less than a hundred and fifty-five thousand men; and this unprecedented advantage was still further increased by the bad condition of the French squadrons, which precluded the possibility of committing them against even equal numbers of the enemy's cavalry. Napoleon was therefore obliged to rely principally on his artillery; but, pressed on all sides by overwhelming masses, he in vain exhausted his ammunition; the artillery of the enemy was as formidable as his, and latterly better served. Still the French soldiers fought with astonishing courage, and, notwithstanding every effort, maintained their ground. Poniatowski and his gallant Poles kept Schwartzenberg in check. Macdonald was opposed to the Prussians, and, when hard pressed, Napoleon at the head of the guard marched to his assistance, and drove back the enemy. To the north of this attack, Bernadotte, with the army of the north, advanced against Reynier, whose corps consisted chiefly of Saxon and Wurtemberg troops. Eager to encounter the Prussians and Swedes, Reynier ordered these troops to move forward. They obeyed, but it was only to desert and join the enemy. Seven battalions of Saxon infantry, two regiments of Saxon cavalry, and several Wurtemberg regiments, making in all twenty-six battalions and ten squadrons, together with three Saxon batteries of twenty-six guns, passed over to the enemy, and ranging themselves under the colours of Bernadotte, instantly attacked their brothers in arms; in fact, before arriving at any distance, the three batteries were turned against the division of Durutte, forming part of the seventh corps, and swept away entire files by a raking fire. Nevertheless, the emperor, undismayed by this disaster, caused his reserves instantly to advance, and succeeded in checking the enemy, who were now pouring down upon Leipsic. But the army could not long maintain its positions without exposing itself to total ruin. It had neither been broken nor defeated; yet, after its enormous losses, it was evident that want of time alone had prevented the enemy from obtaining complete success. Napoleon was sensible of this; and, on the approach of night, he issued orders for retreat.

Next day, the 19th, Leipsic was taken. The emperor of Russia, the king of Prussia, and Bernadotte, entered by three different gates, and the king of Saxony was made prisoner. Encumbered with the dead and the dying, with fugitives and equipages, this city presented a horrible scene of route and carnage; but the spectacle exhibited by the approaches to the suburb of Lutzen was most appaling; it was a sort of gulf into which the French precipitated themselves, as into a haven of safety. Nevertheless, the combat and the fusillade continued for two hours, during which sixty pieces of cannon horsed, and twelve thousand brave men, were saved: the enemy, master of Leipsic, feared to push to extremity warriors who might set it on fire, and still more to oppose column to column in a confined space. The retreat of the French could only be operated in braving the greatest difficulties. Their route lay through a defile of more than two thousand toises, between marshes, and along five or six bridges; nevertheless the retreat was being executed without very great disorder, when some Russian tirailleurs, gliding along the Elster, arrived near the principal bridge on that river, which had been mined in the night. No sooner were they perceived than the bridge was blown up by the chief of the post of sappers stationed there, who, disregarding the safety of the emperor and of all those on the western bank, fired the train. This accident, occasioned by the absence of the colonel of engineers, to whom the charge of the post had been committed, having cut off the retreat of all those who were still in the boulevards and suburbs, the bravest, those old soldiers who had escaped the casualties of twenty campaigns, only thought of selling their lives as dearly as possible, and perished under the ruins of the houses, which they defended to the last extremity; whilst the greater number believing resistance to be hopeless, fled towards the Pleiss and the Elster. The first of these rivers presented few obstacles; but the other, whose bed is deep and muddy, and whose banks are marshy, swallowed up all those who could not swim. In this number was Prince Poniatowski, who had been created a marshal of France on the 16th, and who on this same day had been wounded whilst performing prodigies of valour on the field of Liebertwolkwitz. Having failed to clear his way through the ranks of the enemies who surrounded and pressed on him, and believing at this extreme moment, when the hands of the Russians were extended to seize his person, that he might find a way to safety through the waters of the Elster, he dashed into the river, and was drowned. Marshal Macdonald, more fortunate, succeeded in clearing the muddy stream. The carnage finally ceased about two in the afternoon. Two hundred pieces of cannon and nine hundred caissons or waggons remained in the hands of the allies. The loss of the French in these two days was immense, being estimated at upwards of sixty thousand men killed, taken, or lost by desertion, exclusively of the wounded. The number killed or mortally wounded on the field of battle did not fall much short of thirty-seven thousand. But the allies paid dear for their success, having lost in killed and wounded nearly eighty thousand men. This is explained by the circumstance that, although their artillery was more numerous than that of the French, the latter played on columns of greater depth and density, and was thus proportionally more destructive. Napoleon arrived in the evening at Marc-Rerstaedt, and there rallied the remains of his army.

Remarks.

Such was the terrible battle of Leipsic, the battle of nations, as the Germans call it, in which the numbers of the combatants arrayed in the field, and the extent of the carnage, exceeded any thing which Europe had witnessed since the use of artillery, and the results of which fixed for a time the fate of the Continent. It is, however, difficult to conceive how a great captain like Napoleon, who had fought thirty pitched battles and gained them all, and who had attained the very summit of military glory, by availing himself with rare ability of the great talents of a crowd of French generals, should have concentrated his army in a position so unfavourable, and accepted a decisive battle in the eastern part of the plains of Leipsic, having in his rear the city, the marshes, and the waters of the Pleiss and the Elster, divided into numerous canals, on which there are but few bridges. The only explanation seems to be, that it no longer depended upon him to choose the position of his army; for, if he had established himself beyond the Partha, the Elster, the Pleiss, and the Luppa, he would have extended his army in a level country, where the enemy's cavalry, in all respects superior to his, would have interrupted and paralysed all his movements. He could not avoid fighting on the 16th, in order to force back the Austrian army from Leipsic, and pass the marshy defile which leads from that city to Lindenau, on the road towards France. But his determination to deliver battle on the 18th cannot be so easily justified. Since the combats of the 16th produced no decided results, how could he flatter himself with being more successful on the 18th, when the enemy, more concentrated, were in a condition to bring into action a still greater amount of force? Instead of engaging anew, he should during the night have made dispositions for retreat, which his army was still in a condition to effect, if not without embarrassment, at least without disorder, and without encountering any serious obstacles.

Battle of Hanau.

On the 23d of October the wrecks of the army defeated at Leipsic on the 18th reached Erfurth, where were supplies of ammunitions, provisions, and clothing. All that remained of the German troops had deserted since the battle of Leipsic. On the 26th Wrede, commanding the Austro-Bavarian army, took possession of Wurtzburg, and followed the course of the Mayn. The same day, the troops of Wurtemberg marched to join those of Bavaria, against the French. On the 30th the Austro-Bavarian army, amounting to about sixty thousand men, was found posted at Hanau, on the line which the French had followed from Erfurth, no doubt in the hope of arresting their progress, and thus affording time to Blucher to attack them in the rear, whilst the grand army of Bohemia turned their left flank, and that under the orders of the prince royal of Sweden (Bernadotte) extended itself beyond their right. Placed under the necessity of breaking through this mass of fresh troops, the French fell upon them with incredible fury, and cleared a way by crushing all that opposed them. General Curial at the head of two battalions of the old guard, General Nansouty with the cavalry of the old guard, and General Drouot with fifty pieces of artillery, carried all before them, and not only saved the remains of a brave army, but illustrated its retreat by a brilliant victory. Wrede, who imagined that he had learned the art of war by serving under the French colours, was wounded; whilst the loss of twelve thousand men in killed, wounded, and prisoners, punished the temerity of the general and the ingratitude of his country. Napoleon repassed the Rhine on the 1st of November with the remains of the guard and six corps d'armée, the numerical force of which had been reduced nearly two thirds; and on the 9th he arrived at the palace of Saint-Cloud.

Results of the campaign.

The second overthrow of the French was necessarily productive of more decisive results than the first; Leipsic completed what the disastrous fate of the Russian expedition had only commenced. Germany regained its independence, by which we mean that it disengaged itself from all connection with France. The confederation of the Rhine was dissolved. Hanover resumed its allegiance to England. Ferdinand VII. was released from Valençay, and acknowledged as king of Spain. Holland, evacuated by the French troops, recalled the stadtholder. Denmark concluded an armistice with Russia, by which Napoleon lost his only ally in the north; and Davoust was isolated in Hamburg, without the possibility of disengaging himself. Naples and Sweden alone remained under men of the Revolution, who both retained their regal stations by betraying at once the chief whom they had served, and the country which gave them birth. The exterior frame-work of Napoleon's power had been shattered to pieces by the rude shocks of adverse fortune; and all the changes produced on the Continent, whether directly by the Revolution, or through the instrumentality of the extraordinary person who had been constituted its representative, were obliterated. Nor were his enemies confined to the provinces beyond the Rhine. The royalists stirred in the provinces, the republicans in the capital; and, feeling the compression of despotism removed, the constitutionalists of the first National Assembly began to raise their heads, and to build hopes of re-establishing a representative government. In the legislative body itself, purified as it had been of all those who were conceived to be friendly to free institutions, there were men who still retained their attachment to the principles which they had originally professed; and five of its members, intrusted with drawing up an address, to be presented on the 1st of January 1814, ventured to allude to the liberty of the subject, the necessity of reforming abuses, and the urgent expediency of accepting peace, and being contented with the frontiers of the Rhine and the Alps. This manifestation of independent opinion excited the astonishment and indignation of Napoleon, who, after replying in a style worthy of a disciple of Cagliostro, adjourned the meeting of the legislative body, and shut up its hall.

State of affairs.

The situation of Napoleon had now become worse than critical. All Europe in arms was arrayed against France, whose active means of defence had been nearly annihilated in two campaigns terminating in unparalleled disasters. When Napoleon recrossed the Rhine on the 1st of November 1813, he had not more than thirty-five thousand men in a condition to face the enemy; and even towards the close of the year, when three hundred thousand conscripts had been placed at the disposal of the government, his total numerical force did not exceed three hundred and sixty thousand men, whilst eleven hundred thousand enemies were advancing from various points to pour their invading torrents upon France. On the 11th November, Dresden capitulated on honourable terms, which, however, Schwartzenberg refused to ratify, and the French troops were marched as prisoners into Austria; on the 1st of January 1814, Dantzick surrendered in virtue of a convention, which the Russians in like manner refused to execute; and the other fortresses occupied by the French in Germany speedily shared the same fate. It has been said that the allies offered Napoleon France, imperial France, with the Rhine for its boundary, and that this fair, this generous offer, was madly refused by him. But this charge is without foundation. On the 2d of December 1813, the Duke of Vicenza, in a note addressed to the minister of Austria, declared that the Emperor Napoleon adhered to the general and summary bases proposed in the name of the allied powers at Franckfort, and also agreed that negotiations should immediately ensue in a congress to be assembled at Manheim. The bases proposed were, France confined within her natural limits between the Rhine, the Alps, and the Pyrenees; Spain replaced under its ancient dynasty; and Italy, Germany, and Holland, re-established as states independent of France, and of every preponderating power. To these preliminaries Napoleon now declared his unqualified adherence. The allied powers, however, were bent upon conquest, not conciliation; their armies were preparing to pass the Rhine for the purpose of invading France; and their insincerity was proved by the evasions which they practised when the bases proposed by themselves had been unreservedly acceded to. Meanwhile the tide of war continued to roll on towards France. On the 21st of December, six divisions of the enemy under Schwartzenberg, amounting to more than a hundred thousand men, crossed the Rhine between Basle and Schaffhausen, and ten days thereafter occupied Geneva. On the 31st, the army of Silesia under Blucher crossed the Rhine between Manheim and Coblentz; Bulow, advancing from Holland, passed still more to the north; and Wellington, descending from the Pyrenees, was preparing to invade the south of France. On the 25th of January 1814, Napoleon left Paris to join the army, and give new proofs of transcendent military genius in maintaining to the last a hopeless contest.

Battles of Brienne and La Rothière.

Schwartzenberg, having advanced through Upper Burgundy, had come upon the Seine, the course of which he intended to pursue towards Paris. Blucher, having passed the Vosges Mountains, had established himself on the Marne, at Saint-Dizier and at Joinville. Between these two rivers was the principal mass of the enemy, amounting at least to a hundred and fifty thousand men. Napoleon could not muster half that number, and the greater part of his army consisted of raw levies who had never been in fire. Advancing from Châlons-sur-Marne, and throwing himself between Schwartzenberg and Blucher, he directed his first blow at the latter. The Prussian commander now (29th January) occupied Brienne, with the Russian corps of Sacken and Alsufiew, belonging to the army of Silesia, and was at dinner in the castle when the French under Ney drove in his outposts. The château, the town, and its approaches, now became the scene of fierce combats, in all of which the French were victorious. The castle was taken; and Blucher, who had barely time to effect his escape, was compelled to fall back, take up a position, and wait for reinforcements. The audacity of Napoleon increased in proportion to the immobility of his enemies, who, in fact, durst not execute any movement in his presence except in overwhelming masses. But as the battle of Brienne had failed in its object of preventing the junction of Blucher and Schwartzenberg, he should have returned in all haste to the town of Troyes, where Marshal Mortier would have given him a considerable augmentation of force, instead of waiting to measure himself a second time with an enemy so greatly superior. On the 1st of February, Blucher, reinforced by the corps under Giulay, Wrede, the Prince of Wurtemberg, and the Grand Duke Constantine of Russia, which carried the force under his command to about a hundred and ten thousand combatants, became the assailant in his turn, and attacked the French at La Rothière, a village situated in the plain bounded by the Aube and its tributary the Voire, and distant about two leagues and a half north of Brienne. Napoleon, though he had scarcely forty thousand men present under arms, did not hesitate to accept battle. The engagement commenced at one o'clock in the afternoon, and did not terminate until midnight. Attacked along their whole line, the French stood their ground with great firmness, and towards evening the Russians in the centre began to waver; but a vigorous charge executed by Blucher secured him the advantage. In the battle of La Rothière the French lost about six thousand men, of whom two thousand five hundred were prisoners, and more than fifty pieces of cannon. The loss of the allies in killed and wounded was nearly as great, but it little affected their mass. In the night the French retreated to Troyes, without being pursued in any direction; a proof of the incapacity or timidity of the Prussian commander.

Congress of Châtillon.

Elated with his advantage, and eager to push on to Paris, Blucher, being joined by two fresh divisions, now separated himself from Schwartzenberg and the Austrians, tardy in their operations, both from character and from policy, and persisted in advancing along the Marne. Meanwhile a congress was opened at Châtillon between the four great allied powers and France. It was composed of Count Stadion, Baron Humboldt, and Count Rasumowski, plenipotentiaries of Austria, Prussia, and Russia; England was represented by Lords Aberdeen, Cathcart, and Castlereagh; and Caulaincourt, duke of Vicenza, appeared as the envoy of France. The result of the battle of La Rothière had decided Napoleon to treat conformably to the bases proposed at Franckfort; and the congress accordingly met on the 4th of February. But whilst occupied with the congress of Châtillon, Napoleon had his eye upon Blucher, whose rash advance along the Marne now inspired him with the idea of surprising and defeating the Prussians. Full of this idea, and finding that the allies rose daily in their demands, and refused to leave even Belgium to France, Napoleon recalled the carte-blanche which a few days previously he had given to Caulaincourt, and, on the 9th of February, refused to ratify the conditions transmitted to him by his minister from Chatillon. An opportunity of striking a blow had now presented itself, and he resolved once more to commit all to the fortune of a battle.

Battles of Champaubert, Montmirail, &c.

Having abandoned Troyes, Napoleon transferred his army, by cross roads and forced marches, from the Seine to the Marne, along which Blucher was confidently advancing towards Paris, under the impression that the battle of La Rothière was the last serious effort of the French. Of this notion he was speedily and severely disabused. On the 10th of February Napoleon threw himself on the Russian corps of Alsufiew, which formed the left flank of the Prussian army, and occupied a position near Sezanne in order to connect the two allied armies. The attack was made with such rapidity and impetuosity, that, of six thousand Russians, scarcely fifteen hundred escaped. Alsufiew, two other generals, forty-five officers, eighteen hundred soldiers, and twenty-one pieces of cannon, were the trophies of the day of Champaubert. On the 11th, at Montmirail, Napoleon came up with the corps under General Sacken, at the moment when he was endeavouring to operate his junction with the Prussian general Yorck, and defeated both with the loss of three thousand men killed and wounded, a number of prisoners, twenty-one pieces of cannon, and nearly all their baggage. In two days, three of Blucher's lieutenants had been defeated, and the wrecks of their corps driven beyond the Marne. On the 14th the emperor, after gaining some advantages at Château-Thierry, on the 12th and 13th attacked Blucher himself at Vaucamp, a league and a half west of Montmirail, and defeated him with the loss of seven thousand killed and wounded, three thousand prisoners, and eighteen pieces of cannon. Leaving Blucher thus humiliated to await the arrival of the Russians under Winzingerode, who were advancing from Belgium to support him, Napoleon now turned towards the Seine, where the grand army of the allies was manœuvring separately, with its advanced posts beyond Moret and Provins, whilst parties extended to the south of Fontainebleau, and spread alarm even to the gates of Orleans. Supported by Marshals Victor, Oudinot, and Macdonald, commanding the remains of the corps, conducting himself the old and young guard, and reinforced by troops which had arrived from Spain, Napoleon advanced on the 15th against the flank of the enemy disseminated upon the right bank of the Seine. The French army presented a mass of about fifty thousand men. On the 17th several strong Austro-Russian divisions, in full march on Paris, were completely defeated near Nangis, by the emperor, who on the 15th had left Montmirail with his guard and the corps of Marshal Ney, and marched twenty-eight leagues in two days. In this action the enemy lost five thousand men, as many prisoners, and a dozen cannon. But its result would have been more considerable if Victor had acted with greater decision. The combat of Montereau on the 18th was merely a continuation of that of the preceding day. The Prince of Wurtemberg being impetuously attacked, lost seven thousand men. Generals Gérard and Pajol had the greatest share in the success of the day. It was during this affair that Napoleon said gaily to his soldiers, who murmured at seeing him expose himself, "Ne craignez rien, mes amis; le boulet qui me tuera n'est pas encore fondu."

Effect of these successes on Napoleon.

These successes revived the confidence of Napoleon in his genius and fortune, and blinded him to the dangers by which he was menaced. After crushing Alsufiew at Champaubert, he wrote to his plenipotentiaries at Châtillon to assume a prouder attitude. The victory of Montmirail confirmed him in the belief that every thing might yet be repaired; and this conviction was strengthened by the subsequent successes at Nangis and Montereau. To an Austrian officer, who came to propose an armistice, and urge his acceptance of the conditions of Châtillon, he returned for answer that he would accede to those of Franckfort, but would on no account consent to yield up Belgium. "Recollect," said he, "that I am nearer to Munich than my enemies are to Paris." The conditions now offered were no doubt severe and humiliating. Departing from the bases founded on the natural limits of France, which they had themselves proposed at Franckfort, the allies now proposed that the emperor of the French should renounce all the acquisitions made by France since the beginning of 1792, and all constitutional influence beyond her ancient limits; that he should recognise in the allied powers the right of determining, conformably to the treaties they had entered into among themselves, the limits and relations of the countries ceded by France, as well as of their own states, without interfering therein in any manner of way; that all the colonies of France should be restored to her, excepting Tobago, and the isles of Bourbon and France; that all the fortresses of the ceded countries, and all those still occupied by French troops in Holland, Belgium, Germany, and Italy, should be given up without exception, and with the least possible delay; and that, under the denomination of depôts, the strong places of Besançon, Béfort, and Huningen, should be occupied by the allied armies until the ratification of a definitive peace. Such were the humiliating conditions agreed to at Châtillon, and which Austria now strenuously urged Napoleon to accept. "The peace," observed some one, "will be good enough, if it is time enough." "It will come too soon," replied Napoleon, "if it bring disgrace."

Battles of Craonne and Laon.

On the 24th February, the French, after several affairs with the rear-guard of the allied army, now in retreat, reoccupied Troyes. Some manifestations of royalism were exhibited at this place, and one unfortunate individual lost his life. At Troyes a flag of truce arrived from the Austrian head-quarters proposing an armistice, which, however, Napoleon refused except on the condition of its extending to the whole line. The urgent remonstrances of the king of Prussia having roused Schwartzenberg from the state of inaction in which he had for some time remained, an attack was resolved upon, and, on the 27th, forty thousand Austro-Russians advanced against fifteen thousand French under the orders of Oudinot and Gérard. Oudinot allowed himself to be surprised, and was only saved by the admirable dispositions of Gérard, and by a rapid and vigorous charge of cavalry executed by Kellerman. The assailants gained nothing but the field of battle. On the 2d of March Soissons was occupied by Bulow, the commandant of the city having opened the gates without making an attempt to defend it, although he had a sufficient garrison under his orders, and the sound of the cannon already announced the approach of the French. On the 4th Marshal Macdonald assumed the command of all the troops in presence of the grand allied army, amounting to about thirty thousand; and having evacuated Troyes and abandoned the basin of the Yonne, he retired to establish his line of defence from Nogent to Montereau. On the 7th Napoleon attacked Blucher at Craonne, about three leagues south-east of Laon. The French had only thirty thousand men, the Prussians upwards of a hundred thousand; but the force of the attack was principally directed against twenty-two thousand Russians under Generals Woronsow and Sacken. The action was long and obstinate; during the day the Russians maintained their ground against the furious and reiterated onsets of the French, and retreated in the night towards Laon, where they formed a junction with the Prussians. In the critical situation of Napoleon this victory was equivalent to a defeat. Laon, a place which served as an entrepôt to the allied army, was next attacked, but without success. In the night of the 9th, Marmont, advancing to support Napoleon in the approaching attack, suffered himself to be surprised by Blucher, and lost two thousand five hundred prisoners, with forty pieces of cannon. The consequences of this check were fatal to Napoleon. On the following day he persisted in his design of endeavouring to carry Laon by main force, but all his efforts failed, chiefly from the want of artillery.

Hopeless situation of Napoleon.

At Laon had vanished Napoleon's last hope of retrieving his fortunes in the field. He therefore dispatched orders to Caulaincourt to treat with the allies upon any terms; but the time fixed for receiving his answer to the conditions proposed had elapsed, and, taking advantage of the change of circumstances, the allied plenipotentiaries refused to enlarge it. Caulaincourt now gave in a counter project, by which the emperor consented to restrict his domination within the boundaries of ancient France, with Savoy, Nice, and the island of Elba, on condition that the crown of the kingdom of Italy, with the frontier of the Adige on the side of Austria, should be given to Eugene Beauharnais; but this the allied plenipotentiaries rejected, and the congress broke up. Disasters now thickened around Napoleon. Encouraged by the presence of the English army under Wellington, Bordeaux declared in favour of the Bourbons; and intriguing statesmen of the Revolution, at the head of whom was Talleyrand, were preparing a similar re-action in the capital, in the hope of establishing a constitutional government under the auspices of a restoration. Hitherto the allies had carefully abstained from openly espousing the cause of the exiled princes; but the manifestations of royalism in the provinces, and intimation of the intrigues carried on in the capital, emboldened them not only to advance upon Paris, but to declare in favour of a restoration.

Manœuvres on the Aube; battle of Arcis.

Meanwhile Napoleon, having left Mortier and Marmont with nearly twenty thousand men, and given orders to the commandants of places on the Moselle, the Meurthe, and the Meuse, to push strong parties in the rear of the enemy, marched on the 17th from Reims, at the head of about eighteen thousand men, with the intention of effecting a junction with Macdonald, who was advancing with thirty thousand; and, on the 20th, he moved on the Aube against Schwartzenberg, who had under his command a hundred thousand effective combatants. During this day and the following one, Napoleon displayed the talents of a great captain with the *sang-froid* of a brave soldier, manœuvring with transcendent skill, and fighting with the most determined bravery. With the loss of about four thousand men the proposed junction was effected, and Napoleon retired on Saint-Dizier and Joinville without being pursued. In thus operating on the right bank of the Upper Marne, the emperor no doubt hoped to draw the enemy out of their positions on the Aube, and cause them renounce their direction on Paris, as well as to rally some reinforcements which had been sent to Metz. It has been commonly supposed that his intention was, at the risk of uncovering Paris, to manœuvre in their rear, and intercept their communications with the Rhine; but his troops were too feeble, particularly in cavalry, to enable him to flatter himself with attaining such a result. Napoleon made every possible effort to retard their advance, and, on the 26th, defeated with great loss ten thousand Russian cavalry belonging to the army of Winzingerode, who had been sent in pursuit of him.

Fall of Paris, and abdication of Napoleon.

On the 27th he marched to succour the capital, and reached Montiérender, five leagues south of Saint-Dizier. On the 29th Mortier and Marmont occupied Saint-Mandé, Vincennes, and Charonne, and established themselves before the barriers of Paris adjoining to these villages. On the 30th the allied troops commenced the attack of the several heights, occupied by about twenty-five thousand soldiers of all arms. The French assumed the offensive on the principal points, and the villages of Pantin and Romainville were taken and retaken several times. The battle commenced at sunrise, and at eleven o'clock in the forenoon the Austrians and Russians were still in complete check. But at that moment the Prussians appeared, entered into line, and proceeded to arrange their attacks. Seized with terror, Joseph Bonaparte, who acted as generalissimo, now only thought of providing for his own personal safety; and having intimated to Mortier and Marmont that he authorized them to capitulate, he fled with all the precipitation of a Thersites. A capitulation was accordingly concluded, and on the last day of March the emperor of Russia and the king of Prussia entered the French capital at the head of their troops. When Napoleon, who had reached Fontainebleau on the 30th, encountered, in the evening of that day, while advancing towards the capital, some of the troops of Marmont retiring by virtue of the capitulation, he refused to give credit to the tidings; and it was only by persuasion, amounting to force, that he was induced to return to Fontainebleau. No wonder his astonishment was great. If the minister Clarke had delivered twenty thousand new muskets to the national guard, to those robust workmen who loudly demanded arms, the heights would not in all probability have been carried on the 30th; and the sudden apparition of Napoleon in the centre of such immense resources as Paris presented, might have suddenly changed the fortune of the war, and led to a very different result; whilst a check sustained by the allies before Paris would have inevitably led to their destruction, by rousing all France to crush the invaders. But treason deprived Napoleon of the last great resource on which he had all along calculated, and completed the subjugation of France. A provisional government was appointed, with Talleyrand at its head; and a proclamation was issued by the allied sovereigns, refusing to treat with Napoleon as sovereign of France. In these circumstances, finding himself deserted by his marshals, officers, and dependents, from Berthier, prince of Neufchatel, down to the Mamluke Rustan, this wonderful man, who had never appeared greater than during the late struggle, signed an unconditional abdication, and, on the 11th of April 1814, his dynasty expired.

Formation of a provisional government.

A provisional government was formed, and M. Lambrecht drew up an article in which it was said that the French people freely called to the throne Louis Stanislas Xavier, the brother of the late king, but the Abbé Montesquiou maintained that the king had never lost his rights, and that he succeeded as uncle of Louis XVII. "Do you take no account," asked M. de Tracy, "of what passed since 1789?" "Facts," rejoined the Abbé, "are impotent against right."[1] An inconvenient discussion might have arisen between the senate and the Abbé, if M. de Nesselrode had not appeared announcing the arrival of the plenipotentiaries charged to treat in the name of the regency. A compromise was the consequence, when it was agreed that Louis should be called by the French people to the throne as Louis Stanislas

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[1] Vaulabelle, tom. 2.

Xavier of France, brother of the late king. But though this was voted by 66 senators in the name of the French people, we know from the notes and despatches of the Abbé Montesquiou, found in the Tuileries after the 20th March 1815, that this agent and adviser of the monarch counselled his sovereign to publish an edict in which he would style himself King of France and Navarre, and announce the privileges he would accord of his own mere motion to the French nation.

On the 11th April the provisional government addressed the army, stating that the new constitution would assure to them their honours, their grades, and their pensions. Summoned to Paris by Talleyrand and the Abbé de Montesquiou, the Count d'Artois reached Livry on the 11th April preparatory to his entry into the capital on the following day. He had assumed the title of Lieutenant-General, but the senate and Talleyrand declined to recognise this title, more especially as the prince refused to acknowledge the constitution agreed on. But the difficulty was got over by Talleyrand, who welcomed the prince, not as Lieutenant-General, but as Monsieur. The count made his public entry accordingly, and was met by the marshals, Ney at their head, in full uniform. On the following day the provisional government substituted the white flag for the tricolor, and the senate conferred the provisional government of the kingdom on the Count d'Artois. In his address to the senate the provisional governor declared that he was not authorized by his brother to accept the constitution, but that he knew the king's opinions sufficiently well to declare that its fundamental principles would be acknowledged by him. Meanwhile Louis had set out to occupy the throne of his ancestors. He was received enthusiastically in London by the Prince Regent, and accompanied to Dover by His Royal Highness. His Most Christian Majesty was conveyed to France by a squadron commanded by H.R.H. the Duke of Clarence, afterwards William IV. Louis XVIII., in company with the Duchess d'Angoulême, entered Paris on the 3d May amidst a concourse of cosmopolitan spectators composed of all the nations of the earth. He was well but not enthusiastically received. While the sovereign of France was making preparations to leave Hartwell, the ex-empress Maria Louisa was at Blois. Her courtiers and the brothers of the ex-emperor deserted her, so that it was not difficult for her father to induce her to proceed with her son to Vienna. Nine days after his abdication, namely on the 20th April, the very day of Louis XVIII.'s triumphant entry into London, the ex-emperor, her husband, proceeded to take his departure for Elba. With much emotion he bade farewell to his old guard, saying, "Adieu, my children. I would press you all to my heart if possible, but I will at least press your eagles." On the 23d April the convention signed at Paris between the Count d'Artois and the allied powers was agreed to, and on the 27th the treaty of Paris, by which the emperors of Austria and of Russia, and the king of Prussia, acknowledge the sovereignty of the isle of Elba in the person of Bonaparte. On the 2d of May Louis issued the declaration of St Ouen. By this instrument representative government was to be maintained by a senate and a chamber of deputies—taxes were to be freely consented to, public and individual liberty to be secured, property to be inviolable and sacred, and the sale of national property to be irrevocable. Ministers were, moreover, to be responsible and impeachable; judges to be irremovable and independent; the public debt to be secured; Frenchmen to be admissible to all employments; the legion of honour to be maintained; and no individual to be molested for his votes or opinions. This declaration gave general satisfaction, and the day after it was issued the monarch entered Paris. The Duchess d'Angoulême was by the king's side, dressed in the English fashion, and on the opposite seat of the royal coach sate the Prince of Condé and the Duke of Bourbon, dressed in a full court suit of 1789. This clinging to obsolete custom in dress, abolished for a quarter of a century, was unfortunate, to say the least. On the 13th of May the king named his first ministry. D'Ambray was chancellor and minister of justice; Talleyrand, minister of foreign affairs; the Abbé Montesquiou, of the interior; General Dupont, of war; Baron Malouet, of marine; Blacas, of the household: whilst the ministry of the police was confided to Beugnot. Two of these men were undoubtedly eminently capable, M. Talleyrand and Baron Louis. M. d'Ambray, too, had been distinguished in the olden time in the parliament of Paris, and M. Montesquiou was not without a certain species of ability; but none of them, except the two first named, were generally known except Dupont, unpopular with the army, and disgraced by Napoleon for his surrender of Baylen. The ministry of police, at a time of most unexampled difficulty, was placed in inexperienced, if not in incapable hands, and the ministry of the king's household was handed over to a favourite, Blacas, who sought to render the monarch inaccessible. On the day the ministry was appointed, the Count d'Artois was created Colonel-General of all the national guards of the kingdom; and immediately afterwards an ordonnance of the king authorized the conscripts of 1815 to return to their families. A few days after the publication of this ordonnance, the articles of the Treaty of Paris between France and the allied powers became known. The limits of France, as they existed on the 1st January 1792, were restored to her, with the addition of some cantons in the departments of the Ardennes, the Moselle, the Ain, and the lower Rhine. A part of Savoy, as well as of Avignon and the *Cantal de Venaissin*, was annexed to the French territory.

First ministry of Louis XVIII.

The charter signed by Louis XVIII., and counter-signed by the Abbé de Montesquiou and the Chancellor d'Ambray, which the monarch accorded to the French people, consisted of a great number of articles. It is not necessary we should here enumerate any of these articles, with the exception of such as have reference to the public right of Frenchmen. All Frenchmen were declared equal before the law, as well as admissible to civil and military employments—their individual and religious liberties were guaranteed, as well as perfect freedom of conscience. Frenchmen were declared to have the right to print and publish their opinions with no restraints excepting those imposed by the laws. Property of all kinds, whether that called national or otherwise, was declared to be inviolable, and the conscription was abolished. Other articles regulated the form of the king's government, the constitution of the chamber of peers and of deputies, the judicial and military services, &c. The article of the charter on the subject of electoral right limited it to those who paid 300 francs taxes. The power of proposing laws was denied to either chamber, and reserved for the king, who, independently of his executive functions, was to make rules and issue ordinances necessary for the execution of the laws and the safety of the state.

The legislative chambers were soon constituted. The Chamber of Peers consisted of 152 members named for life, among whom there were 86 senators, several marshals and generals, three prelates, the dukes and peers acknowledged under Louis XVI., and some nobles of the *ancien regime* who enjoyed the favour of the restored princes.

By a wise ordonnance of the king, it was provided that from the day of the publication of the charter the names still existing on the list of emigrants should be effaced. In April 1802 the list of emigrants amounted to 150,000, filling no less than nine large volumes.

After the treaty of May 30th, the allied sovereigns withdrew their troops from Paris. The Emperor Alexander and the King of Prussia proceeded to England, and the Emperor of Austria to his own capital.

The Chamber of Peers was summoned for the 14th June to hear the charter read. Fifty-four of the senators were omitted to be summoned, some of them, as Fouché, Gregoire, Cambacérès, Chaptal, and Garat, because they had been regicides. The full complement of peers was eked out by a selection from the ancient nobility. A popular measure to the great body of the nation was the making ten of the marshals peers; among these were Ney, Berthier, Suchet, Massena, Oudinot, Mortier, and Soult. The peers and deputies assembled on the 4th June in the Palais Bourbon, to which the king, attended by all the princes of his family, proceeded.

In his address, his Majesty observed that the glory of the French army had received no stain, and that the peace concluded was general. In conclusion, his Majesty stated that, penetrated with the sentiments that dictated the immortal testament of Louis XVI., he had caused to be drawn out the constitutional charter which they were about to hear read. The speech of the king was received with considerable applause; but when the chancellor referred to his Majesty as in full possession of his hereditary rights, and when it was perceived that the charter was dated in the nineteenth year of our reign, the general feeling of satisfaction became greatly abated. Sensible and moderate men, however, considered that its leading articles contained the essentials of freedom. It was true the electoral qualification restricted the franchise to 80,000 souls, out of a population of 30 millions; but it was possible by degrees to extend the right of voting. As a universal amnesty was proclaimed, and the Code Napoleon continued, men hoped that time would bring healing on its wings, as well as better measures. It was a most difficult thing, however, to calm the passions and satisfy the expectations of a nation distinguished by great mobility of disposition, and which had known within a few years the extreme of military success and the bitterness of unbounded humiliation. A great party of the defeated army was disbanded, and now wanted bread; many of the holders of national property were uneasy lest the lands which they had purchased should be resumed by the original owners. Several functionaries too had been discharged and were without employment or the means of subsistence. The revenue of the country had during the last two years been allowed to run into more than fifty millions arrears, whilst the expenditure exceeded the receipts by at least twelve millions. Here alone were abundant elements of dissatisfaction and discontent; and when in addition it is stated that the Swiss Guards were employed at a time when many Frenchmen, officers and soldiers, were suffering poignant distress, it is no marvel that public feeling became exacerbated.

Law on the press.

Nothing more provoked the ire of republican or imperial Frenchmen during a quarter of a century than ceremonies in which priests and clergy paraded. The pomp of a daily military mass at the Tuileries, during the course of 1814, and the celebration of a funeral service in memory of Louis XVI., gave some colour to the cry that the pristine power of the clergy was to be restored.

The law relative to the liberty of the press, brought forward on the 21st October, increased the general excitement. Every writing of more than twenty sheets might be published freely, whilst MSS. of twenty sheets and under were to be subject to a previous censorship. Newspapers and periodical writings could only appear with the permission of the king, and none could be a printer or publisher unless a person who had taken the oaths and received a royal licence. The debate on the press was the first that excited general attention. It lasted for several days. The reporter of the commission chiefly addressed his objections against the censorship; but on this head the minister of the interior would make no concession, except that the duration of the law should be temporary, extending only to the opening of the session in 1816. The measure passed by a majority of 157, in a chamber composed of 317 votes. In the Chamber of Peers, where the question was more ably and eloquently debated, it was carried by a much smaller majority.

A budget for 1815 was proposed amounting to 618,000,000f., about L.25,000,000 sterling of our money in round numbers. The interest of the debt and the arrears were provided for by an allotment of 4 millions. Government bills, payable in three years, carrying an interest of 8 per cent., were issued to meet the arrears. The law that was introduced into the chamber for the purpose of restoring to the Duke of Orleans and the Prince of Condé such of the palaces and forests as had escaped sale, might have silently passed, had it not been for the imprudent language of M. Ferrand, which aroused opposition. The overheated zeal of the clergy at this time did more disservice to the king than the imprudent language of some of his ministers.

When ultramontanism first began to show itself in 1814, when acts of expiation were called for, and the public ways and cross roads became encumbered with *calvaires* and *prie Dieus*, the people seemed more amazed than indignant. At the funeral of Mademoiselle Rancourt, the actress, in January 1815, they exhibited more vehement feelings. 1815. When the body of this lady was brought to the church of St Roch, the priests refused to receive it or to recite prayers over the body of an actress. While the friends and funeral cortege were expostulating a crowd collected. The mob becoming violent soon broke down the grating, entered the body of the church, and required the priest to perform the funeral ceremony. The king, who had heard of the tumult, sent a priest of his household to read the prayers, and the discontent was then quelled. Circumstances of this kind, when taken in conjunction with the ordonnance of M. Beugnot, prefect of police, forbidding the passing of carriages from eight to three during the procession of the *Saint Sacrement*, were sure to excite an ill feeling. A procession which soon afterwards took place in honour of the Virgin excited the contemptuous sneers of the population, and more especially of the army. The officers of the line were still further alienated by finding the ancient system of education for military orphans overturned. Proofs of nobility were now, as before 1789, demanded for admission into the school St Denis. This proceeding had excited so much discontent in military circles, that Dupont had been removed from the war-office at the end of 1814, to give place to the more vigorous Soult. Soult had rendered himself zealous as commandant of the thirteenth military division at Rennes, and had also signalized himself by subscribing to the monument proposed to be raised on the beach of Quiberon.

After having passed a law relative to the debts contracted in foreign countries by the king and the princes of the royal family, and agreed to provide for the debts of the monarch as state obligations, to the amount of thirty millions, the legislative chambers adjourned on the 30th December 1814 to the 1st May 1815.

The exhumation of what were supposed to be remains of Louis XVI. and Marie Antoinette, on the 18th and 19th January, still further disquieted the Parisians. Only calcined fragments of bones had been extracted from the lime in which they were enveloped, so that it was doubtful whether what was dug out were really the remains of the distinguished victims. None of the ordinary municipal or judicial functionaries had been present at the exhumation, and the signature of De Blacas appended to the official documents induced men to look on the whole proceedings with suspicion and dislike, as it was well known that M. de Blacas wished to return to all the habitudes and traditions of the old monarchy.

Napoleon had been carefully informed at Elba of the silly and unpopular conduct of the Bourbons and their

Embarkation of Napoleon for Cannes.

partisans. A constant communication was kept up between him and certain members of his family and friends, among whom Hortense, the mother of the present Emperor of the French, was conspicuous, as well as the Dukes of Bassano and Rovigo, and Count Lavalette. In the month of February Maret, Duke of Bassano, had despatched a trusty emissary to Elba in the person of M. Fleury de Chaboulon; and in consequence of information conveyed by this gentleman, Napoleon resolved to set out for France, more especially as it was the opinion of his old secretary Maret that he should attempt to do so. On the evening of the 26th February he embarked with 900 men in a few small vessels, and landed in the Gulf of Juan, which lies between Cannes and Antibes, on the afternoon of the 1st March. In a MS. address, distributed to the soldiers on his landing, and which was printed at Digne, he stated he heard their voice in his exile, and hastened to it through every peril. He called on the men whose votes had raised him to the throne, and who had borne him aloft on their shields, to come and join his standard, to tear down the white cockade and mount the tricolor, to resume the eagles of Ulm, Austerlitz, Jena, La Moskowa, and Montmirail. Then, said he, victory will march *au pas de charge*, and the eagle will fly from steeple to steeple to the towers of Notre Dame. In conclusion, he called on all Frenchmen to wash out from Paris the stain incurred by treason and the presence of the enemy. This address did wonders. Napoleon traversed Grasse and Digne without molestation, and was enabled to pass the Durance under the fortress of Sisteron. It was not till he had been a week in France, and had made a march of 72 leagues or 150 miles in a mountainous and difficult country, that he found himself opposed by the troops of the king's government. It was at Vizille, a few leagues from Grenoble, that an officer sent out by the emperor met a hostile demonstration. The emperor, informed of the fact, dismounted, and taking off his hat said in a calm, distinct voice, "Soldiers of the 5th, if there be one amongst you who desires to kill his old general, his emperor, he may do so. Behold me, I am here." Loud shouts of *Vive l'Empereur* were the answer to this artful appeal.

Progress of Napoleon.

On the 8th the emperor entered Grenoble amidst cries of "*A bas les Bourbons.*" His march to Burgoin was a triumph. It was from Lyons, on the 5th March, that the first news of Napoleon's disembarkation was sent by the telegraph to Paris. On the 6th an *ordonnance* of the king convoked immediately the Chambers, and another *ordonnance* declared Bonaparte a traitor and a rebel. Napoleon entered Lyons on the 10th at the head of 8000 troops, and with 30 pieces of cannon. The majority of the people received him with enthusiasm in a city from which the Count d'Artois and the Duke of Orleans, sent to combat the "traitor" from Paris, had been obliged to make a precipitate retreat a few hours previously. Napoleon remained during the 11th and 12th at Lyons, and there resumed the exercise of sovereign power. Master of the second city of the empire, and of eight or ten regiments, saluted everywhere on his passage as emperor, the reign of the Bourbons appeared to Napoleon finished, and his own about to recommence. He signalized his resumption of power by the issuing of nine decrees, among which was one for the resumption of the tricolor, one for the re-establishment of the Imperial Guard, one for the abolition of the Swiss regiments and *mousquetaires*, one for the sequestration of the property of the Bourbons, and one for the abolition of the noblesse and feudal titles. This looked like an appeal to the extreme party, which Napoleon always detested. Through Burgundy, though not received with enthusiasm by the people, the passage of the emperor was a triumph—an ovation, at least with the army. At Auxerre he was joined by Ney, whom he embraced, calling him *le brave des braves*—that very same Ney who, a few days before, kissed the royal hand, exclaiming that he would bring back Bonaparte to his Majesty in an iron cage. Nor was Marshal Soult less enthusiastic in his professions to the king than his brother marshal. In an order of the day, as Minister of War, just before he had been removed to make way for the Duke of Feltre, he called Napoleon an adventurer, yet within a very short time afterwards he was again in the service of this adventurer as his trusted lieutenant.

It is said by a recent historian that Ney had no personal attachment to Napoleon, but that the glory of the army and the cause of France touched his heart. This may have been so. But we confess we incline to the opinion of M. Villemain, that Ney was persuaded his soldiers were for Napoleon, and that he had no chance of being able to master them. He therefore resolved to go with the tide, deeming the cause of the Bourbons to be irrecoverably lost.

Departure of Louis XVIII. and arrival of Napoleon.

On the 12th March the king called on the troops to defend liberty, and promised that the officers of the army should be taken from the ranks, and on the 15th it was intimated that the half-pay officers were to be raised to whole pay, and that the arrears of the Legion of Honour were to be liquidated. On the 16th the king and his brother Monsieur, with other princes of the family, sought to excite popular enthusiasm by swearing to the charter before the united legislative chambers; but all these attempts having failed, and the prestige and success of Bonaparte having increased daily, the king left the Tuileries after midnight on the 19th, or rather in the early morning of the 20th March. The intention of the monarch was kept secret till the moment of his departure. Napoleon, at 9 o'clock of the evening of the 20th, was borne into the Tuileries on the shoulders of an immense and generally an enthusiastic population. He had left Fontainbleau in the day after receiving a courier from Lavalette (who had taken possession of the post office), but he could only advance slowly to the capital, in consequence of the immense crowd of villagers and peasantry who flocked from the surrounding country for several leagues round to greet him with their acclamations. His carriage was preceded by a numerous group of generals, and about a hundred cavaliers of all branches of the service; and when the vehicle at length reached the court-yard of the palace, each man of the immense mass disputed the honour of giving an arm to the emperor. In this wise it was that he was borne up the staircase, his feet never touching the ground. Though a smile played on his features, yet his countenance exhibited some traces of anxiety. Cries of Vive l'Empereur rent the air, but even according to the testimony of Vaulabelle these were not marked either by the wonderful unanimity or the frenzied enthusiasm which had greeted him on his landing at the Gulf of St Juan.

Meanwhile the courageous and determined efforts of the Duchess of Angoulême to rouse the loyalty of the troops at Bordeaux were unsuccessful. General Clausel had arrived on the banks of the Garonne with a handful of soldiers, bearing the tricolored flag. The troops sent against Clausel joined him, and when the Duchess called on General Decaen to march against Clausel, the commander of the town intimated he could not rely on the garrison. After the entry of Napoleon into Paris, the Duke of Angoulême hastened to take the command of the troops in the department of the Gard. He exhibited some capacity—more, indeed, than was expected of him—and proved himself not deficient in courage, defeating General Debelle and the National Guards; but Grouchy advanced against him in great force, and having fallen back on St Esprit, he was obliged to surrender.

Though Napoleon thus resumed the imperial purple with more than the facility of a stage emperor or king, yet on the morrow of his arrival he found no eager anxiety for office among his adherents and partisans. It was with

Additional act to the constitution.

difficulty Cambacérès could be prevailed on to accept the portfolio of Justice, and Caulaincourt at first positively refused the Ministry of Foreign Affairs, which was next offered to and refused by Molé, and afterwards forced on Caulaincourt. Carnot, however, accepted the Ministry of the Interior, and Fouché that of the Police, affecting to be mightily pleased with the republican tendencies of the emperor. Before the additional act to the constitution of the empire was presented to the acceptance of the nation, the Duke of Bourbon, having failed to excite an insurrection in *La Vendée*, embarked on the 1st April at Paimbœuf on board an English vessel; on the following day the Duchess of Angoulême embarked at Bordeaux; and the Duke of Angoulême, who had given himself up a prisoner, was allowed to embark at Cette. On the 22d, the supplementary or additional act was presented to the acceptance of the nation. It acknowledged two legislative chambers, an hereditary chamber of peers, a chamber of representatives elected by the people, according to two degrees of election. The second chamber was to be composed of 629 members, and the minimum of age was to be 25 years. By the last article the French people divested itself of the right of establishing the Bourbons under any pretence, or the ancient feudal nobility, or feudal seignorial prerogatives, tithes, or a religion which should be privileged or dominant. This additional act to the constitution was not very warmly received. The people saw war and a great struggle in the not distant perspective. Napoleon, however, ordered that the new constitution should be submitted to universal suffrage, and the result made known in the Assembly of the *Champ de Mai*, which took place on the 1st June. At this assembly there were present the Archbishop of Tours (Barral), assisted by Cardinal Bayane, Marshals Soult, Jourdan, and Oudinot, and Cambacérès the chancellor, who proclaimed that the constitution was accepted by 1,300,000 voters, and rejected by only 4206. The emperor appeared on this occasion in great pomp. He said that as emperor, consul, and soldier, he owed everything to the people, and after calling on them to support him, he took the oath to the new constitution. The dignitaries present followed his example. The eagles were then delivered to the regiments amidst vociferous cheering. On the day following this ceremony Bonaparte named 118 peers, among whom were Carnot, Fouché, Quinette, Roger Ducos, Sieyes, Boissy, D'Anglas, &c.

Opening of legislative assemblies.

Treaty of March 1815.

Napoleon's march to Belgium.

The opening of the legislative assemblies by the emperor in person took place on the 7th June. The peers named by him showed themselves sufficiently supple and complying, but there were many friends of liberty, many men of extreme opinions, many Jacobins, among the deputies, and they evinced their feelings by electing Lanjuinais as president, in the worst of times celebrated by his resistance to injustice, and by his unalterable adhesion to the principles of liberty. This selection was not pleasing to Bonaparte, who was aware of Lanjuinais's independence, and who desired an instrument in the person of Merlin de Douai. But though Merlin only obtained 49 votes against the 189 registered for Lanjuinais, yet Napoleon would have refused to receive Lanjuinais as president, had he not been warned of the danger by Regnault de Saint Jean d'Angely and Carnot. Lafayette, Dupont de l'Eure, General Grenier, and Flaugenques were significantly elected vice-presidents. These circumstances doubtless induced the emperor to state that the fondest wish of his heart was accomplished in commencing a constitutional monarchy. "I desire," said he, "to see France enjoy all possible liberty." "The liberty of the press," he continued, "is inherent to the actual constitution. The sacred cause of the country will triumph." The constitutionals and liberals of the chamber received these advances of the emperor with mistrust, having no faith in their sincerity. The congress of Vienna had meanwhile declared Napoleon the enemy and disturber of the world, and placed him under the ban of Europe, which might be said almost to be in battalion against him. On the 25th March a treaty was concluded, by which the four powers bound themselves to furnish 180,000 men each, making a total of 600,000 men. Napoleon exhibited his usual activity and vigour; but the man who used to devote 12 millions sterling annually to the providing of materials of war, exclusive of his war budget, had now scarcely two millions to refit his army. The contractor, Ouvrard, advanced the emperor two millions; but these, even with the bills of the receiver-general, were but feeble resources; yet at the commencement of June Bonaparte had nearly 300,000 soldiers, exclusive of 200 battalions of National Guards. Three battalions were added to each regiment of infantry, and two squadrons to those of cavalry. Arms and all munitions of war were manufactured with the greatest rapidity, and the prodigious efforts of the Committee of Public Safety in 1797 were rivalled, if not surpassed. The administration of the artillery took effective measures to double the supplies formerly produced. From the commencement of June 3000 firelocks per day were manufactured, and 4000 were to be delivered from the 1st of July. On the 15th June Napoleon entered Belgium, his army advancing in three columns from Maubeuge, Beaumont, Philippeville, to debouche by Marchiennes, Charleroi, and Chatelet. It is not our purpose, however, to go over at any length the history of events comprised between the 15th and the 18th June, commencing with an affair of outposts, and ending with the battle of Waterloo.

Waterloo.

It is indispensable, however, in the most succinct account of this memorable battle, to state that the emperor was at the head of an army of about 125,000 men, for the most part seasoned troops, of whom about 25,000 were cavalry. On the 15th June he advanced on Charleroi. At the head of this force, with 350 pieces of cannon, having under him Ney, Soult, Mortier, Grouchy, Gerard, &c. Ney was ordered to seize the position of Quatre Bras, which he omitted to do. Napoleon on the 16th found that Blucher had concentrated three divisions of the Prussian army at Ligny, numbering between 80,000 and 90,000 men before him. These the emperor attacked, driving back Blucher with great loss. Ney he sent against a portion of the English army at Quatre Bras. But though the French marshal successively charged our troops with cavalry, in which, as well as in artillery, he was superior, yet the English maintained their ground. On the 17th, in consequence of Blucher's retreat, Wellington fell back to the position of Waterloo. He was followed by Napoleon, who had already despatched Grouchy with 30,000 men to follow the retreating Prussians. On the 18th, the great and memorable engagement of Waterloo was fought. As Napoleon gained the eminence of La Belle Alliance, he exclaimed, "I have these English at last." But in this he counted without his host. Between 10 and 11 o'clock, the emperor gave the signal for the attack on Hougomont. The position was several times taken and retaken; but although the French made several desperate, brilliant, and furious attacks both with infantry and cavalry, they could not break the solid and compact masses of the British squares, and while they vainly attempted to do so, Bulow's corps of 30,000 Prussians were seen in the distance. Ney's first attack at one o'clock was unsuccessful. While the French columns were deploying to return fire with effect, they were charged by the English cavalry and dragoons, and more especially by the Scotch Greys, who cut the traces of Ney's artillery and upset the carriages. At half-past two the attack of Ney was repulsed. He commenced a second attack at half-past three with masses of cavalry. At the first onset he was successful, but after a little while it became apparent, to use the graphic language of General Foy, who was on the field, that the English were rooted to the earth on which they stood. No cavalry could make any impression on such solid and steady troops as the English, and the attempt resulted almost in the destruction of the French cavalry. Meantime the Prussians under Bulow, and other Prussian divisions under Blucher, had joined the English on the left. Ney was rallying his men about the farm-house at La Haye Sainte. In a third attack, in which the emperor had determined to support him with the reserve and a portion of the old Guard, Wellington assumed the offensive. The decisive words, "Up Guards and at them," were now uttered; and the British troops, who had sustained an eight hours' attack with passive courage and unflinching constancy, rushed on the enemy with resistless fury and bore him down. The old guard attempted to deploy, but became confused and at length gave way. Napoleon turned pale, and, exclaiming "Ils sont mélés ensemble," mounted his horse and left the field. It is a difficult thing for even a professional soldier to write an account of a battle. We do not profess here to give more than an outline of an engagement which we find simply and unostentatiously described in the Duke's own words in the *Wellington Despatches*, vol. xii. p. 609. The letter is addressed to Mr Croker, and is in the following words:—

"The battle began, I believe, at eleven. It is impossible to say when each important occurrence took place, or in what order. We were attacked first with infantry only, then with cavalry only, lastly and principally with cavalry and infantry mixed. No houses were possessed by the enemy on Mont St Jean, excepting the farm in front of the left of our centre, on the road to Genappe, can be called one,—this they got, I think, at about two o'clock, from a circumstance (want of ammunition) attributable to the neglect of the officer commanding on the spot. The French cavalry were on the *plateau* in the centre between the two high roads for nearly three quarters of an hour, riding about among our squares of infantry, all firing having ceased on both sides. I moved our squares forward to the guns; and our cavalry, which had been detached by Lord Uxbridge to the flanks, were brought back to the centre; the French cavalry were then driven off. After that circumstance repeated attacks were made along the whole front of the centre of the position by cavalry and infantry till seven at night. How many I cannot tell. When the enemy attacked Sir Thomas Picton I was there, and they got as far as the hedge on the cross-road, behind which the (Belgians) had been formed. The latter had run away, and our troops were on one side of the hedge. The French were driven off with immense loss. This was the first principal attack. At about two in the afternoon they got possession of the farm-house on the high road, which defended this part of the position, and then they took possession of a small mound on the left of the high road going from Brussels, immediately opposite the gate of the farm; and they were never removed from thence till I commenced the attack in the evening, but they never advanced farther on this side."

Waterloo, however, was not merely a battle, but the overthrow of the whole system of one of the greatest military generals, and one of the most remarkable governors and administrators the world has ever produced. Up to nearly the last moment, Napoleon preserved his calm imperturbability, but when he perceived that the day was irretrievably lost, he fled as fast as his horse could carry him from the field, and reached Charleroi at six in the morning of the 19th. His carriage and private papers were taken near Genappe. The loss of the French had been more than 40,000, and it is doubtful whether more than that number crossed the Sambre. On the 21st, at four in the afternoon, the defeated emperor reached Paris—bringing the first intelligence of his own disaster.

In the Chamber of Deputies all were agitated with conflicting emotions. The home minister, Carnot, and Lucien recommended a dictatorship in the person of Napoleon, but the constitutionalists and independent members had joined with Fouché (who was shrewd enough from the first moment of the return from Elba to see that the power of Bonaparte would be short-lived, and who had for some time opened communications with Talleyrand and Metternich at Vienna), and the chamber, on the motion of Lafayette, declared that the independence of the nation was menaced, that the members would sit in permanence, and that every attempt to dissolve them would be a crime of high treason. The chamber also passed a resolution to the effect that the army of the line which had fought and were still fighting to defend the liberty and independence of the French territory had deserved well of the country.

But while this feeling for the army and the country pervaded every breast, cries were generally uttered calling for an abdication. Lucien counselled his brother to assume a dictatorship, and to dismiss the chambers; while Bonaparte's old secretary, Maret, Duke of Bassano, and his faithful friend Caulaincourt, suggested an abdication. To Lucien, who again and again insisted on a dictatorship, the emperor said, "Nous ne sommes plus au 18 Brumaire."[1] It now came to the ears of the emperor that deposition and dethronement were openly spoken of by Lafayette, a measure certain to be proposed by him in case Bonaparte did not immediately decide to abdicate; so, making a virtue of necessity, he signed his abdication in favour of his son, retiring because, to use the words of Villemain, in a recent publication, "his part was finished and the tragedy played out."

But the deputies would not hear of an imperial prince of the Bonaparte dynasty. Abdication, says Villemain, is civil death, and the monarch who abdicates has no right to name his successor. Labedoyere, however, and other partisans of the imperial regime, made strenuous efforts in favour of Napoleon II., but the proposition was opposed by Dupin, Boissy d'Auglas, and indeed by the general sense of the Chamber, which named a provisional executive legislative commission, composed of Fouché, Carnot, Caulaincourt, Quenet, and Grenier, to carry on the government.

The government of Napoleon lasted exactly a hundred days, during which period he expended 600 millions of francs and the lives of 60,000 soldiers. It may be here remarked, as a commentary on the Napoleonic system, that the news of the abdication caused the French five per cents to rise from 55 to 60 francs.

On the 23d June foreign troops entered the department of the Moselle by Forbach. Napoleon remained at Malmaison for six days after his abdication, during which period he tendered his services to the government as generalissimo of the forces. But this offer was declined. On the 29th of June he set out for Rochefort, with the design of embarking for America. He reached Rochefort on the 3d of July. But the coast was so strictly blockaded by British cruisers that he found it impossible to accomplish his design; and fearing at length to fall into the hands of the royalists, he caused himself to be conducted aboard the Bellerophon, having first announced to Captain Maitland that he threw himself on the generosity of the Prince Regent. In a letter addressed to his Royal Highness, written in an antique fashion, he stated that he claimed the protection of the British laws from the most powerful, the most constant, and the most generous of his enemies. On the 24th of June the Bellerophon entered Torbay, and it was communicated to the captive (for such he was) by Lord Keith and Sir Henry Bunbury, Under Secretary of State, that St

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[1] Villemain, *Souvenirs les Cent Jours.*

Helena was to be his future residence. On the 7th of August, Bonaparte, notwithstanding his earnest remonstrances, was transferred aboard the Northumberland, Sir George Cockburn's flag ship, which was appointed to carry him to St Helena. The remonstrances and complaints uttered by him on this occasion, to use the words of Villemain, were more dramatic than sincere.

Military convention between Wellington and Davoust.

Louis XVIII., who on the 20th of March had retired in the first instance to Lille, and subsequently to Ghent, now addressed a moderate proclamation, dated from Cambrai, to the French nation. Much more important and significant than this proclamation was the advance of Wellington and Blucher. Cambrai was stormed by the British on the 24th, and Peronne on the 26th. On the 28th the rear-guard of Grouchy was defeated by Blucher at Villers-Cotteret, with the loss of six guns and more than 1000 men. On the 29th the British crossed the Oise, and established themselves in the forest of Bondy, close to Paris. In order to approach Paris on the south, on which side the fortifications had been erected, Blucher crossed the Seine at St Germain's, fixed his right at Plessis, and his left at St Cloud. The home minister, Carnot, a distinguished engineer, and the organizer of victory under the Republic, wished to defend the capital; but Massena, Soult, Davoust, Oudinot, and other marshals, declared a defence difficult if not impossible. On the 3d of July, therefore, a military convention was signed at St Cloud, between Marshal Davoust, commanding the French army, on one part, and Wellington and Blucher commanders of the English and Prussian armies, on the other part. By this instrument it was agreed that the French army should retire behind the Loire, carrying its material, its field artillery, &c. This armistice preserved Paris from the horrors of a siege, and the French army from the certainty of a struggle with victorious troops ten times more numerous. On the 6th of July the allied troops entered Paris, and on the following day the commission of the provisional government ceased its functions. On the 8th, during the night, and in the absence of the members, the halls of the Legislative Assembly were closed by armed Prussians. Before the convention had been signed, Fouché, the minister of police, had opened negotiations through Vitrolles, whom he released from prison, with Louis XVIII., and it is also certain that he kept up a regular correspondence with the Allied Powers and with the Duke of Wellington. There can be little doubt that the Emperor Alexander and Prince Metternich would not have been averse to a regency in the interest of Napoleon II., but the Duke of Wellington saw no satisfactory guarantee for permanency unless in the restoration of Louis XVIII., remarking, when the Duke of Orleans was proposed, "*Nous ne pouvons donc pas en finir dans trois mois par une usurpation même honnete et de bonne maison.*"[1] From the Duke of Wellington's headquarters at Neuilly, Fouché proceeded with the English commander and Talleyrand to the Château of Arnouville, near Gonesse, where the king, after a slight pause, addressed the Duke of Otranto in civil terms, assuring him he had determined to have him as minister of police. On the following day, the 8th, the king entered Paris, and on the 9th the names of a new ministry, which had been for some days agreed on, were published. Talleyrand was president of the council, with the portfolio of foreign affairs, the Duke of Otranto had the police, Pasquier was made keeper of the seals, Gouvion St Cyr minister of war, Count de Jaucourt of marine, the Baron Louis of finance, and the Duke de Richlieu was named minister of the king's household. Davoust, who was commander-in-chief beyond the Loire, in nine days after the entry of the king called on his soldiers to resume the white flag and cockade. Although Paris was soon after the entry of the king crowded by strangers, yet the inhabitants, and indeed the great body of the nation, felt themselves profoundly humiliated. The capital of France was garrisoned—"taming thought to human pride"—by strong bodies of Prussians, and the bearing of Blucher and his soldiers was harsh, exacting, and brutal to a degree. The oppressions and exactions of the Prussians are recorded in burning words by M. Vaulabelle and other historians of the Restoration. Indeed, had not the ferocity of the Prussian general been tempered by the calmness, equity, and sense of justice of the Duke of Wellington, the bridges of Jena and Austerlitz would have been blown up. The Prussian general required his men to be maintained, not as soldiers, but as persons accustomed to luxuries and indulgence. He ordered the municipality of Paris to pay him a contribution of a hundred millions of francs, which was afterwards diminished to 100,000. The king was aware of these exactions, and of the attempt to blow up the bridges, and behaved like a prince of courage, feeling, and spirit. He intimated to the Duke of Wellington that he would take his station on the bridge of Jena if Blucher persisted in his attempts. The people of Paris and of France also deeply felt the humiliation of being obliged to restore to the various states the works of art that had been taken in the victorious career of Napoleon. But it is one of the conditions of hostilities and of war, that what is gained in one campaign may be lost in another.

Louis XVIII. had been recommended by more than one counsellor to govern with clemency and moderation, and to throw a veil over the past. Before the month of July had passed, however, an ordonnance of the king directed that nineteen generals and officers who were named should be arrested, and brought before a council of war. Thirty-eight persons also were commanded to reside under *surveillance* in places fixed by the police, till the chambers should determine which should leave the kingdom, or be prosecuted by the tribunals. It is true that those who would be compelled to leave the kingdom were to have the power of selling and disposing of their property, but a measure may be unwise and inexpedient, without being violent or tyrannical. On the 1st August, Marshal Macdonald, who had been instructed by the king to disband the old army, succeeded Davoust, who had kept up a rigorous discipline since the convention of the 3d of July. Thus, within the space of four months, an army of more than 100,000 men was dispersed amongst the body of the people. During the month of August a deplorable and reactionary spirit was exhibited by the populace of the south. Bands of ultramontane and ultra-royalist fanatics paraded the towns, maltreating all opposed to them in political and religious opinions. Of these sanguinary monsters Generals Brune and Ramel became the victims, both being murdered in cold blood in broad day—the one at Avignon, the other at Toulouse, in the presence of thousands of citizens, passive spectators, if not actors in these cowardly assassinations. These excesses in the south were followed, not by the trial and judgment of the offenders, but by an ordonnance concerning the formation of the royal guard, the force of which in peace was to be 25,000 men, irrespective of a force of 1800 men attached to the personal service of the king, of whom 1400 were to be *gardes du corps*.

The ministry which the king had appointed, or which was arranged *by* and *for* him, was by no means a strong one. The Ministry of the Interior had been originally intended for the Corsican Pozzo di Borgo, and the Ministry of the King's Household for the Duke of Richlieu, both of whom had been in the service of Russia. But the Emperor Alexander, who had been consulted, advised Pozzo to decline the appointment, and the Duke of Richlieu refused the Ministry of the Household on the ground that private affairs rendered his presence at Odessa necessary.

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[1] Villemain, *Souvenirs les Cent Jours*, Paris, 1855.

Talleyrand was unpopular with, and Fouché odious to, the ultra-royalists, who ranged themselves around the Count d'Artois. Some, and among others Talleyrand, supposed that Fouché would rally to the government sections of the national independent liberal and ultra-liberal party, but it appeared that no portion of the community had confidence in a man called *le fourbe des fourbes.* The first act of the ancient Jacobin was to forbid the publication of journals without the permission of the police; his second to appoint a commission of censorship. While these measures were put in force at Paris, it is not wonderful that the spirit of religious and political reaction revived at Nismes and in the south. One of the laws most strictly enforced by Napoleon was to prevent the Roman Catholic clergy from forming processions in the open air, or celebrating their pompous melo-dramatic parades and ceremonies in the streets, more especially in districts in which there were Protestants. At Nismes, where there were many Huguenots, the ultramontane rabble of fanatics formed processions to demonstrate their gratitude to Heaven for the fall of Bonaparte. As those professing the Reformed faith did not join in these processions, they were insulted, and their churches broken open. The furious and fanatical rabble was led by a man of the name of Trestaillon, a miscreant of the most ferocious nature. Huguenot women were ill-treated, stripped, and even flogged; and at Uzes, not far from Nismes, were brought into the market-place and shot.

Scenes such as these, which continued for two months, were a disgrace to the government which permitted them. Talleyrand now sought to get rid of Fouché, who had become somewhat disagreeable to the king, with whom he expostulated as to the necessity of conciliating the party of the revolution and the empire. Fouché had also become disagreeable to the majority of the chamber. Talleyrand sounded the Duke of Otranto as to accepting the embassy to America; but the only reply of Fouché was, "Est ce que l'on veut se débarrasser de moi?" Talleyrand was silent.

Two days later, M. Pasquier represented to Talleyrand that Lainé, the President of the Chamber, had intimated that the presence of Fouché in the ministry would be fatal to its existence. Talleyrand, alarmed, sought an interview with his colleague, and a negotiation was entered on, the result of which was that Fouché placed his resignation in the hands of the prime minister the 19th September, in exchange for the embassy to the small court of Dresden. Five days later he left Paris in disgrace, dreading to find the arm either of a victim or an avenger raised against him. Villemain, in his recent history of the Hundred Days, looks upon the employment of Fouché as a reproach and a shame to France, and would trace his nomination to the Duke of Wellington; but the truth is, that Fouché had rendered himself indispensable to all parties, and all that the Duke of Wellington did was to counsel the king to avail himself of the services of a man capable of doing such immense mischief out of office. Having got rid of Fouché, Talleyrand hoped to be enabled to meet the chamber, and to obtain the particular support of the king against all enemies, by threatening a resignation. But his Majesty did not like the threat, became irritated, and a resignation of the ministry was the consequence.

Richlieu cabinet.

The Duke of Richlieu was named head of the new cabinet. Descended of a distinguished historic family, a stranger to all domestic parties and factions in France, M. de Richlieu had yet another title to the favour of the king. As governor of Odessa, he had gained the confidence and esteem of the Emperor Alexander, and it was considered that he would exhibit equal administrative ability in France. But M. de Richlieu mistrusted his own powers, and at first declined the honour intended for him. Overcome, however, by royal persuasions and the importunities of friends, he accepted the Presidency of the Council, with the portfolio of foreign affairs. M. Barbé Marbois became keeper of the seals, M. Vaublanc minister of the interior, Clarke duke of Feltre minister of war, M. Dubouchage of marine, and M. Corvetto of finance. Decazes, prefect of police, was promoted to the ministry of police. It is a remarkable coincidence, that on the same day on which the Richlieu ministry was constituted, the treaty of the Holy Alliance between the Emperors of Austria, Russia, and Prussia was signed at Paris.

The Legislative Chambers opened their ordinary session on the 7th October. The king, in his speech, stated that in the frank and loyal union of the Chambers with the monarch, and in respect for the constitutional charter to which the sovereign was by reflection more and more attached, was to be found the fundamental basis of the happiness of the state. "But in pledging myself to this charter," said Louis XVIII., "and which I have sworn to maintain, and which you all, commencing with my family, will also swear to obey, you will bear in mind that though it is, like all human institutions, susceptible of improvement, yet that the advantage of amendment is not far removed from the danger of innovation." The Count d'Artois, and all the princes present, among whom was the venerable Prince of Condé, took the oaths to the charter.

On the 2d of November the bar and the general public of France were startled by the opening discourse of M. Seguier, *President de la Cour de Paris.* This magistrate maintained that all authority came from God, and that it was unlawful for the people to have a voice in the disposal of it. Sir Robert Filmer had maintained such doctrines in England in 1646, more than a century and a half before, doctrines triumphantly refuted by Locke in his Treatise on Government. A few days afterwards a bill was brought forward in the Chambers for the repression of seditious cries and provocations to revolt. By this law it was provided, that whoever provoked directly or indirectly the overthrow of the government, or the order of succession to the throne, even though these attempts should be followed by no overt act, and connected with no plot, should be punished with deportation. Some articles of this bill introduced new and obscure definitions, subjecting condemned persons to the surveillance *de la haute police.* The bill was, however, carried by a majority of 69. De Serre, deputy for the *Haut Rhin*, prophesied that this law, like all laws dictated by passion and cruelty, would be disregarded by judges and juries in practice.

The violent and fanatical spirit prevailing in the south of France still continued. On the 12th November General Lagarde, commanding at Nismes, was assassinated while attending in the exercise of his functions the opening of the Reformed place of worship. The king gave directions that the authors and accomplices of this crime should be punished, but they eluded the authorities.

M. de Talleyrand, in the last note which he transmitted to the conference of the Allied Powers, before the fall of his ministry had consented to a territorial cession, limiting the frontiers of France to what they were in 1790, and to an occupation of the French territories by an army of 150,000 men for a term of seven years, had also agreed to the payment of an indemnity fixed by the allies at 800 millions. M. de Richlieu, soon after his accession to power, obtained an alleviation of these conditions. The allies consented to leave to France the strong towns of Condé, Givet, Charlemont, the forts of Joux, and l'Ecluse. They further re-

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[1] Vaulabelle, tom. iii., p. 388.

duced the figure of the war contribution to 700 millions. The arrangement was also come to, to fix the maximum period of the occupation at five years, making three years the limit if the French territory could be so speedily evacuated.

The Duke of Richlieu was under the impression that these would be the only sacrifices required. In this he was, however, mistaken. The different powers sought to be reimbursed the damages occasioned by the French armies since 1792, which were 735,500,000 francs, or nearly L.30,000,000. The duke was about to resign in despair, when Louis XVIII. made a last effort with Alexander, who induced Austria and Prussia to moderate their pretensions.[1]

Treaty of Paris.

On the 20th November, the treaty of peace of Paris between France on the one part, and Austria, Great Britain, Prussia, and Russia, on the other, was concluded. France, by this treaty, was deprived of the fortresses of Philipeville, Marienbourg, Sarre Louis, and Landau. A part of the Pays de Gex was ceded to Switzerland; and the part of the department of Mont Blanc which remained to France in virtue of the treaty of May 1814, was given to the king of Sardinia, as well as the principality of Monaco. The fortifications of Huningen were to be demolished, and the French government were not to reconstruct them hereafter, nor to replace them by other fortifications at a distance less than three leagues from the city of Bâle. The pecuniary indemnity, as we have stated, was to be 700 millions, to be paid in equal portions at the end of five years: 150,000 allied troops were to occupy the military positions along the frontiers of France in the departments of the Pas de Calais, le Nord, les Ardennes, la Meuse, la Moselle, and the Upper and Lower Rhine. French writers in general consider this treaty as one of the most disastrous in the annals of the country: the publicists of other nations do not, however, share in this opinion. As to the pecuniary mulcts, though heavy, they were not so severe as France herself had imposed on poorer countries. The Duke of Richlieu did all that was possible for a statesman to do in contending for better terms, but the allies were inexorable. The friend of Richlieu, the Emperor Alexander, gave him a map on which were marked provinces which Austria, Prussia, and the Netherlands had wished to obtain from France, telling him to keep it as a proof of his own influence, and as a testimony of Alexander's friendship, both for himself and his country. A little more than a month after the entry of Louis XVIII. into Paris, Labedoyere had paid with his life the penalty of having joined Napoleon at Vizille: a more illustrious victim was to suffer in the month of December.

Trial of Ney.

An accusation of high treason had been preferred against Ney for joining Napoleon, and bringing over with him the troops under his command. He was tried by the Chamber of Peers for this crime, and, in a house of 161 who were present, was condemned by 136, who voted, to capital punishment. This is not the place to excuse the faithlessness and treason of Ney, but it must be recorded that he died as he had lived, a brave soldier—refusing to have his eyes covered, and exclaiming, that for five-and-twenty years he had faced death without finding it on the field of battle. The sacrifice of such a victim at such a time, though he was not covered by the capitulation of Paris, was not indispensable. It awakened the feelings of the nation on behalf of the victim, and palliated and excused where it did not hallow his crime in the opinion of great bodies of the nation. Ney had always been looked on as the bravest of the brave by the army; and it was not a wise or expedient thing, as a political act, even though justified by strict military law, to shoot a soldier who had excited the admiration of his countrymen in every battle-field of Europe.

On the 20th December, a law was passed re-establishing prévotal jurisdictions, which were to be composed of five civil judges, selected from among the members of the tribunals of first instance, and of a prévot chosen among the officers having at least the rank of colonel. The interrogatory of the person arraigned was to take place within twenty-four hours; the information or indictment was to be filed, and the hearing of witnesses was also to take place on the shortest delay. The sentences of the prévotal courts were to be without appeal, or, to use the term of French law, *sans recours en cassation*, and were to be executed within twenty-four hours. Judgment and execution were thus to follow almost as quickly on each other as in the case of a military court martial.

1816. Law of amnesty.

The law of amnesty, passed early in January 1816, contained some curious provisions. The ascendants and descendants of Napoleon Bonaparte, his uncles, his aunts, his nephews, his nieces, his brothers, their wives, and their descendants, his sisters and their husbands, are, by this instrument, excluded for ever from the kingdom, and are directed to leave France within a month under pain of death. They can enjoy no civil rights, possess no property, titles, pensions, and it is made obligatory on them to sell within six months all property they possess of whatsoever kind. The 7th article declared such of the regicides as voted for the *Acte additionnel* of Bonaparte, passed on the 22d April 1815, or who accepted office or employment under the usurper, irreconcileable enemies of France and of legitimate government, and as such excluded them from the kingdom, from which they were bound to withdraw within a month on pain of banishment. A few days after the passing of this law, a measure was introduced fixing a general mourning on the 21st January, in commemoration of the death of Louis XVI.

In the commencement of April, public opinion received a shock from a royal ordonnance, disbanding the Polytechnic School. The budget for the year 1816 was brought forward on the 28th April, and the session of the legislative chambers closed immediately afterwards.

Insurrection at Grenoble.

Early in May an insurrection occurred at Grenoble. A person of the name of Paul Didier, who had been an emigrant, and who was appointed a *maitre des requêtes* after the first restoration, was the chief actor and promoter of this movement. Didier's watchword was National Independence; but he induced his followers, who were not satisfied with this vague watchwórd, to rally to the cry of Napoleon II. The truth however was, that Didier really had at heart the interests of the Duke of Orleans (afterwards Louis Philippe), and purposed to substitute him for the elder Bourbons. The plot failed, but all those concerned in it were punished with prompt severity. Twenty-one persons, all, with the exception of Didier, obscure, were sent to the scaffold, and about a hundred were killed by the hands of the troops sent into the insurgent villages in the neighbourhood of Grenoble. Didier, after wandering for some time in the frontiers of Savoy, was taken in consequence of information afforded by one Balmain, an innkeeper, in whose house he had taken refuge. He was tried and executed, and met his fate courageously. Decazes, the minister of police, led him to hope for a commutation of his sentence, if he would make disclosures. But all Didier would say was, that the only proof of gratitude he could offer to Louis XVIII. for the benefits he had received of him was, that he would advise his Majesty, as soon as possible, to send out of France the Duke of Orleans and the ex-minister Talleyrand.[2]

On the 17th June, a few days after the last execution at Grenoble, the Duke de Berry, second son of the Count D'Artois, married at Notre Dame Mary Caroline, a princess of the Two Sicilies. These nuptials were inaugurated by numerous fêtes and festivities; but not one single pardon was granted to the numerous body of political prisoners in course of trial by the prévotal courts throughout the county.[1]

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[1] Vaulabelle, tom. iii., p. 398.

[2] *Ibid.*, tom. iv., p. 162.

1816. By an ordonnance of September 4, the Polytechnic School was re-established, though its organization was altered. The suspension of this establishment was traceable to M. de Vaublanc, who had been dismissed from the ministry of the interior in the month of May. Any momentary popularity which the king may have reaped from this measure was destroyed by an ordonnance which appeared three weeks afterwards, authorizing the society "des Prêtres des Missions." The intelligent people of France are well aware that their priests have ever been the servile instruments of any existing authority. In the time of the league the priests flung themselves at the feet of Philip II.; when Napoleon became emperor they hailed his presence as they did the return of the Bourbons. As soon as the Revolution of 1830 was consolidated they fawned on Louis Philippe. In 1848 they prostrated themselves to the republic, planting and blessing trees of liberty; and in 1852 they most servilely saluted the autocracy of Louis Napoleon with the loudest acclaim.

By an ordonnance of the 5th September, the Chamber of Deputies was dissolved. The discussion on the law of elections exhibited the ultra materials of which it was composed. The majority affected to be more royalist than the king himself. Whilst the accounts of the abortive insurrection at Grenoble were still ringing in men's ears, Plaignier, Carbonneau, and Tolleron were tried for distributing three-cornered cards with the words Honour and Liberty upon them, and issuing a proclamation telling the people they were about to save the country. It was sought to be proved on this trial that attempts were made to introduce barrels of gunpowder into a sewer that communicated between the river and the palace, but the accused asserted that no one made this proposal but a person named Scholtein, who was connected with the police. The three men whose names we have mentioned were condemned to the penalty of parricides, to walk to the scaffold in their shirts, and to have their hands cut off before they were executed. Nor were these the only political trials calculated to excite disgust. The courts martial and prévotal courts in several provincial towns shocked by their severity when they did not excite indignation by their injustice. At the trial of General Debelle at Lyons, and of General Travot at Rennes, the presiding military authorities exhibited an open contempt for impartial justice. Advocates were interrupted, insulted, and attempted to be intimidated. Abundant details of these disgraceful scenes are to be found in the History of Vaulabelle, where the proceedings against Admiral Duran de Linois, Colonel Boyer, Generals Drouet, Cambronne, and Bonnaire, Lefebvre, Desnouettes, Rigot, Gilly, &c., may be found set forth at a considerable length, and with a detail of which it is impossible here to give even a summary. The conduct of the government after the events of Grenoble indeed appeared marked by a spirit of vengeance and exacerbation. General Mouton Duvernet, who had accepted the office of governor of Lyons in 1815, after remaining nearly a year at the house of a friend, gave himself voluntarily up, was tried by a council of war, and executed on the 19th July.

Madame Duvernet gained access to the Tuileries, and presented petitions for pardon to the Count d'Artois and the Duke of Berri, both of whom declined to receive them. She ultimately threw herself at the feet of the king, imploring his clemency. But Louis XVIII. passed on without heeding her.[2] Several generals who escaped capital punishment were condemned as contumacious, and their names erased from the army list.

On the 4th November the ordinary session of the Chambers was opened by the king in person. His Majesty in his speech, among other things, said,—"Be attached to the charter. I will never permit any infraction of that fundamental law." In conclusion, the king said,—"Count on my unalterable firmness in curbing the attempts of malevolence, and in repressing the efforts of a too ardent zeal." These latter words conveyed a covert censure on the violent conduct of the majority during the last session, and were meant to prove that the king intended to pursue moderate courses, and not be guided or overborne by fanatical royalists or ultra-royalists. The minister in his political tactics now sought the support of the liberal politician to check the vehemence of the ultra-royalists, and of the royalists, in turn, to stem the violence of the liberals. This system of balance was not without its advantages. The too arbitrary laws against the liberty of the person and the press were mitigated. On the 14th November M. Corvetto made his financial statement. It was referred to a commission, which did not make its report till January. Instead of devoting 150,000 hectares offered to the support of the sinking fund, the commission proposed to assign all the forests of the state for that purpose, thus throwing down the gauntlet to the ultramontane party, who were desirous of dedicating the property of the state forests to the endowment of the church. The 5 per cent. obligations suggested to the government by M. Ouvrard were denounced as improvident and ruinous; but when the Duke of Richelieu announced that the allies had consented to withdraw one-fifth of their armies, the ministry recovered its position. But the bigoted and ultramontane party continued to inveigh, in the Chamber, in journals, and in pamphlets, against the proposal to devote the forests to the sinking fund as a measure levelled against the church. By these means some impression was produced on the Chamber, and the proposal of the commission was sent back to that body for amendment. An ultra-royalist speaker having declared that the church had a right to the restoration of its property, for that religion, like the emigrants, had returned, M. Lainé, the minister of the interior, replied, that religion had not shifted or changed place, but had always remained in the hearts of the French. The law was at length voted, and the principle of the budget sanctioned. A further struggle took place on the new law of election. The chief change proposed in this law was the substitution of direct for indirect election, by which a large share of political influence would be given to the middle and commercial classes.

The royalist opposition proposed an amendment, substituting the greatest tax-payers, up to a certain number, instead of all paying 300 francs. But this attempt failed, and the law was passed without a division. The summer and autumn of 1816, cold, rainy, and ungenial in every part of Europe, was peculiarly so in France. Constant rains fell during the months of July, August, and September. The low grounds became flooded, the crops were destroyed, and even on the higher lands the harvest was seriously injured. But for an abundant potato crop, famine with all its horrors would have been the lot of France. Prices suddenly rose in all the markets; and the holders of grain, anticipating greater gains, hoarded their stock, and sent insufficient supplies to market. The minister of the interior established granaries generally throughout the kingdom, where corn was sold to the destitute at a reduced price. But notwithstanding these efforts, prices rose to more than double, and hundreds perished of actual want.

1817. On the 19th January M. Pasquier, President of the Chamber, was appointed keeper of the seals; and M. de Serre, one of the ablest of the deputies, was named President of the Chamber. The law on individual liberty brought forward in February was perhaps at the moment necessary, and less severe in its enactments than that of October 1815.

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[1] Vaulabelle, tom. iv., p. 214.

[2] *Ibid.*, tom. iv., p. 208.

It should also be remembered that it was a temporary measure, expiring on the 1st January 1818. The law on public journals, enacting that no journals or periodical writings could appear without the permission of the king, was also temporary in its nature, being limited to the 1st January 1818.

Death of Massena.

On the 4th April Marshal Massena died in his fifty-ninth year. Among Napoleon's marshals none was distinguished by a greater military capacity, or by rarer energy on decisive or unforeseen occasions. The sound of guns, said Napoleon at St Helena, cleared his ideas, and gave him understanding and penetration. His talents seemed to increase wherever danger was most imminent. He was superior to every marshal of France in comprehensiveness of view, and in the formation of those varied combinations on which the fate of battles depends. But his character was sullied by insatiable avarice and rapacity.

During the spring of this year the price of bread in the provinces had greatly increased, whilst employment was slack and scanty. Bread riots were frequent, and several persons were executed; among others a woman for disorders produced by hunger. This scarcity of food also produced discontent and *emeutes* in the neighbourhood of Lyons. These popular movements, represented to the government as part of a vast conspiracy, were speedily repressed. The ministry certainly exhibited no clemency towards the offenders. There were 140 condemnations, and 28 sentences of death, one being a boy of sixteen. The commissary of police averred, and the nation re-echoed, that there was no plot; and the government indicated its doubts if not its disbelief, by sending down Marshal Marmont on a commission of inquiry.

The marshal's report was in harmony with the general opinion of the public, and the consequence was that the prefect and general, as well as the mayor, were dismissed, and the remaining prisoners set free.

Death of Madame de Staël.

On the 14th July died the illustrious Madame de Staël, one of the greatest glories of French literature, at the early age of fifty-three. Towards the close of August an ordonnance of the king was published concerning the institution of majorats, by which it was provided that no one should be created a peer unless he had instituted a majorat. The majorat for a duke was fixed at 30,000 francs of net revenue, for a marquess and count not less than 20,000, for a viscount and baron not less than 10,000; the majorat as well as the title to be transmissible to the eldest son.

The reunion of the electoral colleges for the first time under the law of the 5th February, proceeded with wonderful quiet and regularity, and on the 5th November the ordinary session was opened by the king in person.

In the royal speech satisfaction was expressed that it would not be necessary to keep the prévotal courts in action beyond the term fixed for their existence; a law of recruitment was announced according to the charter, giving free scope to the talents and services of the soldier.

On the 22d a concordat on ecclesiastical affairs was laid before the Chamber, by which it was provided that all acts emanating from the court of Rome (excepting penitential indulgences) could only be received, published, and executed with the authority of the king. It was also provided that papal bulls could only be received and published in cases in which they did not conflict with the public rights guaranteed by the charter, and by the franchises, maxims, and liberties of the Gallican Church. But though the provisions of this law seemed fair enough on the surface, yet the exaggerated opinions and vehement expressions contained in papal bulls excited a general feeling of indignation in the breasts of intelligent Frenchmen. In truth, no party was thoroughly satisfied with the new concordat. The liberals looked on it with suspicion, and the ultra-royalists were dissatisfied because they looked for a law endowing the church with land, and leaving its prelates almost independent of civil authority, and free from ministerial influence.

1818.

Gouvion St Cyr had now succeeded the incompetent Clarke, Duke of Feltre, as minister of war, and he it was who drew up and introduced the plan of military recruitment promised in the king's speech. He performed this task with ability, and carried it with success through the Chamber. The *projet de loi* provided that the army should be recruited by voluntary engagements, or in case of insufficiency of "*par des appels*," that every soldier should be a Frenchmen enjoying civil rights, and that the army should consist of 240,000 men. The duration of service was to be six years, with a power of re-engagement. No one could be an officer if he had not served two years as a *sous-officer*, or attended a complete course at the military schools. Two-thirds of the *sous-lieutenancies* were to be given to *sous-officers*, and two-thirds of the grades of inferior officers to seniority men, to rise not by selection, but by years. The announcement of these conditions was received by the royalist party with violent indignation. Ever since the return of the king the army had been filled by officers who had not seen service, and who had not studied at the military school. The great objection to the bill by the nation, however, was that it went to create a species of army of the Faith officered by ultras and men of exaggerated royalist opinions, or feigning such.

Villèle, a royalist, but of sound and sagacious views, indicated the danger of organizing military institutions in a country in which there were no other institutions whatever. His conclusions were certainly far-sighted; for we have seen in 1855 an army democratically organized and selected, sustaining autocracy and absolute power.

Notwithstanding the objections of Villèle and Chanteaubriand, however, the project of law passed both Chambers, and the result is, as a recent historian of the Restoration judiciously remarks, that the army is rendered more an imperial than a royalist institution.

Treaty between France and the Four Powers.

At the close of the month of April a convention was signed at Paris between France on the one side, and Austria, England, Prussia, and Russia, on the other, by which the former agreed to inscribe *a rente* of 12,040,000 francs, representing a capital of 240,800,000, with a view to the total extinction of debts contracted by France out of its territory, payment of which was obligatory by the treaties of the 30th May 1814 and the 20th November 1815.

Convention between France and England.

A convention was also signed between France and England for the entire liquidation of the debts due to the subjects of his Britannic Majesty, payment of which was required in virtue of the treaties of 1814, and the 20th November 1815. To this end there was to be inscribed, on the great book of the public debt of France, a rent of three millions representing a capital of 60 millions of francs. After passing the law on the finances on the 15th May fixing the budget for 1818, the session closed on the following day. The credit of the government at this epoch stood high. The finance minister estimated the receipts at L.30,710,000 of our money (767,778,000 francs), and the expenditure at L.39,700,000, so that the deficit to be provided for by loan was L.9,018,000. Native capitalists being unable to raise so large a sum, the English houses of Baring and Hope lent their welcome aid. The loan was obtained on more favourable terms than that of the preceding year. During the course of it the various parties in the Chamber became more distinctly apparent. There were the ultras of the right, sticklers for absolute power and passive obedience, the ministerialists of the centre, without any fixed ideas but the complaisant tools of power; *3dly*, the friends of constitutional liberty, or as some called them, the doctrinaires, not factiously resisting the government on all occasions, but only opposing it when they believed it to be entering on a wrong and mischievous course; and, 4*thly*, the gauche or liberals calling for the entire and immediate execution of the charter, and almost uniformly opposing the measures of the ministry frankly and vigorously. In this session the debating talent and public education of France made immense progress, and although a great many members read their written speeches, yet almost all the leading men in the Chamber possessed the power of improvising. Constitutional principles also made a slow but a steady advance, and public credit became re-established with a rapidity almost without example. The most remarkable speakers among the deputies of this session were D'Argenson of the Haut Rhin, Becquey (Marne), Beugnot (Seine Inferieure), Chauvelin (Côte D'Or), Corbière (Ile et Vilaine), Camille Jordan (Ain), Martin de Garay (Haute Saône), Roy (Seine), Royer Collard (Marne), Villèle (Haute Garonne). The President of the Chamber, De Serre, was distinguished by dignity and impartiality, and by a nervous and facile style.

Congress of Aix-la-Chapelle.

Session of 1818 and 1819.

hange of ninistry.

onspiracy f the ords de Eau.

On the last day of September the conferences at the congress of Aix-la-Chapelle were opened. At the third meeting of the representatives of the five great powers the evacuation of the French territory by the army of occupation was unanimously decided on almost without discussion, the event to take place on the 30th November. It was agreed that France, according to the stipulations of the treaty of the 20th November 1815, should pay to the allied powers a sum of 265 millions. On the 10th December the legislative session of 1818–19 was opened by the king in person. The speech delivered on this occasion was vague and general in its terms. "In seconding my efforts," said his Majesty, "you will not forget that the charter, in delivering France from despotism, has placed a term to revolutions. I count on your co-operation to repress those pernicious principles which, under the mask of liberty, attack social order and lead by anarchy to despotism." Each party interpreted these doubtful words according to its wishes and desires. On the 29th December the ministry was almost wholly changed. The Duke of Richelieu was succeeded in the ministry of foreign affairs by General Dessolles, the Baron Pasquier in the seals by De Serre, Lainé in the interior by Decazes, Molé in the marine by Portal, and Roy at the finance by Baron Louis. Marshal Gouvion St Cyr remained at the war office, and was the only minister who retained his place. The ultra-royalist party were deeply annoyed that the credit of putting an end to the military occupation of France should fall to the lot of Richelieu and Decazes: for on the 30th November 1818 the fortresses occupied by the allies were everywhere evacuated by their troops, and transferred to the French corps under the Duc d'Angoulême; and they even went the length of getting up a conspiracy in favour of their views. A scheme hatched at the *Café Valois* and the *Terrasse a Bords l'Eau*, haunts frequented by the ultras, was set on foot to seize the ministers by the troops of the guard, to carry them to Vincennes, and to compel Louis XVIII. to resign in favour of his brother the Count d'Artois, afterwards Charles X. The minister of the interior, Lainé, issued his warrant to arrest Generals Canuel and Donnadieu, the former of whom fled to avoid the consequences. Such was the foolish conspiracy called *Bords de l'Eau*, from the terrace by the river side where the parties met. It was at the period of the congress of Aix-la-Chapelle that Vitrolles, an active and zealous agent of the ultra-royalists, drew up his secret note advocating a change of ministers and of policy to be effected by foreign powers. It was suggested in the note that if the allies refused to withdraw their armies they might compel the king to a change of system. The Duke of Richelieu for a while listened to the views of this party, though not willing to go the full lengths they required. He was prepared to satisfy the congress by somewhat modifying the politics of the cabinet of the Tuileries, but he found himself unable to accomplish his views, partly owing to the composition of the Chamber produced by the elections of 1818, partly owing to the peculiar position of Decazes. After the congress of Aix-la-Chapelle the Emperor Alexander paid a visit as a private individual to the French monarch. Louis the XVIII. experienced the greatest satisfaction in receiving the Russian emperor, a satisfaction which he records in his memoirs in a few brief words—"Un des moments," he writes, "le plus heureux de ma vie a eté celui qui a suivi la visite de l'Empereur de Russie."

Financial crisis.

A financial crisis occurred in December 1818, the proximate, if not the promoting, cause of which was the immense sums which the contractors for the loans borrowed by the French government had to raise to make good their engagements. The crisis was aggravated by its being known that the English government intended, in the following session, to resort to a system of cash payments. In the month of November the French funds fell ten per cent., and credit in the capital of France was at the lowest ebb. The French minister, at the suggestion of Messrs Baring and Hope, made a proposal to the allied powers to extend over a period of eighteen months the payments which were to be made in nine, according to the convention agreed to in October.

Retirement of Richelieu.

On the 29th December 1818 the Duke of Richelieu retired from office; and even his rivals, for he had no personal enemies, allowed that his career was distinguished by the most estimable qualities, by a rare disinterestedness, and the most stainless honour. But it must be admitted, notwithstanding his accomplishments and his knowledge of foreign courts, that he lacked the qualities of a statesman, and had an imperfect knowledge of France.

Ministry of Decazes.

For a moment, but only for a moment, the king talked of applying to Talleyrand to form a ministry. He soon, however, fell back on Decazes, his personal favourite, who was prepared, to use the words of the king, to plant his flag upon the ordonnance of the 5th September 1815, and who was willing to be the disciple and instrument of the monarch as minister of the interior, prepared to accept the support of the liberals, and not to reject that of the moderate royalists. A minister of foreign affairs, not unacceptable to the Emperor of Russia, was, however, needed, and such a one was found in the person of General Dessoles.

On the last day of December 1818, the new ministry appeared in the Chamber, in which proposals were made for bestowing on the Duke of Richelieu a national recompense. On the 11th January 1819 that recompense was decreed in the shape of a majorat of 50,000 francs as a national reward for his successful negotiations with foreign powers.

1819.

Installed in the ministry of the interior, Decazes applied himself to the task of conciliating the liberal party. He determined on two concessions, one a law of ministerial responsibility, the other a law admitting the liberty of the press.

He also promised a law on municipal liberties; and M. Guizot, who had been appointed to a department in the home office or ministry of the interior, undertook to draw up that law. Prefects, *sous-prefets*, receivers-general, provincial attorneys-general, and *juges de paix*, were now appointed for their liberal opinions, and the war office was managed in the same spirit. The decrees against some of the surviving members of the National Convention were also mitigated, and Tallien and Cambacérès were permitted to return to France.

A party in the Chamber of Peers was determined to avenge the fall of M. de Richelieu. On the 20th February the Marquis Barthelemy made a motion for altering the constitution of the electoral colleges, contending that the franchise, which was the exclusive privilege of owners of land and houses, was usurped. Decazes, who had been created a peer, spoke on the question, but he was replied to by one of the party of the Count d'Artois (afterwards Charles X.), a party which, voting in a body, set aside the order of the day by a large majority, and voted for taking the motion into consideration.

Laffitte, on the following day, brought forward a counter proposition in the Chamber of Deputies, and exposed the folly of considering as too democratic a law which only conferred the elective franchise upon 100,000 persons out of 29 millions. Menaced by a hostile majority in the Upper Chamber, Decazes proposed to the king to restore to the Chamber the peers eliminated in 1815; but his Majesty preferred creating a new batch of peers, and the minister presented him with a list of 70, among whom were six of Bonaparte's marshals hitherto excluded. By these new creations the number of peers was raised from 208 to 270.

In speaking on the electoral law, Decazes vindicated the intelligence and wealth of the great towns representing manufacturing and commercial interests.

M. Barthelemy's proposition was, however, adopted by a majority of 45, the numbers being 98 to 53. The ministry had determined, and the Chamber of Deputies had agreed, to make a change in the financial year There was but one method to accomplish this, namely, by voting the supplies for eighteen months. Flushed with their victory, the peers refused to adopt the change sanctioned by the deputies by a majority of 39. It was this vote which justified a creation of peers, a fact announced in the *Moniteur*, published the day after the vote. This decisive measure obtained ministers a majority of 56. Almost all those engaged in the conspiracy of the Hundred Days received at this period permission to return to France, and among them the chief conspirator Maret, Duke of Bassano, a man who so long held the pen for Napoleon as secretary and minister. But notwithstanding the clemency of the king and the moderation of the government, the monarch was unpopular, and the people discontented. In the three elections made to complete the last renewal of the chamber, Daunou Saint Aignan and Benjamin Constant, all leaders of the extreme democratic party, were chosen. Opposition in the chamber was generally systematic, often violent.

Law on the press.

The preparation of the three projects of law on the freedom of the press was entrusted by the ministry to M. de Serre. By the main provisions of this law outrages on public morality and religion were subjected to penalty as well as offences against the person of the king, royal family, members of the chamber, or foreign sovereigns, and defamation of public functionaries and foreign ambassadors. The third of these projects liberated the journals from the censorship, as also from the necessity of a royal permission. The proprietors, however, were obliged to furnish a security of 10,000 francs. Libels against individuals were to be tried by judges, juries being only admitted when public interests or establishments were attacked.

Budget of 1819.

The budget of 1819 favourably contrasted with those that preceded it. The estimated expenses of the year were 889,200,000 francs; those of 1818 being 1,154,000,000 francs. The diminution was in great part owing to the relief afforded by the withdrawal of the allied armies and the evacuation of the French territory.

In the autumn of 1819 the re-election of one-fifth of the members of the Chamber of Deputies took place. The royalists, who were discontented with Decazes, called on their supporters to return rather Jacobines than ministerialists. The advice was notably followed in the election of the Isère, where the recollection of Didier's insurrection and its sanguinary repression had rendered the electors vehement. They chose as their candidate the Abbé Gregoire, whose name was identified with some of the extreme measures of the convention,[1] knowing that his election would displease the king. On the news of the Abbé's return, the Count d'Artois solicited an interview with his brother to whom he had not spoken for some time. "Sire," said he, "behold whither they are leading you." "I see," replied the king, "and will provide against the danger."[2] How vain this royal confidence was will appear from the results of the elections; five-and-thirty extreme liberals, among whom was General Foy, were returned, fifteen ministerialists, and only one royalist. The left, which commenced the struggle with two votes, now mustered more than eighty. Louis XVIII. was so discouraged at the election of Gregoire, that he cordially and confidentially listened to his brother, and it was agreed between them that the electoral law required alteration. That very evening the minister Decazes was summoned to the royal closet, and received orders to prepare a new law of elections, to which he at once agreed. When, however, the matter was broached in council, it was found that there were dissensions in the cabinet. De Serres and Portal fell into the views of Decazes, but the president of the council, General Dessolles, St Cyr, minister of war, and Louis, minister of finance, were in favour of the existing system.

Change of ministry.

A change in the ministry was the consequence. Decazes was made president of the council and minister of the interior, a post for which his habits and talents peculiarly qualified him; Pasquier was appointed minister of foreign affairs; Latour Maubourg of war, and Foy finance minister. In consequence of these changes, the opening of the Chamber was adjourned till the 29th November. But in the interval the president of the council was virulently assailed by the press and in pamphlets. The new cabinet, however, was supported by the doctrinaires, who required for their party two portfolios—one to be given to Mr Royer Collard—the other to Molé, De Broglie, or M. de Barante. The king's speech at the opening of the Chamber explicitly announced a change of policy. "The moment is come," said his Majesty, "when it is necessary to fortify the Chamber of Deputies, and withdraw it from the annual action of party by securing it a longer endurance. To the devotion and energy of the two chambers I look for the means of saving the public liberties from licence, confirming the monarchy, and giving to all the interests guaranteed by the charter the entire security which we owe it."

In the division for the president, Laffitte, representing the extreme liberals, had only 65 votes; while M. Ravez, supported by the centre, had 105; and M. Villèle supported by the right, 75. The majority, however, could not be relied on to support any change in the electoral law. In the division on the address the ministers were defeated by a majority of one. The address drawn up by the Commission which the majority had nominated, announced that a vague disquiet had taken possession of the public mind, and that the factions endeavoured to corrupt public opinion. It was true that at this period secret societies abounded, and that associations were formed to defend liberty of thought and opinion. In the mansion of Lafayette secret committees were held and a secret correspondence was established between the malcontents in Brussels and Paris. The new electoral law proposed by the government was to the effect, 1*stly*, That the Chamber should be renewed every five or seven years, and not a fifth every year. 2*dly*, That the number of the members should be augmented; and, 3*dly*, That the colleges of arrondissement should be broken into smaller divisions. It was agreed that the Chamber should be composed of 430 instead of 260 members—258 being returned by the colleges of arrondissements and 172 by the colleges of departments. The important change introduced into the new law was that a different class of electors was introduced,—persons paying 1000 francs instead of 300.

Secret societies.

New electoral law.

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[1] Gregoire is generally denominated a regicide; but he did not actually vote for the death of the king, having been absent at the time on a mission.

[2] Lamartine, *Hist. de la Restauration*, tom. vi., p. 187.

Assassination of the Duke of Berri.

During the month of January and the first part of February of this year nothing very important occurred in the Chambers. On Sunday night the 13th February, however, Paris was startled by a sad event. On that evening, just preceding the close of the carnival, there was, as is usual, a representation at the opera. The Duke and Duchess of Berri were among the audience. About eleven o'clock the duke conducted the duchess, who wished to retire to her carriage, intending to return for the ballet. As he stood at the door of the carriage, a man of the name of Louvel, a journeyman saddler, whose boyhood had been passed amidst the worst scenes of the Revolution, rudely thrust aside the aide-de-camp, struck a dagger into the right breast of his victim, and leaving the weapon in the wound, escaped round the corner of the Place Louvois into the Rue Richelieu. The duchess hearing her husband exclaim that he was assassinated, rushed from the carriage, and followed him as he was borne bleeding to the little room behind his box. The Duke felt that the blow was mortal, and called for his wife that he might die in her arms. The best medical skill was had recourse to, but in vain. The blood escaping from the wound into the chest threatened suffocation, when the Prince requested to be turned on his left side; no sooner was this demand complied with than he expired.

The assassin was taken near the royal library in the Rue Richelieu. When pressed as to what could have instigated him to commit such an act, he replied, that the Bourbons were the tyrants and enemies of France, and that he had singled out the Duke of Berri as the youngest of his race. Before the duke breathed his last sigh the king arrived. When the monarch approached, the first words of the duke were, "My uncle, give me your hand that I may kiss it for the last time;" and he then earnestly added, "I entreat the life of that man. I beseech that I may die in peace, and that my dying moments may be softened." These words paint the generous, noble, and placable prince whose days had been so untimely shortened.

The death of the prince excited general regret amongst all parties; and amongst the royalists it excited consternation. It was determined by the government that the opera house should be removed from the spot where the crime had been committed, and that a monument should be erected on the site.

The suspicions and dislike of the royalists had been long concentrated upon M. Decazes, and they now sought to fix on him the guilt and infamy of this crime. "Party," said Louis XVIII, to his favourite minister and pupil, "will seek to turn this event to its purposes. The ultras, who hate me as much as you, will accuse me of blindness and indifference if I support you. But I will resist, and you shall not quit office; I insist, my child, upon your remaining; they shall not separate you from me." When the Chamber opened, the zealous ultra-royalists accused M. Decazes of being an accomplice of the assassin. Villèle in vain endeavoured to restrain these furious zealots; La Bourdonnaye proposed an address to the king praying his Majesty to put down revolutionary doctrines; General Foy supported the proposal of an address, but suggested that it should merely express the grief of the Chamber; a sentiment in which all were unanimous. "To no party," said Foy, "can this event be so deplorable as to the friends of freedom; for the antagonists of freedom will turn this conjuncture to their advantage in seeking to deprive the country of those liberties which the king had granted." The Chamber adopted the motion of Foy.

It was agreed by the monarch and his minister that the Chamber of Peers should be summoned as a supreme court to try the assassin, and that stringent laws against the press, modifying the electoral law, and giving the government extraordinary powers, should be introduced into the Chamber of Deputies. Though Louis XVIII. was determined to support M. Decazes, yet public feeling appeared too strong for him. Châuteaubriand attacked the favourite, saying his feet had slipped in blood. The Count d'Artois, too, as well as the Duchess d'Angoulême, demanded his dismissal. It is impossible for me, said the father of the murdered prince, to remain at the Tuileries when M. Decazes, accused of that crime, sits at the council. I beseech your Majesty to allow me to retire to Compiègne.[1] When M. Decazes heard of these events, he tendered his resignation. The king felt obliged to accept it. It is not against you, he said, but against me that the stroke is directed. The Pavilion Marsan are trying to overbear me. I will not have M. de Talleyrand; the Duke de Richelieu alone shall replace you. I will show the world that you have not lost my confidence.

Second ministry of M. de Richlieu.

The Duke of Richelieu, though he evinced the utmost distaste for the task, at the earnest solicitation of the king, undertook to form a ministry. M. Simeon was made minister of the interior, M. Portalis under-secretary to the minister of justice, but no other changes were made in the cabinet. M. Decazes was appointed ambassador to London, with a salary of L.12,000 a-year, was loaded with presents by the monarch, and he was so far from losing his influence by the change, that the king corresponded with him almost daily. The French proverb, however, says *les absens ont toujours tort;* and while M. Decazes was in London an intrigue was hatched which destroyed his ascendancy.

Madame du Cayla.

Though the king was at this period advanced in life, and addicted to the pleasures of the table, yet he was not insensible to beauty, and was above all delighted with the conversation of the refined and sensible of the fair sex. The royalists, aware of this disposition, fixed on a young and beautiful woman possessing a graceful exterior and winning address, great powers of conversation, and exquisite tact; and it was contrived that this lady should solicit the favour and protection of the monarch in reference to her family affairs, thus win his confidence, and insensibly draw the king more and more from M. Decazes, and of course nearer to the ultra-royalists and clique of the Pavilion Marsan. Such was the origin of the secret influence of Madame du Cayla. The management of the delicate negotiation was entrusted to the Viscount de la Rochefoucauld, and he, aided by the Jesuits, impressed on the fair lady the service she would render to religion, to royalty, to the family of the Bourbons, and to France, if she would lead back the sovereign into the right way. The history of the plot is graphically, minutely, and apparently from most accurate sources, told in the recent volumes of Lamartine's *History of the Restoration*, to which we must refer the reader curious of more copious details than can be here given.[2]

The result of the first interview was entirely successful. Dazzled and captivated by her beauty, her grace, her tact, and her charm of manner, the king invited Madame du Cayla to a second interview. Her ascendancy grew apace, and so necessary did her presence become to the monarch, that he passed several days in her society, and no longer thought of the male favourite whom for years previously he had called by the endearing term of "*mon enfant.*"

It is a remarkable fact that from the period of Madame du Cayla's ascendancy, the career of Decazes as a public man closed. He never again formed a part of any ministry, and his influence ceased when no longer in office. He was a man of great tact, of considerable ability, and of most serviceable suppleness. The ascendancy he gained over the mind of the monarch was partly due to his suavity and moderation—partly to his studying the dispositions and designs of the monarch, and making himself the exponent, interpreter, and executor of the royal wishes, projects, and plans. Decazes, like the king, was a temporizer, a moderator. His policy was to disarm and mitigate opposition, but he was a man of just views, of clear judgment, joining to considerable powers of speech the art of adroitly conciliating and managing men. The doctrinaires went out of office with M. Decazes, but the *elite* of the party, comprising MM. Guizot, de Staël, de Barante, and St Aulaire, voted generally with the new ministry. It should be stated to the credit of this minister, that Guizot, Villemain, and Cousin all owed their rise to him. He was the first minister who gave to France direct election and the freedom of the press.

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[1] Vaulabelle, *Histoire de la Restauration*, tom. iv., p. 486.

[2] See *Hist. de la Restauration*, par Lamartine, tom. vi., pp. 230, 244.

Funeral of the Duke of Berri.

The murdered Duke of Berri was buried with all possible pomp in the vaults of St Denis. The king, accompanied by the Duke and Duchess d'Angoulême, attended the ceremony. The murderer was brought to trial in due course. He was condemned on the clearest evidence, confessed his guilt, but maintained that his crime was justifiable on public grounds.

After the fall of Decazes, the electoral law was the first upon which the fortune of parties turned. The existing law, giving the franchise to all who paid 300 francs taxes, was sure to produce a liberal majority, for the simple reason that the ultra-royalists were a minority in the nation. But the murder of the Duke of Berri produced a universal panic, appalled the royalists, and was not without an influence on the mind of the king himself.

His Majesty heard from all sides, at home and abroad, that the law should be altered so as to produce a royalist majority, and the Duke de Richelieu was willing to go these lengths. The duke, however, refused to enter the ministry unless the Count d'Artois would promise his support, a support which the latter was ready to give, as the great object of the ultra-royalists was to obtain the repeal of the electoral law. To conciliate the ultra party, the under-secretaryships of both the home ministry and ministry of justice were given to two ultras, the Barons Portalis and Capelle; and the latter, who had been a kind of private councillor and secretary of the Count d'Artois, was entrusted with the management of the *employés* of the home office, thus giving him unlimited power over the appointment of prefects and functionaries. Thus the duke gave up the patronage and management of the departments and of the elections to the Count d'Artois.

It was by a compromise, brought about by the efforts of Simeon, Pasquier, and Mounier, that this was effected. It was agreed that there were to be two classes of colleges of electors—one of the departments, the other of the arrondissements. The electoral college of each department was to consist of a fifth part of the whole electors paying the highest taxes; the electoral colleges of the arrondissements were to consist of the remainder of the electors having their domicile within the limits. The electoral colleges of the arrondissements named by a simple majority as many candidates as the department was entitled to elect, and the college of the department chose from among the deputies to send to the Chamber. To the government project an amendment was proposed by M. Camille Jordan, which received the support of the liberal party, and was carried against the government by a majority of one. This majority was produced by the vote of M. Chauvelin, who, seriously ill, was carried into the Chamber on a couch to decide the question. An appeal was now made to the doctrinaires, and a new amendment was proposed by MM. Boin and Courvoisier, which was supported by the government, the right, and their adherents in the centre.

It was to this effect, that the Chamber of Deputies was to consist of two hundred and fifty-eight members chosen by the arrondissements, and a hundred and seventy-two by the departments; the latter being chosen, not by the whole electors, but by a fourth of their number, composed of those who paid the highest amount of taxes.

M. de Boin's amendment was carried by a majority of five. It is a remarkable circumstance that only five members were absent from the division, a plain proof that the question excited the most palpitating interest. As soon as the news of the decisive vote in favour of the new law became known, there was considerable excitement in the capital. Crowds collected in the streets, seditious cries were heard, and the military were called on to disperse the mob. In the tumult a law student named Lallemand was shot.

This event increased the excitement and augmented the discontent. Mobs collected in greater force, and proclamations were issued forbidding assemblages even to the number of three. The proclamation of the government produced a counter one from the democratic and liberal committees, calling on the students to avenge their companion. The students met and marched two by two, but were dispersed by the *gendarmerie à cheval.* A suppressed insurrection generally strengthens the hands of government, and at the funeral of Lallemand, which occurred on the 9th June, the capital was tranquil.

The budget.

The budget for the year was voted with little opposition. The gross revenue was 741,087,000 francs, the net income 739,712,000 francs. The expenditure, exclusive of the interest of the debt, was estimated at 511,317,000 francs.

It was at a period when the revenue was thus flourishing, and when the country was generally prosperous, that military conspiracies became rife. Lamartine, who had access to good sources of information, states that Lafayette declared to his friends that open force could alone overthrow a government which declared against the equality of classes. Conspirators and carbonari, as they were then called, tried to seduce the military; to surprise the fortress of Vincennes; to tamper with the regiments in Paris; to excite the schools of law and medicine, and to rouse the faubourgs. Such were the affairs in which Nantil, Sauzet, and Mazaire were implicated.

Many general officers were also at this time mixed up in conspiracies. So long as Gouvion St Cyr, as minister of war, and Decazes, had made attempts to allay the discontent of the old Napoleonist officers by giving them a share of promotions and honours, though there was secret discontent there was no conspiracy; but now that the new war minister closed the career of promotion and honour to officers with imperial sympathies and predilections, military conspirators became more numerous. They assembled together in the Rue Cadet, and their schemes were communicated to Lafayette, who had formed a species of council composed of Voyer d'Argenson and Koechlin, both deputies having immense influence in the Rhenane departments, to Manuel, one of the orators of the Chamber, to Dupont de l'Eure, an ancient magistrate, to Merilliou, a rising barrister, to Corcelles, a deputy, and others. Several generals, and among others, Pajol, Bachelu, Maransin, and Merlin; the colonels Ordner, Combe, Caron, Ferrari, and others, were also mixed up in these plots. The day on which a simultaneous demonstration was to take place was fixed for the 19th August, but circumstances prevented the outbreak. Towards the end of July the legion of the Meurthe, of the Cotes du Nord, and of the first legion of the North were all affiliated. But accidental circumstances prevented the rising at the appointed time, though Colonel Sauzet started for Vitry, Colonel Mazian for Amiens, Lafayette for his chateau of Lagrange, Voyer d'Argenson for the Upper Rhine, Corcelles for Lyons, and Saint Aignan for Nantes.[1] Lafayette, according to Lamartine, wished to postpone the enterprise to some days later, in order to keep the anniversary of the death of his wife, and on the night of the 18th or 19th August an explosion took place in the castle of Vincennes, and this caused military and gens d'armes to be assembled in the fortress. The presence of the troops led the conspirators erroneously to suppose that their designs were discovered.[1] Some vague information had, however, been given to ministers, and they assembled on the 19th at the Duke de Richelieu's. Lists of the persons implicated in these plots were then in the hands of the cabinet, and among them were many of the foremost men among the liberals, among others Lafayette and Manuel. The cabinet recoiled from the task of grappling with the leaders who were strong in the chambers, and proceeded only against the inferior agents.

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[1] Vaulabelle, tom. iv., p. 561.

Birth of the Duke de Bordeaux.

Royalist reaction.

f. de Villèle in he Cabinet.

A month subsequent to the threatened outbreak, the Duchess de Berri was safely delivered of a son, who was christened Henri Duke de Bordeaux. Suchet Duke d'Albufera and several of the guard were eye-witnesses to the birth.[2] The royalists were delighted at this auspicious event, nor could the liberals resist the general enthusiasm. The Duke d'Orleans, afterwards Louis Philippe, asked the Duke d'Albufera whether the Duchess de Berri his niece was really the mother of a boy. "As certainly as your Royal Highness is the father of the Duke de Chartres," replied the marshal.[3] The duke, with his duchess, afterwards Marie Amélie, queen of the French, went to congratulate his royal relative on the birth of a prince who might one day be his king. The military conspiracy, which was to have broken out on the 19th August, had ramifications in many of the provinces, and disturbances took place which had to be put down by open force. At Brest M. Ballart, a deputy, was insulted by the populace. The national guard in the town, exhibiting symptoms of disaffection, was dissolved. Benjamin Constant was threatened by the scholars of the military school of cavalry at Saumur. There were also conspiracies in the east and west, at Saumur, Befort, and La Rochelle, during the course of 1820 and 1821. In these conspiracies Generals Berton, and Thouars, Bories, Armand Carrel, and Lafayette were implicated. Lafayette set out from Paris for Befort, and only turned back when he heard on reaching the place that the plot had failed. The attitude of the *Doctrinaires* at this epoch was almost hostile to the ministry, and the Duke de Richelieu exasperated the party at the close of the session by striking the names of Royer Collard, Guizot, Barante, Camile, Jourdan, and Mirbel, from the members of the council of state. In consequence of the reaction which had taken place in the public mind after the birth of the Duke de Bordeaux, the elections were favourable to the royalists. They had now for the first time since the Restoration obtained a preponderance, and the consequence was that De Villèle was admitted without office into the Cabinet; that De Corbière was appointed minister of public instruction, and M. de Châteaubriand appointed to the embassy to Berlin.[4]

aw of cclesiastial endowients.

The Chambers met on the 20th December, and the king addressed them in a moderate tone. "Whatever," said he, "adds to the consideration and influence of the legislature, adds to the authority and dignity of my crown." The address and answer echoed the strong feelings of the majority, and suggested the necessity of fortifying the authority of religion, purifying morals, and giving to the armed force the organization which would secure tranquillity within and peace without. The strength of the royalists induced the ministers to introduce a law for additional ecclesiastical endowments. It was proposed to establish twelve new bishopricks, and to raise the salaries of the clergy. The project met with a violent opposition from the liberal party, but it was carried by a majority of more than two to one. Some modifications were introduced in the French corn laws by limiting the number of places to which foreign grain might be imported.

Indemnity to marshals.

A law was also passed for an indemnity to the marshals, generals, and others, whom Napoleon had endowed out of the revenues of Italy, Germany, and other countries over which he had extended his sway. The indignation of the royalists knew no bounds when they heard the names of these Napoleonists.

The censorship.

1821.

The minister of the interior brought forward a project for continuing the censorship, contending that it had been so gently exercised that no legitimate and proper discussion had ever been interfered with, but that abuse and scandal had been checked. Shortly before the session closed Villèle and Corbière resigned their places, and Châteaubriand retired from the embassy at Berlin. After the session of the legislature had terminated, the difficulties of the ministry greatly increased. The ultra-royalists, with the Count d'Artois at their head, were discontented that they had not a majority in the Cabinet as well as in the Chamber, and that Polignac, the favourite of the prince, and Peyronnet, the spokesman if not the orator of the extreme party, had not portfolios as ministers.

Elections of 1821.

Resignation of M. de Richelieu. Villèle ministry.

The ultra-royalists had no objection to M. de Richelieu as premier, and they commenced negotiations on this basis, demanding the ministry of the interior in a new cabinet for M. de Villèle, and the creation of a ministry of public instruction for M. de Corbière, the English embassy for M. de Châteaubriand, and another embassy for M. de Vitrolles. The Cabinet offered the ministry of marine to this small party, but insisted on maintaining M. Mounier in the ministry of the interior, by far the most influential office connected with the government. On this point negotiations broke off, and the old ministers, without the support of the right, opened a new session. The elections of 1821, however, had increased the royalist majority, already great, and which was victorious by a large majority on the first division. On the 13th December, M. de Richelieu, finding the Chamber hostile to him, and there being no possibility of coming to an understanding with the Count d'Artois, resigned the seals of office. All his colleagues followed his example. M. de Richelieu advised the monarch to send for M. de Villèle, who accepted the place of president of the council and minister of finance. M. de Peyronnet was appointed minister of justice, M. de Montmorency of foreign affairs, M. de Corbière of the interior, Marshal Victor of war, and M. Clermont Tonnere of marine, whilst Châteaubriand was sent to London as ambassador. This was a complete ultra-royalist or Carlist Cabinet, to which the monarch would not have consented had he possessed his ordinary health and strength. But he was frail and feeble, and in such a state of debility that his mind had lost its tone. In truth, Louis XVIII. now considered his reign as almost terminated. "Now that M. Villèle triumphs," he exclaimed, "I regard myself as annihilated.[5] Hitherto I have preserved the crown, and defended the charter; if my brother imperils both, it is his affair."

There cannot be a doubt that the change introduced into the electoral law under the Duke de Richelieu's administration contributed to placing the government in the hands of the ultra-royalists. The principle of giving the departmental electors representatives of their own, chosen by a fourth of their number who paid the highest amount of taxes, completely altered the character of the Chamber, and gave to the Carlists, the seigneurs, proprietors, and *parti prêtre* an undue ascendancy. Indeed this last party, with its Jesuits of the long and short robe, and its congrega-

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[1] Lamartine, *Histoire de la Restauration*, tom. vii., p. 26.

[2] *Ibid.*, tom. vi., 277.

[3] *Ibid.*, tom. vi., p. 278.

[4] *Memoires d'Outre Tombe*, tom. vii., 276, 279, 131 and 132.

[5] Vaulabelle, *Hist. de la Restauration*, tom. v., p. 262.

History.

1821.

tionists now assumed a dangerous prominence, obtained many employments in every department, and urged on its instruments without any regard to consequences.[1] Embassies, prefectures, places in the council of state and in the ministry of public instruction, rained on them. It is no part of our duty in this place to refer to the congresses of Carlsbad, Troppau, and Laybach, or to the insurrection in Naples, Piedmont, and Greece, all of which had more or less an effect on France; but whilst the ultra-royalists were making such rapid strides towards a monopoly of place and power, the Emperor Napoleon departed this life at St-Helena on the 4th May in his fifty-second year. (See NAPOLEON BONAPARTE.) His demise, strange as it may appear, excited a greater sensation in England than in France. Thus passed away the man who for twenty years had disposed of the destinies of nations after a fashion recalling the times of Alexander, Cæsar, and Charlemagne. Alas! to use the words of Burke, "what shadows we are, and what shadows we pursue."

Death of Napoleon.

It may be supposed that a man of the keen common sense of Louis XVIII. deeply felt the humiliation of his present position. It is true he was still king, but his brother was viceroy over him. It was the Count d'Artois appointed the new ministry, every one of whom, says Vaulabelle, with the exception of Victor duke de Belluno, belonged to the congregation; and from the date of that appointment the Count d'Artois was the real king of France.[2]

The first difficulty of the new ministry arose from the laws regarding the press. It was necessary to do something to check the boldness, daring, and what the ultra-royalists called the licentiousness of the journals, and yet this was difficult in a ministry in which M. de Châteaubriand—who had been himself a writer in the press—held a distinguished place. A law was brought forward by M. Peyronnet professing to be based on the charter, but yet tending seriously to abridge the liberty of the press. By this it was enacted that no journal could appear without the king's authority, excepting such as were in existence on the 1st January 1822. Offences of the press were declared to fall exclusively under the jurisdiction of the royal courts which decided without a jury. The authorities were authorised to suspend or even suppress journals which published a series of articles against religion and the monarchy. The pleadings were to be with closed doors, in cases in which the authorities considered publicity dangerous to morality or to order. When the Chamber was not sitting, the king was authorised by ordonnance countersigned by three ministers to re-establish the censure. This law was received by the left with a storm of indignation, and even M. de Serres so recently filling a high office in the king's government, made an eloquent speech against the project. The law was, however, carried in both houses, and by a greater majority in the Chamber of Deputies than in the Peers. After the discussion on the press, the budget was the only question that excited general interest. The revenue for the year 1823 was estimated at 909,130,000 francs (L.36,450,000), and the expenditure at 900,475,000 francs (L.36,025,000); leaving a surplus of 8,000,000 francs, or L.320,000. The vote for 80,000 in the army was the theme of indignant remark to the opposition. The revenue of 1822 was 915,591,000 francs (L.36,600,000), the expenditure 882,321,000 francs (L.35,960,000); leaving a surplus of 33,270,000 francs (L.1,320,000) in the hands of government. The sums voted for the army amounted to 250,000,000 francs.

Law on the press.

1822.

Revenue for 1823.

French intervention in Spain.

Villèle was a man of sound sense, shrewdness, and sagacity, and entered into office with views directed to the peace and prosperity of the country. But circumstances and events overmastered him and disturbed all his plans of domestic government. He had not been long in office when revolution reared its head beyond the Pyrenees. The examples of Naples and Piedmont had now extended to Spain, and the French ultra-royalists were for measures of repression by armed interference. They were determined in fact to put down the Spanish revolution by force. Already during the administration of the Duke de Richelieu a body of troops called a *Cordon Sanitaire* had been collected on the French side of the Pyrenees, under the pretext of preventing the yellow fever, then raging at Barcelona, from penetrating into France, and now a congress was summoned at Verona to take into consideration the question of Spain, and the progress of the Spanish revolutionists.

History.

1822.

Congress of Verona.

The directions which M. de Villèle drew up for the plenipotentiaries whom he proposed to send to Verona were skilfully and moderately framed. He required that France should be left independent to deal with Spain according to the exigencies of the case, and that the other powers should recall their ambassadors when France recalled hers. But these were the views of the minister, not of the majority of the Chamber. The views of the majority were expressed by M. de Montmorency, who required that the great powers should recall their ambassadors simultaneously with France, and afford material support in the certain event of war.

To counteract these views of M. de Montmorency, M. de Châteaubriand left the London embassy and proceeded to Verona.

M. de Montmorency was the representative of the extreme-royalists, and the object of the French premier was to curb and check him by a man of more liberal opinions and of more brilliant reputation. M. de Montmorency returned from Verona with the draft of the despatches which the allied governments proposed sending to Madrid, and bearing one from France to the same purport. But he was coldly received by the monarch and M. de Villèle to whose instructions he had paid so little regard, and the notes which he brought from Verona were not despatched; a more conciliatory one drawn up by the king and Villèle being substituted. The result was the resignation of M. de Montmorency. M. de Châteaubriand was appointed in M. de Montmorency's place as minister for foreign affairs, the premier Villèle believing Châteaubriand to be imbued with his own moderate views. But Châteaubriand, as soon as M. de Montmorency had left Verona, suddenly embraced with zeal and ardour the views of the ultra-royalists, and by every diplomatic effort sought to force his country into an invasion of Spain. Placed in the ministry of foreign affairs, he carried out these views with all the energy of an anxious mind, making himself the exponent of the opinions of the ultra party. In his memoirs he extenuates this passage in his public life, on the ground that it was necessary for the grandeur of France and the consolidation of the throne of the Bourbons. His object, he maintains, was "to replace France in the rank of military powers; to restore the white cockade in a war almost without danger, to which the opinions of the royalists and the army strongly inclined." Louis XVIII. and Villèle, however, were apprehensive of the consequences of this French intervention. They feared a war of opinion, and that the French troops marching under the white flag might rally to the Spanish marching under the tricolor. These misgivings were much strengthened by the Duke of Wellington, who on his return from Verona had a confidential interview with Louis XVIII., and represented to his Majesty, in the words of Mr Canning's note, that the English government had always been opposed to any foreign intervention in the internal affairs of Spain.

The arguments of the Duke had great weight with the sovereign. But in the French Cabinet Peyronnet, Clermont Tonnere, and the Duke de Belluno strongly counselled intervention, the latter, who was war minister, insisted that the example of the Spanish revolution was prejudicial to the throne of France, and that the impression it produced on the military might be dangerous. The Duke de Belluno further stated that the army would in a campaign become devoted to the Bourbons, but that it was dangerous to leave it inactive on the frontier. Nothing, he truly added, is so dangerous as a body of troops in a state of inaction.

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[1] Lacretelle, *Hist. de la Restauration*, tom. iii., p. 198.

[2] Vaulabelle, tom. v., 263.

Warlike preparations were not suspended, and the march of troops to the Pyrenees continued. Public opinion in France, it must be confessed, was in favour of the war. The war party in the legislature was augmented by the result of the annual election of one-fifth of the Chamber, and it now comprehended an immense majority in the Chamber. The royalists and the army panted for the contest, and the liberals and democrats in secret hoped that the French troops would fraternise with the Spanish revolutionists.

1823. The French Chambers met on the 28th January, and the speech of the king was eminently warlike. "I have tried," said his Majesty, "everything to secure the peace of my people, and to preserve Spain, but in vain. 100,000 men, commanded by a prince of my family, are ready to march to preserve the throne of Spain to a descendant of Henry IV., and to save that fine kingdom from ruin. Let Ferdinand VII. be free to give to his people the institutions which they can never hold but of him, and which in assuring the repose will dissipate the just uneasiness of France. From that moment hostilities shall cease."

Châteaubriand, the minister for foreign affairs, made an eloquent and well-reasoned speech in favour of the interference which he had promoted and provoked. Admitting that no government has a right to interfere in the affairs of another, except in the case where the security and immediate interests of the first government are compromised, he proceeded to show that there was a moral contagion which was the most serious and alarming of all the dangers—that the revolutionists of Spain were in correspondence with the revolutionists of France, and excited French soldiers to revolt. These circumstances, he urged, compromised the essential interests of France. This speech made a prodigious impression; for it expressed with force, felicity, and eloquence, not merely the feelings of the ultra-royalists and Carlists, but of the royalists and many men of moderate opinions. The adhesion of the Chamber to M. de Châteaubriand's views was proved by a substantial vote. A supplementary credit of 100,000,000 francs (four millions sterling) was placed at the disposal of the minister to carry on the war. It was in the course of the debate on this grant that Manuel, the orator of the opposition, rose to answer Châteaubriand. He described the government of Ferdinand as atrocious, alluded more than once to the fate of Louis XVI., and endeavoured to show that it was the protection given to the Stuart family by France which led to the destruction of those princes. The royal dynasty of France, he continued, owed its most serious danger to the same cause, the invasion of the soil of the country by foreign armies, and it was then that revolutionary France, feeling the necessity of defending herself with fresh energy—— The speaker was not allowed to finish his sentence. They hastened to interrupt him, says Lamartine, in order to have the right to execrate him.

Manuel, his expulsion from the Chamber.

The *coté droit* exclaimed that Manuel had apologised for regicide, and with loud imprecations they called on the president to put him down, to expel him. Expulsion! expulsion! let us drive him from our benches, exclaimed eighty or a hundred voices. M. Ravez, the president, remarked with dignity that the speaker had been interrupted in the middle of a sentence. The vociferators, heedless of these remarks, surrounded the rostrum on which Manuel stood; and one of them, bolder than the rest, dragging Manuel from the eminence on which he stood, demanded a signal vengeance on the advocate of assassins. Manuel wrote a letter to the president, contending for his right to finish his sentence, and to allow his meaning to be judged. But M. Forbin des Issarts demanded his expulsion, and a formal motion to that effect was prepared by M. de la Labourdonnaye, the leader of the ultra-royalists, which was carried by a majority of two to one. The liberals resolved to resist this unwise act of the government. Guards were placed at the doors of the Chamber to prevent the entrance of Manuel. He entered, however, unperceived. The president then summoned him to withdraw. "I announced yesterday," said Manuel, "that I would yield only to force, and I shall keep my word." After some delay the huissiers, or officers of the Chamber, read to him a written order that he should withdraw. He maintained that the order was illegal, whereupon the huissiers returned with a piquet of National Guards in uniform. The cries of the liberal deputies induced the National Guard to waver, and amidst the applause of Lafayette, Foy, Laffitte, and others, the Sergeant Mercier hesitated to act the gendarme. But in a few minutes thirty gendarmes, under M. Foucault, made their appearance, and Manuel was removed by force.[1] Sixty-nine deputies, among whom were Lafayette, Foy, Laffitte, &c., of the liberal party, followed him to the house of M. Gevandau, where a protest was drawn up against his expulsion, declaring that the Chamber had exceeded the limits of its mandate.

Duke d'Angoulême generalissimo.

On the 15th March the Duke d'Angoulême set out to take the command of the army that was to enter Spain. At first there was a difficulty in provisioning the troops, the commissariat being badly arranged, but M. Ouvrard, to whom the contract was given, soon placed the supplies on the most satisfactory footing. The French army mustered 91,000 men. It was divided into four corps, under Marshals Oudinot, Molitor, Moncey, and Prince Hohenlohe. The Spanish force consisted of 123,000 men, under Ballasteros, Mina, and O'Donnell, Conde d'Abisbal. On the 5th April the French were ranged along the Bidassoa, and it was evident that a passage would be attempted on the following day. A considerable force of Spaniards was also drawn up on the Spanish side of the river, but the corps that attracted most attention was a body of French and Italian refugees, ranged under the tricolor flag, and commanded by Colonel Fabvier, an officer of the Empire. Fabvier had been promised a corps of 800 of these men, but only 200 made their appearance. As the French advanced post approached, the corps of Fabvier chanted the Marseillaise. The moment was critical. General Vallin, who commanded the advanced guard, ordered a gun to be discharged along the bridge. The first round was fired over the heads of the enemy in order to induce them to retire, whereupon the refugees cried *vive l'artillerie*. General Vallin then ordered a point blank discharge, which killed several. A third round completed the dispersion of the group. When Louis XVIII. saw General Vallin after the campaign, he said, "Général, votre coup de canon a sauvé l'Europe." This may have been an exaggeration of the monarch, but it is certain that the act had a most prodigious influence on the campaign.

Operations of the French in Spain.

The French army effected its passage without difficulty, drove back the garrison of St Sebastian, and established the blockade of that place, while the French centre and reserve moved rapidly on the great road to Madrid. The invaders were generally well, often enthusiastically, received. They observed an exact discipline, and paid for everything they required, so that no serious difficulty was experienced from Irun to Madrid. O'Donnell, Conde d'Abisbal, and the municipality of Madrid agreed to capitulate on favourable terms—terms to which the Duke d'Angoulême at once acceded; and on the 24th May he entered Madrid. Two columns, one commanded by General Bordesoult, the other by General Bourmont, marched immediately in pursuit of the revolutionary forces, which were carrying the king a prisoner by forced marches towards Seville. But the enemy retreated as soon as the French troops appeared in sight. The Cortes had established themselves at Seville, whither the English ambassador had followed the captive monarch. On hearing of the approach of the French, the Cortes proposed to the king to move with them to Cadiz, but Ferdinand, who witnessed the want of success and growing unpopularity of the revolutionary government, refused to leave Seville. The Cortes then declared the king deposed, appointed a provisional regency, and forced Ferdinand to Cadiz, where he arrived on the 12th June. Sir W. A'Court, the English ambassador, refused to accompany the deposed monarch. A royalist reaction took place at Seville on the evening of the king's departure, and on the 18th June, General Bourmont entered Seville, where he permanently established the royal authority. The forces of the Cortes abandoning Andalusia, took refuge within Cadiz, where 20,000 men, partisans of the revolutionary party, were assembled. Murillo, who commanded at Valencia, passed over with half his forces to the royalists, and Ballasteros, defeated at Carabil with 7000 men, delivered over to the French Carthagena, Tarragona, and all the fortresses, with the exception of Barcelona. Corunna and Ferroll opened their gates to the French. Mina, indeed, continued the struggle in the mountains of Catalonia, so favourable to guerilla warfare, and Cadiz still held out. Resolved that the city should fall, the Duke d'Angoulême left Madrid on the 18th July, taking with him the guards and reserve, and leaving only 4000 men to garrison the capital. On the 8th of August, his royal highness published at Andujar a proclamation by which it was, among other things, declared that the commanders-in-chief of the corps under the orders of his royal highness were to set at liberty all persons who had been imprisoned for political causes. Meantime the siege of Cadiz had been undertaken. On August the 17th the Duke d'Angoulême sent a letter to the president of the Cortes expressing the wish of the French government that the king of Spain should be restored to liberty, that he should grant to his people a general amnesty, and by the convocation of the Cortes give a guarantee for the reign of justice and order. The Cortes returned a haughty answer, telling his royal highness that if he abused the power he possessed he would be responsible for all the evils he might draw down on the person of the king. Thus all hope of adjustment having failed, the assault of the Trocadero, the outwork of Cadiz, situated on the land side, was directed. So energetically were the approaches made, that on the 24th August the first parallel had been drawn to within sixty yards of the ditch. An incessant fire was kept up from the batteries of the assailants from the 24th to the 31st. On the morning of the 31st, the assaulting column rushed into the ditch, with the water up to their armpits, and ascending the opposite side under a shower of balls, mounted the ramparts. By nine o'clock the conquest was complete, the entire peninsula with all its forts having fallen into the hands of the victors. By the middle of September the Cortes were convinced of the hopelessness of the contest, and they induced Ferdinand VII. to sign a letter to the Duke d'Angoulême, in which he requested a suspension of arms. The duke replied that as soon as the king was set at liberty he would entreat his Majesty to grant an amnesty, and to promise suitable institutions.

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[1] Vaulabelle, *Hist. de la Restauration*, tom. v. Lamartine, *Hist. de la Restauration*, tom. vii., p. 153.

On the 28th September the Cortes declared that their means of defence were exhausted, and dissolved themselves. On the same day the king sent a message to the Duke d'Angoulême that he was at liberty, and on the 1st October he embarked at Port St Mary's for his capital.

Judged by its immediate result, the French expedition was successful. In less than six months, with the loss of only 400 men, and at an expense of 200,000,000 francs, the French troops had delivered the king of Spain, and had prevented Spanish factions from tearing each other to pieces. On the 2d December the Duke d'Angoulême made his triumphal entry into Paris, surrounded by his staff. The municipality of Paris met the prince at the barrier, and warmly congratulated him. He replied that he was happy in accomplishing the mission confided to him, and in showing that nothing was impossible to a French army.

It was not with feelings of pleasure that Mr Canning beheld the successful progress of the French in Spain. In the triumph of the French arms he saw not merely the Bourbons strengthened, but the influence of France on the Continent greatly augmented. To use his own words, he therefore determined on calling a new world into existence to redress the balance of the old, and resolved on recognising the independence of the republics of South America. It appears, however, from a statement published in Châteaubriand's posthumous memoirs, that Canning only forestalled the designs of the French statesman, who projected placing Bourbon princes on South American thrones.

The elections that took place for the renewal of the fifth of the Chamber, in the autumn of 1823, were nearly all in favour of the royalists, who were now enabled to cope with, if not to vanquish, the union of the liberals and the centre. Places and honours were bestowed on the members of the majority to the exclusion of all other candidates. Public affairs, indeed, appeared to proceed most prosperously, and under these circumstances it was that M. de Villèle contracted a loan with the house of Rotheschild and Company, to the amount of L.16,400,000, at 89·55. These favourable terms produced great confidence in the public mind, and enabled the government to clear off the debts and engagements connected with the Spanish war. A dissolution of the Chamber was under these circumstances resolved on, and it was effected by ordonnance on the 24th December. The result of the elections which took place in February and March were most favourable to the ultra-royalists. Even in the capital in which the liberal party had hitherto obtained all the seats, they now only succeeded in returning Foy, Perrier, and Benjamin Constant, while in the provinces, out of 434 elections, the extreme party gained only fifteen seats in the colleges of arrondissements, and two in those of departments. The effect on the public funds was surprising. In the beginning of March the public funds reached the extraordinary figure of 104·80, a price not attained for more than half a century.

New loan.

On the 23d March the Chambers met. The king congratulated the country on the discipline and bravery of the French army, conducted, said Louis XVIII., by my son, with as much wisdom as valour. There were here loud cries of *Vive le Roi, Vive le Duc d'Angoulême*. After alluding to the inconvenience that resulted from the annual election of the fifth of the Chamber, the speech proceeded to state, that a bill would be introduced for extending the duration of the legislature to seven years, subject to the royal prerogative of dissolution. Another bill was presented for the purpose of providing the means of repaying the holders of government annuities, or converting their rights into a claim for sums more in accordance with the actual value of money. A measure for reducing the interest on loans from 5 to 3

Septennial law.

Conversion of 5 to 3 per cents.

per cent., in a country in which there are so many small *rentiers*, as in France, can never be popular. Lamartine, in the seventh volume of his *History of the Restoration*, contends that a conversion was retroactive and dishonest, inasmuch as the state constituted these funds as *rentes perpetuelles*,[1] and in this opinion he is supported by Alison.[2]

It was argued in favour of the septennial law, that the great want of the government was the absence of a fixed majority, and that the annual renewal of a fifth of the Chamber kept up a perpetual excitement and agitation, and augmented corruption. On the other hand it was urged, that the septennial law repealed a vital part of the charter, and tended to make the king independent of the popular voice.

The debate in the Chamber of Deputies on the law was continued for several days. The most remarkable speech on the occasion was delivered by M. Royer Collard, who urged that the annual renewal of a certain portion of the national representatives could alone suit the country, for in a time of general election the people felt themselves sovereign. The speaker clearly demonstrated, in the course of his remarks, that the power of election and representation had passed from the nation and centred in the class of functionaries. Arguments such as these fell, of course, unheeded on an assembly of functionaries; and independently of this, a newly elected Chamber in any country, or under any circumstances, would feel pleased in prolonging its existence to seven years instead of three. The septennial bill passed by 292 votes to 87.

The measure of Villèle for the conversion of the 5 per cent. to a 3 per cent. stock met with many opponents. The functionaries, the shopkeepers, and the clergy in the capital were all opposed to any change which affected their incomes. The clergy, in particular, much as they approved of the general march of the government, were rancorous on this question. It is, however, quite legitimate in any state to profit by its own prosperity, and to liberate itself from an undue burden of interest, by offering back the principal at par. Another reason why the conversion was unpopular was, that it was publicly known that the amount saved was to be applied to indemnifying the emigrants. A project of this kind pleased the Count d'Artois and the ultra-royalists, but was sure to displease the great body of the nation. The bill was brought forward on the 5th April, when it was proposed to reduce the 5 into 3 per cents, taking the latter at 75. It was calculated that this would effect a reduction in the annual charge of the debt of 30,000,000 francs (L.1,200,000), and would establish the credit of the government on a solid foundation. As, however, there were 250,000 persons holders of these annuities, of whom a majority held only 500 francs, the excitement and opposition were very great. Such, however, was the overpowering influence of the government, that the law passed by a majority of 238 to 145. In the Chamber of Peers the result was different. The bill was there thrown out by a majority of 34; and it was observed that M. de Châteaubriand did not speak in favour of the measure, and that several of his party voted against it. The rejection of the law gave unbounded satisfaction in Paris, and was celebrated by the most signal demonstrations of joy, and led to one important measure, the dismissal of the minister for foreign affairs.

Dismissal of Châteaubriand.

The day after the discussion on the law in the Peers, 5th June 1824, M. de Châteaubriand received an unceremonious announcement from M. de Villèle, that his services were dispensed with at the foreign office. To make this communication more uncourteous, if not contemptuous, it was forwarded by a common messenger, and in the absence of the minister was received by his secretary, who found that his principal, unconscious of his dismissal, had already proceeded on his way to the Tuileries. It was only by hurrying after the dismissed minister that the private secretary could communicate to his principal the fact of his disgrace in time to spare him the affront of finding the council chamber closed against them.[3] Nor was Châteaubriand the only dismissal. Victor duke de Belluno, who had been obnoxious to the Dauphin, was removed from the war department, to which M. de Tonnerre was appointed. The portfolio of foreign affairs was given to M. de Damas, a creature of the Duke d'Angoulême.

Thus was ungraciously dismissed from office the minister who had matured and given life and spirit to the invasion of Spain, who had restored to the throne the representative of the Spanish Bourbons, who had rallied to the French Bourbons the army of France, who had defended the foreign policy of the government in the Chamber with uncommon eloquence, and who, in addition to these services, was renowned throughout Europe by his genius. But M. de Châteaubriand was not a member of the congregation, did not go all lengths with the *parti prêtre*, and on these grounds was obnoxious to the Duchess d'Angoulême and the clerical camarilla about the court. He was, moreover, no favourite with Louis XVIII., and it must also be admitted that in his dealings with M. de Villèle and M. de Montmorency he did not always exhibit straightforwardness, honesty, candour, or high political honour. Inordinate vanity and inordinate ambition were the failings of Châteaubriand; and notwithstanding the attempts of his brother poet Lamartine to make a defence for him, we fear it must be admitted that he was in the gravest national affairs always looking for the opportunity to create a sensation about himself. Such a minister may occasionally be a bold and brilliant statesman, but is not always safe or trustworthy as a colleague. Nevertheless, there was something harsh, if not brutal, in the manner of Châteaubriand's dismissal. To use his own indignant words, he was driven out of the councils of the king *comme un laquais qui aurait volé la montre du roi sur sa cheminée*. This was indeed a grievous error; for it deprived the ministry of M. de Villèle of the support of the *Journal des Débats*, the principal organ of the Parisian press, and of the sympathy of men of letters in general. Nothing memorable occurred in the remainder of the parliamentary session.

The health of the king, for some time infirm, now completely gave way. Suffering from a complication of disorders, the monarch became daily more lethargic, and took little part in business or in the council. The small effort of reading or writing one of those notes which he daily forwarded to Madame du Cayla produced somnolency, and Lamartine tells us, in the minute account he gives of the monarch's illness, that the continual dropping of the royal head on the bronze table had produced an abrasion of the skin. The only pleasure or excitement the king had at this period was in excursions in the royal carriage drawn by eight horses, proceeding at the top of their speed. Louis XVIII. felt the same gratification in these exercises, says Lamartine, that a captive does in the glare of the sun. The royal patient knew he was sinking, but he bore his doom with philosophical indifference if not with stoicism. The direction of affairs was now transferred to the Count d'Artois, so soon to be Charles X. The high hand of the Count might be traced in an edict suspending the liberty of the press, and re-establishing the censure, and in an ordonnance creating a new ministry, the ministry of ecclesiastical affairs, an office which was bestowed on M. Frassinons, bishop of Hermopolis and Grand Master of the University. No doubt M. Frassinons was an able, eloquent, and moderate man, but he was a churchman, and although not going the lengths of the *parti prêtre*, yet he dared not publicly discourage their pretensions.

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[1] Lamartine, *Hist. de la Restauration*, tom. vii., p. 229.

[2] *History of Europe from the Fall of Napoleon*, vol. ii., p. 727.

[3] Lamartine, *Hist. de la Restauration*, tom. vii., p. 234.

While suffering great agony and weakness of body, the king went through public and official receptions, and submitted to all the formal etiquette incident to his rank and station. When no longer able to get into the royal carriage, he ordered his gentlemen and equerries to occupy his place so that the Parisian public might be deceived, and, to use the language of Lamartine, re-assured.[1] As his birthday approached, his physicians feared the fatigue of a public reception of all the great corps of dignitaries of the state, and implored him to postpone this royal ceremony. His Majesty energetically refused. "A king," said he, "should never be ill in the interests of his people." After this public reception he was carried in a comatose state to the royal apartments, and by his obstinate desire to appear in public aggravated the alarms he had intended to allay.

But on the following day his Majesty resumed his wonted habits, rose at the usual hour, was attended by all the great officers of his court, and went through the ceremonies and observances of that etiquette which he had re-established. One of the fancies of the monarch was to be transported to Versailles, in the old palace of which he caused his ancient apartment to be furnished as it had been previous to the revolution. Another of his fancies was to be wheeled round a garden which he had caused to be laid out in the English fashion—a *souvenir* of Hartwell.

As the end of the monarch approached he expressed no wish to receive the ceremonious consolations of the Romish Church. This circumstance gave great uneasiness to the Count d'Artois to the Duchess d'Angoulême, and to the priest party generally throughout the kingdom. It was remembered that the monarch had in his youth associated with the wits and philosophers of the epoch—that in his middle and mature age he had never yielded to superstitious practices, and that he had ridiculed even within a few years the devout observances of his brother, who had become a mere instrument in the hands of the clergy. Unlike Louis XIV. he did not surrender his conscience to a Le Tellier; for though there was a confessor gazetted as of the household, yet this individual never appeared at court, and the king was in nowise under the dominion of an humble and obscure priest, chosen by Louis XVIII. for the piety of his life and for his exemplary character. All these circumstances disquieted the royal family and the high clerical camarilla by which they were surrounded. Cardinal Latil, M. de Frayssinous, and others, held a council on the subject of the king's abstaining from confession, and it was resolved that M. de Frayssinous should seek an interview with his sovereign, and delicately warn him of the danger of delaying the succours of the church. The king, who esteemed the bishop, liked his moderation, and heard the prelate patiently, but persisted in refusing to receive the last sacraments, fearing, he said, to alarm the public.[2] In this difficulty of the *parti prêtre*, the young Viscount de la Rochefoucauld, who originally introduced Madame du Cayla into the private cabinet of the king, appeared on the scene, and proposed to the royal family and to the clerical camarilla of cardinals and bishops to convey to Louis XVIII. their united hopes and wishes. The functions of the viscount gave him a ready access to royalty, and as he was one of the congregation, and attached by conscience and connection to the priest party, he proposed to his sovereign to see once more Madame du Cayla, who had retired to Saint Ouen, and who it was believed would induce the monarch to receive the sacraments. The king, seriously regarding him, said to M. de Rochefoucauld—"Vous le voulez, eh bien, allez dire à Madame du Cayla que je la recevrai."[3] Madame du Cayla, after some hesitation, consented to render this service to the *parti prêtre* and the congregation, and after opening the subject to the monarch with that delicacy and tact of which she was so capable, Louis replied, you only Madame could venture thus to address me. I hear your words, and shall do what I ought to do. Then holding out his hand, which the lady tearfully kissed, the king, with a suppressed sigh, said, "Adieu, et a revoir dans l'autre vie." No sooner had Madame du Cayla departed, than the king sent for the humble priest who filled the office of confessor. Soon after the visit of the latter, the grand almoner, the cardinals, and the bishops assembled, and the funeral pomps and ceremonies of what is called *l'agonie des Rois* were gone through.

The last hour of the monarch was now approaching. The extremities of the king were cold, and symptoms of mortification began to appear. The family of the sovereign and the foreign diplomatists were introduced. "Love each other," said the expiring monarch, addressing his family, "and by your affection console yourselves for the misfortunes of our house." "The charter," said he, "is my best inheritance. Preserve it, my brother, for me, for your subjects, for yourself"—then raising his hand to bless the Duke de Bordeaux (whom his mother placed in the foreground), he added—"and for this child to whom you should transmit the throne after my daughter and my son" (he thus affectionately called the Duke and Duchess d'Angoulême). Looking at the child, he said, "May you be wiser and happier than your parents."

The king received extreme unction, thanked his attendants, and bade an eternal farewell to his former minister, M. Decazes, whom he was wont to call his child, and whose sobs reached his ear. On the 16th September 1824, the day he had fixed on as his last, all that was mortal of Louis XVIII. had passed away. At early dawn on that morning M. Portal drew the curtains of the bed to feel the royal pulse. The pulse had ceased to beat, though the hand was not yet cold. "Gentlemen," said M. Portal, turning to the attendants, "the king is dead;" and then respectfully inclining towards Charles X., he exclaimed "Vive le Roi."

The last words the deceased sovereign addressed to his brother were remarkable. "I have tacked," said he, "between parties, like Henri IV., and unlike him I die in my bed, and in the Tuilleries. Do as I have done and your reign will end in peace." It was indeed one of the greatest triumphs of Louis XVIII. to die in his bed, and in the palace of his ancestors. He had contrived to sit for ten years on the throne of France during one of the most difficult periods of French history, and he maintained his position without any war more serious than the mere military promenade into Spain. He was no ordinary king—we may say, indeed, no ordinary man—who could succeed in such a career. The great secret of the success of Louis XVIII. was, that he was moderate and passionless, and that he altogether suited himself to the temper of the times. He was a man of clear intellect, great observation, exquisite tact and discretion, and consummate judgment. Well read in ancient and modern history, thoroughly knowing the world and its ways, he was very capable of forming a sound and sagacious opinion on public affairs. Yet with all his lights from nature, reading, and experience, he was not wedded to his own views. Open to conviction, calm and unprejudiced, he yielded to superior sense or argument, or whenever circumstances rendered it imperative to do so. Though learned in an eminent degree, he recognised the superior sense and sagacity of M. de Villèle, a man without any pretension to letters, and trusted and confided to his moderation and masculine sense. "His natural talent," says Lamartine, "cultivated, reflective, and quick, full of recollections, rich in anecdotes, nourished by philosophy, enriched by quotations, never deformed by pedantry, rendered him equal in conversation to the most renowned literary characters of his age. M. de Châteaubriand had not more elegance, M. de Talleyrand more wit, Madame de Staël more brilliancy. Never inferior, always equal, often superior to those with whom he conversed on every subject; yet with more tact and address than they, he changed his tone and subject of conversation with those he addressed, and yet was never exhausted by any one. History, contemporary events, things, men, theatres, books, poetry, the arts, the incidents of the day, formed the varied text of his conversations. Since the suppers of Potsdam, where the genius of Voltaire met the capacity of Frederick the Great, never had the cabinet of a prince been the sanctuary of more philosophy, literature, talent, and taste."

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[1] *Hist. de la Restauration*, tom. vii., p. 308.

[2] *Ibid.*, tom. vii., p. 317.

[3] *Ibid.*, tom. vii., p. 320.

Louis XVIII. was humane and benevolent, as well as moderate and wise. The few examples of severity which his reign affords were forced on him either by the violence of party spirit, or the reactionary vehemence of a rank ultra-royalist majority, which became too powerful in his latter days. But for years antecedent to his death he had kept the ultramontane, ultra-royalist, and Jesuitical parties within proper bounds. He also restrained and moderated the monarchical and aristocratic party to which he himself belonged. His conduct in exile was exemplary. Never did man suffer with more dignity, constancy, and patience, or await with more calm certainty his restoration.

The eyes of Louis XVIII. were scarcely closed in death ere the brother of the king (now reigning Charles X.), and the party which used Madame du Cayla for what they called the edification of the kingdom and the honour of religion, sought to efface all traces of her influence. Letters, papers, and everything relating to the intercourse of the late monarch with Madame du Cayla, had disappeared from the cabinet of the king before her friends could take any step in the business. Charles X., however, paid Madame du Cayla during his life an annuity of 25,000 francs. She at once retired from the court, to what M. de Lamartine calls a "splendid obscurity."

Charles X.

The Count d'Artois, who succeeded his brother under the title of Charles X., made no change in the ministry. M. de Villèle had long been acting on the Count d'Artois' views as the minister of his elder brother, and he possessed the entire confidence of Charles X. Everything seemed to smile on the new sovereign.[1] The Spanish peninsula and Italy were tranquil—there was a majority in the Chamber of Deputies in harmony with the Peers, and there was great internal prosperity, every branch of domestic industry being flourishing. The external influence of France was also great, and her power respected abroad.

The personal appearance and demeanour and many of the qualities of the new monarch were greatly in his favour. His figure was tall and majestic, his manners frank and open, his air eminently courtly and chivalric; excelling in all bodily exercises, he rode with skill and boldness, and either in passing a review or in following the chase, to which he was passionately addicted, won all hearts by the charm and fascination of his manner. He walked as erect, and was as graceful in his demeanour, on the day of his accession as in his early youth. Fond of popularity, he was warm-hearted, benevolent, and solicitous for the happiness of his people. There was nothing he more desired than to make a favourable impression on the nation which he governed. His first care was to restore the ancient ranks and titles to his family. The Duke d'Angoulême, turned of fifty, was created Dauphin, and his duchess Dauphiness. Charles X. also conferred the title of royal highness on the Duke d'Orleans, accompanying it with the ancient appanages of the house, consisting of crown forests which had not been sold at the Revolution, and which rendered the duke one of the wealthiest of French proprietors. The Duke de Chartes, the eldest son of the Duke d'Orleans, was promoted to the command of a regiment. The new king also received with a chivalrous cordiality the marshals and generals of the empire. Grouchy was favourably noticed, and to Excelmans the king said, "I remember not the past, but I am sure, general, I can count upon you for the future." Speeches such as these were of the happiest augury.

The king made his entry into Paris on the 27th September. There were not wanting those who suggested precautions; to which the monarch replied,—"People who don't know me cannot hate me, and I am confident those who know me do not hate me." The archbishop of Paris, who awaited the king at the head of his clergy, addressed a mâladroit speech to his majesty, to which the monarch listened with apparent disrelish. The king was perfectly well received by the people, and bore himself inimitably on this occasion. To the Duke d'Augoulême his father had confided the supreme direction of the army. The king proposed to his ministers to abolish the censorship of the journals, an odious and unpopular measure impatiently submitted to during the last months of the previous reign. The editors of newspapers responded to this measure of the king in transports of gratitude. But notwithstanding this temporary effervescence, it was soon perceived that there was a back-stairs influence exercised by a sacerdotal camarilla. Lamartine states, that in a confidential communication with himself Charles X. disavowed being governed by priests and Jesuits, whose God he adored without loving the sect; but the poet historian admits that the king might have deceived himself without deceiving others, and we every day see in every rank of life men denying the existence of an influence to which they unconsciously and almost unawares are slavishly subject. Among this secret council, whose power the monarch concealed from himself, were Cardinals Latil, Lafare, Clermont Tonnere, Lambruschini the pope's legate, and M. de Quelen, archbishop of Paris, a man of piety and worth, but profoundly devoted to the interests of mother church. Latil, according to Lacretelle,[2] was born a courtier, and ever had been a zealous partizan of the Jesuits. The ultra-royalist chiefs joined their councils with these churchmen. Among these were the Duke de Rivière, M. de Polignac, and M. de Vaublanc, who, once an imperial prefect, had now become one of the shining lights of Carlism. The soul of the camarilla, however, was the restless, ambitious, intriguing, and ever active Vitrolles, who played so important a part in 1814.

The Jesuits.

The king had not been long seated on the throne ere the disciples of Loyola began to rear their heads haughtily. Everywhere throughout France they set about establishing new colleges and seminaries. Montrouge, their chief college, became the centre around which the most favoured and distinguished young men about court revolved. Appointments in the public offices were made through the influence of the disciples of Ignatius Loyola. Neither M. de Villèle nor M. Corbière, it is true, belonged to the congregation, but these ministers were overborne by *chefs-de-division*, who opposed their veto to the appointment of candidates suspected of lukewarm zeal. The proof of this is afforded by the case of an old man of seventy-two, and author of mathematical treatises which are classical throughout Europe. M. Legendre, of the Academy of Sciences, enjoyed a pension of 3000 francs, and there being a vacant place in the academy, was asked by M. Lourdoucix, a chef-de-division, to vote for M. Binet, a congregationalist candidate. On his refusing to do so, his pension was withdrawn by royal ordonnance. A fortnight after this the power and intolerance of the clergy was proved by their refusing to receive within the precincts of the parish church the mortal remains of an actor named Philippe, who had suddenly died in an apoplectic fit. A deputation waited on M. de Damas, first gentleman of the chamber to Charles X. M. de Damas appealed to M. Corbière, the minister, who replied that he could not force the ministers of any religion to receive within the church the body of an actor. It was said that the king personally interfered, as his brother Louis XVIII. had done in the case of Mlle. Raucourt, but apparently without success, for an armed force prevented the people from carrying the coffin to the parish church.[1] Mass, vespers, complines, matins, fastings, pilgrimages, were now the order of the day. It was even necessary, says Lacretelle, to be armed with a confession ticket;[2] that is, a card importing that you had confessed and been shriven in the most approved fashion within canonical time. It was counted a noble work to baptize a Jew or to convert a young Protestant, male or female. In the army, as well as in civil life, confession was made a test. The minister of war, M. Clermont Tonnerre, the nephew of the archbishop of Toulouse, the most turbulent and arrogant of prelates, caused all the regiments to be regularly catechised. Thus mere outward observances were made to pass for religion, the profoundest and deepest sentiment of the human soul. Processions and expositions of the *saint sacrement* and of relics multiplied; and "at one of these," says Lacretelle, "I remember to have seen Don Miguel, after the crime attempted against his father and the actual assassination of Count Loulé."[3] Yet notwithstanding this hothouse forcing of a sentiment which ought to take its rise spontaneously in the heart of man—notwithstanding the pastorals of bishops and the preachings of Jesuits, Congregationists, and Redemptorists, more copies of Voltaire, Rousseau, and the atheistical work called *Le Système de la Nature*, were sold than in any antecedent period. It was at this period that Lamennais, then a furious ultramontane, and who died not long since out of the pale of the Romish church, fulminated his anathemas against Frayssinous, bishop of Hermopolis, whom he accused of semi-Gallicanism. On the other hand, the Count de Montlosier, a conscientious man, of intrepid courage, abandoned the culture of his estate, and came up to the capital to point out, in a series of pamphlets, to the king the evils which Jesuitism would inflict on the country. M. de Montlosier opened the way for other writers, such as the Abbé de Pradt, former archbishop of Mechlin, Paul Louis Courrier, and the ablest critic of the *Journal des Débats*, Hoffmann. The ultramontane and absolutist tendencies of the monarch were resisted in the Chamber of Peers by Lainé de Talleyrand, Decazes, Pasquier, Molé, Siméon, Portal, Roy, Mollien, and Mounier. Among the mass of the people different opinions predominated as to these observances. A few regarded them with reverence, many with indifference, but the majority with scoffing sneers. The priest party was, however, strong in the Chamber of Deputies. So great a change had been operated by the electoral law of 1821, that 130 members were devoted to the *parti prêtre* in the lower house, though that party could not boast of more than 30 adherents in the Chamber of Peers. But that which rendered the party all-powerful was, that it had placed viceroys over all the ministers. Thus M. de Renneville was a sacerdotal spy over M. de Villèle, M. Tronchet over the minister of the interior. The king probably was not aware of these manœuvres. The progress of the Jesuits is always sly and insidious, and it is very likely they had installed their instruments before the monarch was aware of the fact. The answers of Charles X. to the public bodies who presented congratulatory addresses were such as became him, frank and conciliatory. As the nation was prosperous and flourishing, there was a general feeling of satisfaction and security. This was first dispelled by a proceeding of the minister of war, M. de Clermont Tonnere, who issued an ordonnance placing on half-pay 50 lieutenant-generals and 100 major-generals, whose names had many times figured in the bulletins of the *grande armée*. Among the number were Grouchy, Vandamme, Gazan, Drouot, Ornano, Excelmans, Harispe, and many others. This measure was the result of a secret conclave of the camarilla, the object doubtless being, as Lacretelle suggests, to more easily place the army under the discipline of the congregation.[4]

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[1] *Hist. de la Restauration*, tom. vii., p. 329.

[2] Lacretelle, *Hist. de la Restauration*, tom. iv., p. 132, 133.

Charles X. was not at first aware of the effect of the measure. No sooner, however, were his eyes opened than he granted exemptions and dispensations, and these became at length so numerous that the ordonnance remained a dead letter. General Foy called it a cannon-shot charge at Waterloo, and fired ten years after the battle.

The Chambers were opened by the king in person on the 22d December. It was intimated in the speech that a measure of indemnity to the emigrants was in preparation. The public finances being in a prosperous condition, this sum, though amounting to a milliard, might be provided for without injuring public credit. The cessation of war contributions, and a peace of ten years, had so restored the finances that there was an excess of income over expenditure of 8,898,118 francs, or L.360,000 for the year 1824.[5] The sinking fund, too, remaining intact, the public debt was undergoing a diminution. It appeared also that the late king had left no debts. The accounts of his household were regular and orderly, and there was annually a very considerable excess of income over expenditure.

1825. The first law, brought forward on January 3, was the law on the civil list, which was fixed at 25,000,000 francs (L.1,000,000) for the king during his life, besides 7,000,000 francs (L.280,000) for his family, and 6,000,000 francs (L.240,000) for (an odd conjunction) the funeral of the late king and the coronation of his successor. It was a provision of this measure that the whole territorial possessions and estates of the Orleans family should again revert to them. These properties had been merged in the domains of the state in 1791, but Charles X. now proposed to sanction a restitution by a solemn act of the legislature. The bill passed the Chamber of Deputies by a large majority, and was almost unanimously voted by the Peers.

The next measure brought forward was the creation of a fund to provide an indemnity for the emigrants. It was proposed to create a stock of a milliard (L.40,000,000) in the 3 per cents., to be devoted to the families who had lost their property during the revolutionary era. The annual charge, it was calculated, would be about 30,000,000 francs, or L.1,200,000, a-year. To reconcile tax-payers to the weight of such a burden, M. de Villèle abandoned the idea of reducing the interest of the national debt.

The law of indemnity for the emigrants or sufferers by the Revolution was brought forward by M. Martignac, a gentleman of great ability, of amiable manners, of irreproachable character, of the most persuasive eloquence, of great moderation of views, and of winning gentleness of expression. He stated the case of the emigrants lucidly and strongly; and now that thirty years have passed since the discussion, and that party spirit is not so exacerbated, it may be said he stated the case unanswerably. Every candid man must agree with Lacretelle, a writer of decidedly liberal if not democratic tendencies, in thinking that the measure was fully as advantageous to the acquirers of national domains as to the emigrants themselves. It was said at the time to be an attempt to restore the aristocracy, and to be an outrage to the Revolution. But calm reflective men will agree with Lamartine in thinking that it was the greatest political administrative and financial act of the Restoration, the conception of Louis XVIII., the work of Charles X., the glory of M. de Villèle.

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[1] Vaulabelle, *Hist. de la Restauration*, tom. vi., pp. 288, 289.

[2] Lacretelle, tom. iv., pp. 134, 135.

[3] *Ibid.*, tom. iv., p. 137.

[4] *Ibid.*, tom. iv., p. 156.

[5] *Annuaire Historique*, 1825.

The valuation was easy with respect to all property sold since 1795, as an account of the rental of each property in 1790 was given in at the sale. There had been 452,072 sales of the landed property of emigrants, of which 81,455 were made subsequent to 1795. The annual revenue of these amounted to 35,000,000 of francs, and the price at twenty years' purchase was calculated at 692,400,000. The remainder, bought at low prices, and paid for in assignats, was calculated at 605,000,000 francs of capital. Upwards of 300,000,000 francs of debt had been paid, leaving the indemnity proposed to be liquidated less than a milliard. It was proposed to pay this sum by the delivery to the claimants of stock bearing 3 per cent. interest; in other words, there were to be thirty millions of rentes, six millions of which were to be issued for five years in succession. To the ultra-royalists, such as Le Clerc, De Beaulieu Duchâtelet, Duplessis de Grénédan, and Labourdonnaye, the law of indemnity appeared a miserable compromise. Labourdonnaye, indeed, went the length of declaring that the king had no right to declare the tenure of emigrants' property secure in the hands of those who had taken it, and he maintained that the indemnity should be levied on the purchasers instead of on the nation. This called up General Foy, who truly described the ultra majority as being desirous to use their power to deprive the peasant of his property. Between the views of such men as Labourdonnaye and Foy the project of law of the government appeared a kind of middle term, a sort of *juste milieu*. His calm manner and sagacious reasoning placed the question in its true light. The indemnity, said he, is neither a punishment to one class of Frenchmen nor a recompense to another. It is a measure indispensable to complete the Restoration, to give unity, security, and peace to the country.

The agitation of the question of the indemnity raised a number of rival claims. Thus the capitalists who had suffered from the confiscation of the funds, the losses by the law of the maximum, the Vendeans, and the generals, who had been ruined by the events of 1814 and 1815, all claimed to be indemnified. "Let a few crumbs, at least, fall to the old and mutilated soldiers," said Foy, "who have carried to the farthest corners of the earth the glory of the French name." The law passed both chambers by large majorities. The majority in the deputies was 105, in the peers 96.[1] The Duke d'Orléans received 14,000,000 of francs, L.560,000 of our money, for that portion of his estates which had been sold; the Duke de Choiseul and the Duke de la Rochefoucault 1,000,000 francs each (L.40,000); the family of Montmorency 12,000,000 francs (L.480,000); and Madame La Fayette 400,000 francs (L.16,000). The clergy, to their own manifest discontent, received no part in this indemnity, but they induced the ministry, as a kind of compensation, to bring forward a law of sacrilege. By this it was proposed to punish the profanation of the consecrated elements with the pains of parricide, the profanation of the sacred vases not yet filled with the consecrated elements with the pain of death, theft in sacred places with death or the galleys for life. The severity of these enactments, more suited, to use the words of Châteaubriand, to the twelfth rather than to the nineteenth century, excited amazement and opposition within and without the chambers. Châteaubriand spoke and voted for the amendment proposed by the liberal party; but such was the strength of the priest party and the camarilla, that the law passed the Chamber of Deputies with scarcely any alteration by a majority of 115, and the peers by a majority of 36.

A bill for legalizing female religious communities also passed. This bill extended the privilege of holding property to societies of religious women, provided they were established for religious purposes, under certain regulations approved by the bishop of the diocese. In the debate on the subject the minister for ecclesiastical affairs stated that 140,000 sick persons among the poor were yearly attended by sisters of charity, and that 120,000 children in the humblest classes received gratuitous education from their labours, and 100,000 in the higher classes an education suited to their position. In a Roman Catholic country, in which there is no well-defined system of poor laws, sisters of charity may no doubt fulfil many exemplary and noble duties; but the danger of these monastic institutions is, that they become too powerful, and that they are guided and governed by a mysterious and occult influence, either Jesuitical, Dominican, or Liguorist. Fortunately, by the provisions of the French law females initiated into these sisterhoods can only leave to the communities to which they belong portions of their fortune. The bill passed the chambers by a majority of 236, thus proving the increased tendency of the chamber towards everything savouring of priestly and sacerdotal dominion.

The high price of the public funds induced M. de Villèle again to recur in a modified way to his favourite project of the reduction of the interest of the public debt. A less comprehensive plan than his former one, which had been lost in the preceding year, was now brought forward by him. It was proposed to the holders of 5 per cent. to convert these securities into a 4½ per cent., with a guarantee that they should not be paid off before 1835. The project was carried by a majority of 118 in the Chamber, and by a majority of 42 in the Chamber of Peers.

The coronation of Charles X.

Preparations had been making for a considerable time, and on a most extensive and expensive scale, for the coronation of the king. The event took place at Rheims on the 29th May. It was conducted with extraordinary pomp, and at a cost of four millions of francs. On the journey to that city, an accident occurred to the royal carriage which was nearly attended with fatal effects. The king was only saved by the dexterity and presence of mind of his coachman, but General Curial and some officers of his household were severely injured.[2] In lieu of the old coronation oath to destroy heretics and wield absolute power, the successor of Clovis took an oath to maintain the constitution, the charter, and the Roman Catholic religion. The oath was the subject of much negotiation between the ultras and the government. Though the prime minister Villèle did all that in him lay to harmonize the whole ceremony of the coronation with the constitution and with modern usages, yet the clergy were unyielding, and insisted that the *Saint Ampoule*, or holy oil, which, according to the legend, had been brought down by a dove to St Remy to anoint Clovis, should again be had recourse to.

It was no legend that the commissary of the Convention had broken the phial and cast out the so-called sacred oil. Yet, as is usual on such occasions, another phial was discovered and produced, containing the miraculous liquor. With this unguent the king was anointed in seven different places of his body, through holes slit in his coronation robes. What with the prayers, the ceremonies, the girding on the sword of Charlemagne, and assuming his crown, the ceremony occupied six hours. The monarch was wiry and slight in figure, and hale in body, but even *his* strength and agility were exhausted by these tedious ceremonies, while the dauphin and Talleyrand were fairly overcome. It was the duty of Talleyrand to put on the velvet boots of the king, and of the Dauphin to put on his father's spurs. Vaulabelle gives a ludicrous description of these doings, of the dressings and undressings of the monarch, and of his receiving the sword from a minister of the church. A certain number of carrier pigeons and other birds were placed in the cathedral to bear the glad tidings, but they were so overcome with clouds of frankincense and the stifling atmosphere of unsavoury priests and sacristans, that many of them died, and the remaining birds were unable to wing their flight with the glad tidings; a sinister augury to those who believe in such omens.

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[1] *Annuaire Historique*, vol. iii.

[2] Lacretelle, vol. iv., p. 185.

Every state in Europe sent representatives to be present at this ceremony. The Duke of Northumberland represented England, and is said by Lacretelle to have expended two or three millions of francs. Mahometanism was represented in the person of an envoy of the Bey of Tunis, and the Jewish community in the person of the banker Rothschild. Three marshals who had fought against the Bourbons were made chevaliers of the *Cordon Bleu*, Soult, Mortier, and Jourdan. The Duke de Chartres was also invested with the insignia of the order, and a general pardon was granted to all political offenders.[2] But notwithstanding this generosity on the part of the king, it was plain that the *parti prêtre* was in the ascendant. Three cardinals, all ultramontane, and one furiously so, Latil, Lafare, and Clermont Tonnere, were made ministers of state; and the last mentioned, the most intemperate of the body, had openly revolted against a decision of the minister Corbière.

It was not therefore surprising, seeing this predominance of sacerdotal influence, that the Procureur-Général took proceedings against the *Drapeau Blanc*, the *Courrier François*, and the *Constitutionnel*, which had denounced the measures of the Jesuits. The *requisitoire* of the government functionary called for a suspension of the journals for three months each. Dupin, who had at this time arisen to great eminence at the bar, defended the incriminated journals with ability and great dialectical skill. The court declared itself incompetent, and dismissed the complaint without costs.

On the 28th November in this year, the great opposition orator, General Foy, died of an aneurism of the heart pronounced incurable by Corvisart. In the previous session of 1824 he had delivered two of his most successful speeches, and was occupied almost to his last moment in writing a history of the war in Spain. Since the death of Mirabeau, says Lacretelle, few men have been more regretted; he was less eloquent than that wonderful orator, but he was a Mirabeau without vices.[2] Having died almost without fortune, a subscription was opened for his family, and it is to the honour of France that a million of francs, L.40,000 of our money, was raised. Foy was never a flatterer of the emperor, which will account for the little notice taken of him by Napoleon. A little while after the death of Foy, the ex-keeper of the seals, De Serre, died at Naples whither he had been delegated by the royalists, who always seemed ill at ease in being sustained by orators and men of genius. De Serre was as much distinguished in the camp of the royalists as Foy in the camp of the liberals. Early in life he had emigrated and served in the army of Condé, but returning to France in 1802 he became a member of the bar of Metz, at which he rose to be advocate-general.

1826. In this year the recognition of the independence of St Domingo was acknowledged by a formal convention. M. de Villèle also joined Mr Canning in sending representatives to Spain to procure the acquiescence of the parent state in favour of the recognition of the independence of the colonies.

A law was introduced this session to procure for the eldest son a larger share of the paternal property. This was a cherished project with the court and camarilla. The favourite of Charles X., Polignac, had recommended it, writing from the London embassy a year or two previously; but M. de Villèle, with his usual sagacity, then replied, that the habits and tendencies of the people were against the measure, and that such success was impossible. But the first minister was now overruled, and the new project was introduced by M. Peyronnet, who gloried in the task of sustaining and advocating unpopular measures. By the existing law a father was obliged to leave his property equally among his children, with the exception of a fourth, which he might dispose of at his pleasure. The project now introduced ordained that when the father had not made a will the one-fourth should be added to the portion of the eldest son. The law assigning the additional fourth of the property to the eldest son was to be applicable to all who paid 300 francs of direct taxes. While the question was in course of debate the hopelessness of carrying such a project appeared palpable to M. de Villèle, and he promised that the operation of the measure should be limited to families paying 1000 francs direct taxes, which it was admitted would affect but 8000 families in the whole kingdom. This proposition put in the shape of an amendment was negatived, and when the principal article of the law was put to the vote it was rejected by 120 votes against 94, and nothing but an article permitting entails for one generation passed. The joy throughout the country at this victory, as it was considered, was immense, and the capital was very generally illuminated. Nothing daunted by this defeat, the clergy and the court braved public obloquy and contempt by getting up splendid religious processions, and a jubilee or religious revival. This ceremony was attended by all the royal family, with the exception of the Duke d'Orléans. It was strange, and very far from edifying, to see Talleyrand and Soult walking in the cortege of a religious procession, with wax candles in their hands, clothed as penitents. The war minister, M. de Damas, compelled whole regiments and divisions to join in this jubilee. Nothing could make the army more hate and despise the Bourbons than such an order proceeding from the war office.

The Jubilee.

We have already mentioned that M. de Montlosier had published a *Mémoire à Consulter* against the Jesuits. Not satisfied with this, he prepared a denunciation of the Jesuits and their establishments to the courts of justice. It was the wish of M. de Peyronnet that the royal court should take no notice of the denunciation, and the procureur proposed a judgment that there was nothing to deliberate upon. But the court did deliberate, there being only two out of fifty-five judges who were for passing over the accusations. The court passed judgment to the effect that several laws prohibited the re-establishment of the Jesuits, their principles being destructive of the independence of any government, and incompatible with the existence of a constitutional chamber, and the public law of the country. But notwithstanding this condemnation of the Jesuits by the first body of lawyers in the kingdom, the ultramontane bishops thundered against the liberal opposition. Among the most intolerant of episcopal missives was that of the Abbé Tharin, Bishop of Strasburg, and the writer of this document was the person selected by Charles X. as preceptor to the Duke de Bordeaux.

Mr Canning in Paris.

Mr Canning spent the autumn of 1826 in Paris, and was well received by Charles X., who did him the extraordinary honour of inviting him to the royal table. A rather amicable understanding with M. de Villèle was one of the results of Mr Canning's journey. This was apparent in December 1826, when the state of Portugal called for an armed interference by England. Villèle then withdrew his ambassador from Spain on that country slighting his advice in reference to Portugal, a measure which could not fail to be agreeable to England.

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[1] *Annuaire Historique*, tom. viii.

[2] Lacretelle, *Hist. de la Restauration*, tom. iv., p. 252.

Revenue.

The revenue of France in 1826 was 985,000,000 francs (L.39,400,000), and the expenditure 981,972,609 francs. The exports for the year 1826 were considerably less than those of 1825, owing to the monetary crisis in England. The army amounted to 232,000 men, the navy to 45 ships of the line, and 37 frigates. The public debt was 3,373,500,000 francs (L.135,000,000), including the emigrant indemnity and the colonists of St Domingo: 37,000,000 of francs were voted for the expenses of the occupation of Spain.[1]

The Duke de Rivière was appointed to the place of governor of the Duke de Bordeaux—a place vacant by the demise of the amiable Duke de Montmorency, who expired in church on Good Friday while assisting at the long ceremonies of the Roman Catholic ritual. This nomination increased the disgust of all thinking people, and placed beyond doubt the ascendancy of the congregationists over the mind of the king. Public opinion pointed to M. de Châteaubriand as the fittest person for this office, but Charles X. had no perception of the propriety of appointing fit men to vacant places.

The *Débats*, in which Châteaubriand then habitually wrote, used the word fatality, in reference to the march of events, and certainly no course could be more mortally destructive to the popularity of the king. "The names of the men," says Lamartine, "with pregnant brevity, indicated the line, the line indicated the intention, the intention disclosed ruin, overthrow, subversion."[2]

Every succeeding day now rendered the monarch more and more unpopular. The attacks of the press galled both the court and the camarilla. The king rashly announced at the beginning of the session of 1827, that, to use the words of Lamartine, "he would stifle the voice that troubled him." This menace indicated extreme courses, for the stillness required by governments is but the prelude to the tyranny of the people. A not distant struggle between the crown and the nation now appeared imminent. The inevitableness of the encounter redoubled the boldness of the court, the irritation of the popular leaders, the license of the journals, and the underground agitation of the masses.

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In the bill brought forward by the government against the press it was proposed that all writings of twenty pages and under should be deposited with the censors five days before publication; if published before the expiration of that period the entire edition was liable to be confiscated, and a fine of 3000 francs (L.120) to be imposed on the publisher. The proprietors of journals were the parties against whom actions for breaches of the law were to be directed, and no company for conducting a journal was to be legal if it consisted of more than five persons. Fines varying from 2000 to 20,000 francs might be imposed. The whole public press was vehemently opposed to this project. It was denounced as not merely directed against the press but against all liberty. Men of all ranks, stations, classes, and professions, joined in a diapason of discontent. The academy, with Châteaubriand at its head, placed itself in the foreground of the movement, and Villemain, Lacretelle, and Michaud made common cause with their illustrious friend. M. Michaud, as reader to the king, was dismissed for his expression of opinion; Villemain lost his place as *maitre des requêtes*, and Lacretelle as examiner of dramatic works.[3] Yet the interference of these men as academicians and as citizens was most legitimate, for this law of "love and justice," as it was ridiculously called by that most perverse being De Peyronnet, the keeper of the seals, threatened not merely the press but authors, publishers, and printers. Precautions as stringent were to be observed in the publication of books as in the publication of newspapers. No book was to be published for five or ten days after a copy had been left at the offices of the government. Pastoral letters of bishops were, however, to be excepted. In the debate on the law the opposition orators had the vantage ground. Royer Collard, so eager was the desire to speak, came at six in the morning to inscribe his name, when he found that three other members had preceded him. Never did Royer Collard make an abler speech than on this occasion.

"No former law," he began by observing, "had ever aimed at more than destroying the licentiousness of the press; the present law was remarkable as aiming at the destruction of the liberty of the press and printing itself. The idea of the proposers of the law was, that it had been a great imprudence on the day of creation, to allow man to come forth intelligent and free in the midst of the universe. The wisdom of ministers was employed in correcting this error of Providence, in restricting his imprudent liberality, and in bringing back humanity, sagely mutilated, to the happy innocence and ignorance of brutes. In defending a measure conceived on such principles as these, ministers are obliged to admit that they extinguish the good with the bad. As the press, they say, produces more bad than good, let us destroy it altogether. Apply the same principle to government, to jurisprudence, and you must put the whole country into prison, regard the population as so many suspected persons, and in fact renew that régime which existed under the Terror."

Benjamin Constant also summed, with pungent force, all the harassing, trivial, and tyrannical provisions of this execrable measure. Casimir Périer too produced a profound impression when he demanded of ministers whether they intended to apply the law to the literature of the country. He asked, were Voltaire, Rousseau, Pascal's *Provincial Letters*, and the *Tartuffe* of Molière to be proscribed.

Villèle's speech failed in answering the weighty and argumentative objections urged against the measure. The bill underwent many mutilations in committee, and ultimately passed in so altered a form that De Peyronnet could scarcely recognise his own legislative bantling. Indeed, so important were the amendments in the Peers that De Peyronnet withdrew his law, whereupon there was a general illumination in all the great towns. Albeit by the new and much mitigated law further restrictions were placed on the press, yet such was the mingled flexibility and force, such the suppleness and strength, of public writers in France at this epoch, that they contrived to arouse and excite the country without enmeshing themselves within the legal nets spread out to catch them. A riot which occurred at the funeral of the Duke de la Rochefoucault, a nobleman of great philanthropy, served still further to render the government unpopular. M. de Corbière had deprived this excellent man of seventeen gratuitous places, because he had disapproved of the centralization of the authority to control and visit prisons. The engineers and mechanics, for whom the duke had founded a college at Châlons, asked to be allowed to carry the body of their benefactor to the grave, and the family yielded to a request which they considered an honour. But on proceeding from the church to the cemetery the funeral was stopped by an agent of the police. The sons of the duke declared they wished the procession to proceed. The police agent communicated an order to the captain of a company of troops who attended the funeral to support the public force, when a struggle took place, in the midst of which the coffin was thrown on the paving stones and burst asunder. The Chamber of Peers ordered an inquiry into the facts by its grand referendary.

On the 29th April the king passed a review of from 20,000 to 30,000 armed citizens of the National Guard in the Champ de Mars. The king arrived on horseback. There were shouts of Vive la Roi along the first legion, but the seventh legion cried Vive la Charte to the exclusion of Vive le Roi. The king was annoyed, exclaiming, "I came to receive homage, and not a lesson." The whole legion now shouted Vive le Roi, but the feelings of discontent, repressed in the presence of the king, broke out on the appearance of the Duchesses d'Angoulême and De Berri. These ladies were greeted with cries of "Down with the Jesuits." As the National Guard were returning home they stopped before the mansions of De Villèle and De Peyronnet, crying, "Down with the ministers! away with Peyronnet!" The king was personally satisfied with the review, and directed Oudinot to draw up his thanks to the National Guard; but the princesses and De Villèle, and the Jesuits, were under other impressions.

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[1] *Annuaire Historique.*

[2] Lamartine, *Hist. de la Restauration*, tom. viii., p. 55.

[3] Lacretelle, tom. iv., p. 215.

The insult and castigation which he had received, says Châteaubriand, rendered Villèle irascible and Corbière malevolent. The ministers demanded the suppression of the National Guard, and were abetted by the princesses. Charles X. hesitated, whereupon Villèle threatened to resign. The decree disallowing the National Guard was drawn up and signed.

An ordonnance appeared disbanding the National Guard. The imprudence of this measure was great. The disbanded became discontented men with arms in their hands on whom a stigma had been cast. To disband the whole National Guard for the fault of one legion, was an act of not merely imprudence but of gross injustice.

Greece.

There was no country in which the people had been more alive to the Greek cause than France. But Villèle was lukewarm on the subject; Mr Canning had invited the French premier to come forward in conjunction with England, and to extend protection to the struggling Greeks of the Morea. But Villèle was embarrassed at home, and he made foreign questions subsidiary to domestic. Mr Canning therefore sent the Duke of Wellington to Russia to offer co-operation in the emancipation of Greece. The other powers of Europe were invited to join in the convention, and as there would be not only danger but disgrace in holding back, Villèle became at length a party to arrangements which resulted in the treaty signed at London on the 6th July 1827 between England, France, and Russia.

By the preamble of this treaty it was declared that the motives which led the contracting parties to interfere, was "the necessity of putting an end to the contest which, by delivering up the Greek provinces and the isles of the Archipelago to the disorders of anarchy, produces daily fresh impediments to the commerce of the European states." The object of the treaty was declared to be "the reconciliation of the Greeks and Turks." For this purpose, so soon as it was ratified, the mediation of the three powers was to be offered to the sultan, in a joint note signed by all their ministers at Constantinople, but an armistice was to be absolutely insisted on by both parties as a preliminary to the opening of any negotiation. The terms proposed to the sultan were, that he should still retain a nominal sovereignty over Greece, but receive from them a fixed annual tribute, to be collected by the Greek authorities, in the nomination of whom the sultan was to have a voice. All the Mussulman property in Greece was to be abandoned upon receiving an indemnity, and the fortresses were to be given up to the Greek troops. If the Porte did not, within a month, declare his acceptance of these terms, he was to be informed that the state of things which had reigned six years in Greece, and to which the sultan seemed unable, by his own resources, to put an end, made it imperative upon them, for their own security, "to come to an approximation with the Greeks, which was to consist in establishing commercial relations with Greece, and receiving from them consular agents," in other words, acknowledging their independence.

The sultan declared his determination to reduce his rebellious subjects to submission. It was now evident that the treaty of July could not remain a dead letter. A British squadron of four ships under Codrington, a French and Russian of equal force under de Rigny and Heyden, proceeded to the Ægean Sea. On the 20th October was fought the battle of Navarino, a battle which in no wise contributed to render the ministry of Villèle more stable or popular.

Convention on slave trade.

During the course of the session a treaty for the suppression of the slave trade was urged on the French cabinet by the English government. The project of law introduced on this subject declared the engaging in the slave trade punishable with confiscation of the cargo and banishment to the chiefs of the expedition. It was apparent to Villèle before the end of the session, that his position was becoming precarious, and that a dissolution of the Chamber might become indispensable. To add to his difficulties, the revenue had been unprosperous, the months of February and March exhibiting a deficit of 6,755,000 francs, and the majorities were day by day lessening.

As a preparatory measure to the dissolution, it was determined to establish the censorship by royal ordonnance. The announcement of this measure in the *Moniteur* was the signal for the establishment of a society to defend the liberty of the press, of which Châteaubriand was made the president. The author of the *Genie du Christianisme* was only too happy to accept this prominent honour. He declared in the Chamber of Peers that ministers could not avert their own fall, and that the only doubt was, whether they would not in falling drag down the monarchy with them.

Censorship. Creation of Peers. Dissolution.

A censorship was now established, 76 new peers were created to overcome the hostile majority, and the Chamber of Deputies was dissolved on the 17th November.

Paris took the lead in voting against ministers. Of 8000 electors 7000 voted for opposition candidates. Dupont de l'Eure, Laffitte, Périer, Constant de Schonen, Ternaux, and Royer Collard were returned for the capital. It was just antecedent to the elections that the society *Aide toi et le ciel t'aidera* was established. It was composed of ardent and advanced liberals, and there can be no doubt that it had immense influence on the elections. Illuminations took place in all the great towns, as well as in the capital, to celebrate the electoral triumph over the ministry. In Paris the populace endeavoured to force the occupants of all houses to illuminate, and proceeded to break the windows of such as did not comply. This led to rioting and arrests, and ultimately the military were called out, and barricades erected. These scenes led to the first appearance of barricades, which three years later were to be so formidable an engine against authority. There was also an ominous symptom observable in these riots. It was, that at the barricades the troops of the line first hesitated to act against the people. It was now evident that the position of M. de Villèle was most precarious, and that a change in the cabinet had become indispensable. M. de Villèle had too much shrewdness and sagacity not to perceive his perilous position. He announced to the king the necessity of forming a new ministry, and named Châteaubriand, De la Ferronays, De Fitz-james, and De Labourdonnaye as members of a new cabinet. But the monarch had a personal prejudice against Châteaubriand, because of his progress in liberalism, and he was, moreover, obnoxious to the congregation. At length M. de Martignac was fixed on as president of the council, and Villèle, now confident that the ministry would not fall into the hands of M. de Polignac, resigned. Villèle had no doubt his faults, but on the whole he was a prudent and sagacious minister, who carried some good measures, and prevented many evil ones. He softened the prejudices of the king, mitigated his bigotry, held his own party within bounds, and retarded at least for three or four years the fall of his master.

Fall of Villèle.

1827.

Martignac ministry.

M. de Martignac had for colleagues M. Portalis as keeper of the seals, M. de Caux as minister of war, M. de la Ferronays as minister for foreign affairs, M. de Vatismenil as minister of the interior, M. Hyde de Neuville of the marine, and M. Feutrier as minister of justice. The king chose M. de Martignac as a sort of concession which he was obliged to make to the liberal party. Had the monarch followed his own inclinations, his selection would have been M. de Polignac. Than M. Martignac, however, no choice could be made more likely to conciliate men of all parties. Persuasive, polished, gentle, accomplished, moderate, firm, yet not retrograde in his views and opinions, he possessed most of the qualities that constitute a popular and parliamentary favourite. No man was so likely as he to fashion the ancient fabric of the monarchy to the needs of the time, or to adapt to modern usages its wants and requirements. But Martignac wanted the hearty co-operation and concurrence of the sovereign. He was only endured as a hard necessity till the man after the monarch's own heart could be openly called in. Martignac did a politic thing in offering a seat in the cabinet to Châteaubriand as minister of public instruction, but his friends and fellow-labourers of the *Débats* induced the author of the *Martyrs* to reject the proposal, insisting that he should only accept the ministry of foreign affairs. When the Chambers met, it was evident from the attitude of parties that a coalition had been formed against the government. The speech of the king was conciliating, but the address in answer to it evinced the hostility of the majority to the late ministry. “ The remonstrances of France,” said this document, “ have put an end to the deplorable system which had rendered illusory all the promises of your Majesty.” The question that these strong expressions should be maintained was carried by a majority of 33, and Châteaubriand's party voted in the majority. The answer of the king, though he was deeply wounded, was dignified.

The influence of the crown, it had been complained, was increasing, and a law was introduced to exclude from the suffrage all persons employed under government. The law passed in the Deputies by a majority of 151, but in the Chamber of Peers several amendments were proposed by Villèle's adherents, and sustained by the 76 peers of his creation. The law, however, ultimately passed by a majority of 83.

A vote of credit for 80,000,000 francs (L.3,200,000) was asked for and granted to the ministers by a large majority, to carry into effect the treaty of the 6th July on the affairs of Greece. A measure which gave great satisfaction was the appointment of a commission to examine into the existence and influence of the Jesuits. When the ministers first broached the subject in council to the king, his majesty said, “ This is a serious matter, I must consult my council.” The council was unanimous on the subject, and the Duke d'Angoulême, the Bishop of Beauvais, Feutrier, and the king's own confessor, advised his Majesty to append his signature to a series of ordinances, the first of which prohibited any ecclesiastic belonging to a congregation forbidden by the laws to engage in teaching. This signature caused the king many a pang. “ Do you not think we are doing wrong,” said his Majesty to the Bishop of Beauvais. “ No, Sire,” responded the bishop, “ your Majesty is saving religion from ruin.[1] The bishops of France and the clerical party protested against this ordonnance, and 100,000 copies of their protest was circulated among the faithful. The Archbishop of Toulouse, the firebrand Clermont de Tonnere, refused to obey the ordinance, and the Bishop of Chartres proclaimed the ruin of the dynasty. The pope, however, approved of the ordonnance in a communication to Cardinal Latil, the king's confessor, as a measure of state, and the Jesuits retired to Switzerland. Meanwhile, M. Châteaubriand, who had refused the ministry of public instruction, accepted the embassy to Rome, “ a kind of opulent and necessary exile,” to use the words of Lamartine. His friends stipulated that the king should pay the debts with which the poet and orator was burdened.

1828.

No measure of M. Martignac was received with greater favour than the abolition of the *Cabinet Noir*, a band of 20 persons charged with the secret examination of letters at the post-office. The new law introduced by the minister for the regulation of the press also gave satisfaction. It was proposed to allow any one to set up a journal, but it was a provision of the law that security should be given by lodging a sum of money producing a certain yearly interest. Offences of the press were to be mulcted with heavy fines, which might amount to the whole of the security, and the trial and judgment of offences would be given to a royal court without a jury. Prosecutions for tendency were abolished.

M. de Martignac made many changes in the French diplomatic service, and also in various branches of the administrative service, but as to almost each of these changes he had a struggle with the king, who was guided by a secret and confidential committee, directed by M. Franchet, a director of the police under Villèle.[2] While the minister was under this species of royal ban, he addressed to his sovereign a confidential memoir on the state of affairs, on the necessity of conciliating the Chamber, and seeking by more constitutional measures a reconciliation with the men of the left centre, rendered indispensable to the crown by the obstinacy of the right. The minister was aware that the king was counselled to the rash act of a dissolution, and he endeavoured to dissuade the sovereign from so fatal a course. M. Martignac counselled the king to replace M. de la Ferronays, who wished to retire, by M. Pasquier, while M. Hyde de Neuville suggested M. de Châteaubriand. The king always thinking of M. de Polignac, declined to accede to either request. His Majesty, determining to judge for himself of the state of parties, set out for Alsace, and M. de Martignac accompanied him. The journey was a complete ovation. The liberals, desirous to attract the king towards their party, received him well. Benjamin Constant, Casimir Périer, and several of the great manufacturers, showed themselves during the royal progress, and Périer was decorated by the royal hand. But all this while Charles X. kept up a secret correspondence with M. de Polignac; and M. de Portalis, who filled by interim the office of minister for foreign affairs, was requested to summon the prince from London. Polignac quickly arrived; but the ministers fearing that it was intended to introduce him into the cabinet, declared to the king that if such a measure were in contemplation they would resign in a body. The king feeling that he had proceeded too far, postponed without abandoning his favourite project. But M. de Polignac, under the rose, made tentative efforts at a cabinet, and offered himself to MM. Pasquier and Lainé. Pasquier listened and refused, and Lainé, whose name was a host, exhibited the most philosophical indifference for office. M. Martignac had now pretty well wrung from the monarch all the concessions he would make to liberalism—a *quasi* freedom of the press, a *quasi* purity of election, and the expulsion of the Jesuits. How then was he without new popular measures to satisfy the chamber or the country? The session of 1829 still saw him at the head of the government. The Chambers opened on the 11th January, and the king, in a speech penned by M. de Martignac, explicitly denied all retrograde measures. After drawing a glowing picture of the prosperity of the country, his Majesty said, “ France knows, as you do, on what basis its prosperity rests, and those who seek it elsewhere than in the sincere union of the royal authority and the liberties

Journey of Charles X. to Alsace.

1829.

Royal speech on opening Chambers.

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[1] Lamartine, *Hist. de la Restauration*, tom. viii., p. 114.

[2] *Ibid.*, tom. viii., p. 112.

consecrated by the charter, will find themselves speedily disavowed by it." In the discussion on the address in the Peers M. de Polignac made a remarkable speech. "Our institutions," said he in a solemn tone, "appear to reconcile all that can be required on the one side by the power and dignity of the throne; on the other by the just independence of the nation. It is in obedience to my conscience and my conviction that I have taken the engagement to maintain them. What right has any one to say I will recede. My accusers bent the knee before idols, when, more independent than they, I braved them in chains, danger, and death." This speech, from a man known to be the favourite and the adopted of the king, produced astonishment and emotion in the country. On M. Martignac, to use the words of Lamartine, it fell like a thunderbolt. The accomplished and amiable premier was clear-sighted enough to see that the king was preparing a successor for him, modelled after his Majesty's own heart. Nor was he slow to discern that the loss of authority in the Chambers would speedily follow his loss of credit and confidence with the king. This the very first votes of the Chamber sufficiently indicated. For the office of president M. Royer Collard had the majority, Casimir Périer obtained 155 votes, and M. de Labourdonnaye, the ministerial candidate, only 90.

Here it was evident that it would be impossible for the government to withstand any coalition that might be formed against it. The centre belonged more to M. de Villèle than to M. de Martignac, and the left was not to be relied on.

The government brought forward a law which tended to increase the popular influence in the municipal councils, and which was expected to unite the voices of both royalists and liberals. But the measure pleased neither party, and a coalition was formed against it, which proved fatal, not only to the law, but to the administration. One part of the law had relation to municipal government, the other to councils of arrondissement; and that part by which it was intended to establish more popular assemblies, in lieu of the old cantons of arrondissement, was defeated by a coalition of the left, and the left centre by a majority of 21. When MM. Martignac and Portalis announced to the king the hostile vote, his Majesty said,—"You see whither you have been dragged by your system of concessions. You see whither they would drag me. Return and announce to the Chamber that I withdraw my laws."

The ministry were taken aback with this declaration, which denoted a long-cherished resolve, and the Chamber was equally amazed and grieved. Parties agreed to vote the budget almost without discussion. It was too evident that a crisis was approaching. M. Martignac, however, still remained in his place, though it was evident to all that his downfall must be immediate. The expenses of the army at this period excited a good deal of discussion, and one evening when M. de Caux, the minister of war, entered the king's cabinet, his Majesty said to him, "Am I sure of the army?" "Sire," said the minister, "you must first tell me in what cause." "Unconditionally," rejoined the king. "The army," said the minister, "will not fail the king in defence of the throne and charter, but if there be an idea of re-establishing the ancient system"——Here the king interrupted him, saying, impatiently, "The charter—the charter—who is for violating it? Though it is an imperfect work I shall respect it; but what has the army to do with the charter?" "Sire," said M. de Caux, "out of 20,000 officers, there are not a thousand who possess 600 francs a-year." This reply, though short, was pregnant, for it proved that the officers were of the bourgeois class, and sympathized with the class from which they had sprung. The full import and meaning of the words were lost on the king, who gave himself entirely up to ultras, the camarilla, and favourites. Secret conclaves were nightly held in the Tuileries, to which the most vehement royalists, such as Labourdonnaye, were admitted in plain dress through the valet de chambre's apartments. At these conferences M. Montbel, afterwards minister of public instruction in Polignac's cabinet, assisted, and Polignac himself was recalled from London to inspire the camarilla with his most calamitous counsel, by a letter in the king's own hand. All these proceedings and intrigues were concealed from M. Martignac, nor was it till the 6th August, that the king suddenly called M. Portalis to St Cloud, to inform him that the ministry was dismissed. The whole of the Martignac cabinet soon after repaired to St Cloud, and placed their portfolios in the hands of his Majesty. The king requested M. Roy, the finance minister, to remain; a request which that statesman declined to comply with. The new ministry consisted of M. de Polignac, minister of foreign affairs, in reality the premier; of M. de Labourdonnaye, minister of the interior; M. de Bourmont, of war; M. de Montbel, minister of public instruction; M. de Courvoiser, of justice; M. de Chabrot, of finance; and M. d'Haussez, of marine, an office which Admiral de Rigny had declined to accept. The very names, and more especially the names of Polignac, Bourmont, and Labourdonnaye, was an insolent defiance to the country. As such, both people and press considered it. The day after the appointments were gazetted, the liberal press teemed with vehement and burning invective. It is Coblentz and Waterloo, said the *Débats*,—we have the emigration in Polignac,—desertion to the enemy in De Bourmont,—the fury of proscription in M. de Labourdonnaye. Such are the leading principles in the three leading persons. Nothing but misfortune and danger will drive this government from power. Unhappy France! unhappy King! M. Guizot and M. Thiers, both since become so famous—the one in the *Temps*, the other in the *National*—fulminated against what they properly called the insanity the king. Writers still more popular, felicitated their readers that the veil which thinly disguised the conspiracy of six years was at length rent asunder. Lafayette and the directing committee at this moment gave the word of order to the secret societies, and MM. de Broglie and Guizot prepared the society of *Aide toi et le ciel t'aidera* either for attack or for resistance. A general correspondence was established to organize a system of resistance to taxes, and subscriptions were opened to defray the necessary expenses. To increase the ferment, Lafayette made a journey to the south. At Grenoble, he was escorted by a cavalcade; at Vizille he was presented with a silver crown, at Lyons his reception was still more enthusiastic. To counteract these popular demonstrations, it was proposed the king should go into Normaudy, but the project was abandoned as dangerous. M. de Labourdonnaye had been scarcely two months in office ere a species of rivalry broke out between him and Polignac, both aspiring to the presidency of the council. Labourdonnaye finding that Polignac was not likely to give way, and that he was himself under the ban of the pope's nuncio and the priest party, resigned his office. He was raised to the peerage, and, happily for himself and his family, became extinct as a public man. Labourdonnaye was succeeded by a young magistrate, M. Guernon Ranville, who had distinguished himself as procureur-general at Limoges, Grenoble, and Lyons. "To accept office under the circumstances," says Lamartine, "was an act of devotedness; to refuse might appear an act of cowardice." Guernon Ranville accepted.

Polignac ministry.

Reception of Lafayette.

1830.
Opening of the Chambers.

The Chambers met on the 2d March 1830. The deputies arrived in immense numbers, for every one saw that a struggle was imminent. Indeed, the certainty of a conflict was daily proclaimed by the four liberal journals, the *Constitutionnel*, the *Débats*, the *Courrier Français*, and the *Temps*; the circulation of the first named of which nearly doubled that of the *Gazette de France*, the most popular of the ultra-royalist journals. The king, in the last speech which he was to deliver, remarked, that France maintained amicable relations with all foreign powers, save Algiers, which had offered an insult to the French flag. He next touched on the prosperous state of the finances, whose condition would enable him to alleviate the public burdens. "The first wish of my heart," he said, "is to see France happy and respected. The charter has placed the public liberties under the safeguard of the rights of the crown; these rights are sacred, and my duty is to transmit them uninjured to my successors."

The strength of the opposition appeared on the first division for the election of a president The candidates of the ministry, MM. de Berbes and Délalot had only 131 and 125 votes, while Royer Collard had 225, Casimir Périer 190, and General Sebastiani 177. The king selected M. Collard for president.

The address in reply to the king's speech was drawn up by the practised pen of M. Etienne, the principal editor of the *Constitutionnel*, and long a writer in the *Minerve*. It was artfully worded. There was a seeming respect for the person of the sovereign, but with all this apparent deference, every other sentence contained a sharp-pointed reproof. Since, said this able state paper, our loyalty, our devotion, compel us to say that concurrence between the political views of your government and the wishes of your people does not exist, an unjust distrust of the feelings and reason of the French is at present the fundamental thought of your administration. Your people are afflicted at it because it is unjust towards themselves; they are disquieted at it because it is menacing to their liberties. These words brought the real question out prominently, that is, whether the Chamber was to have a negative on the appointment of ministers. That the Chamber should reject a minister named by the king appeared to Charles X. little less than treason to his prerogative. The debate was long and able, and on this occasion two men made their parliamentary *debut*, who have since risen to the highest summits of parliamentary eloquence—we mean MM. Berryer and Guizot. M. Berryer spoke against the address, and M. Guizot in favour of it. The original address was carried by a majority of 40—the numbers being 221 to 181—and the amendment intended to modify it was consequently lost. The majority was produced by the defection of the left centre, headed by M. Agier. The cabinet immediately dismissed all who had taken part in the hostile vote, and among others M. Calmon, director-general of domains. The vacant place was offered to and declined by Berryer. When it became known that the government was determined to put itself in antagonism with the Chamber, several high functionaries resigned their employments.

Resignation of Châteaubriand.

Among others, M. Châteaubriand placed his situation as ambassador at Rome at the disposal of ministers. M. Marcellus refused to accept the situation of under-secretary of state to M. de Polignac, and M. de Lamartine, as he himself tells us, declined the confidential post of *la direction des affaires des étrangères*, fearing that something was meditated against the charter.[1] The author of the *Meditations* and the *Girardins*, in alluding to the circumstance, depicts Polignac, we have no doubt truly, as an amiable yet vehement enthusiast, whose idea was not to establish absolute power, but a kind of episcopal aristocracy, formed to be the conservator of that religion which Polignac believed himself born to restore. If any one thing could more than another prove how unfit this man was to govern France, it was his hallucination on this point.

The king received the address of the Chamber, which was read in a tremulous voice by M. Royer Collard, who was saddened by an apprehension of the coming crisis. His Majesty stated that his heart was grieved that he was not to look to the Chamber for a concurrence, that his resolution was immovable, and that his ministers would make known his intentions. On the day following the minister of the interior handed to the president a royal ordonnance which prorogued the Chamber till the 1st September. It should be stated that the ministers proposed to the king to yield to the Chamber. "No," said Charles X., "that would be a degradation of the crown, and an abdication of my functions and prerogative. M. Guernon Ranville intimated that it might be possible to come to an accommodation, and to get a majority. "A majority," replied Charles X.; "I should be sorry to have one, and would not know what to do with it."

It must be said that never did a monarch choose a more unfitting or less opportune time to proclaim these high notions of prerogative. Freedom of discussion and of the press, and increased means of education and intercommunication, had opened the eyes of men, and made them alive to and jealous of their rights. The press, too, at this epoch was worthy of a great and civilized people, such as the French were in 1830. There was the *Débats* with Châteaubriand, Salvandy, the Bertins, and De Sacy; the *National* with Mignet, Thiers, and Carrell; the *Temps* with Guizot, Dupin, Passy, and others; and the *Globe*, numbering among its writers De Remusat, Montalivet, Duvergier, D'Hauraune, &c. &c. Such was the time chosen to commence a general crusade against newspapers, beginning with the *Débats*, whose principal editor and proprietor, M. Bertin de Vaux, had combated and suffered for royalty, had accompanied Louis XVIII. to Ghent, where he founded the official journal called the *Moniteur de Gand*.

M. Bertin defended himself and was acquitted. The *National*, the *Globe*, the *Nouveau Journal de Paris*, the *Journal du Commerce*, were convicted, and severe sentences passed on the managers. On the 15th May the finance minister made a report, to which reference will be made in another part of this article (see STATISTICS). From this document it was apparent that the country had greatly prospered under the government of the Restoration. In the period between 1814 and 1822 the imports and exports of France had increased 50, and the tonnage of shipping 25 per cent. The annual value of agricultural produce had also enormously risen. But though there was much material prosperity there was also much just discontent. No amount of physical well-being could, in 1830, have reconciled the high-spirited and intellectual French nation to be governed by a camarilla of priests and courtiers, or by such a silly reactionist as M. de Polignac.

Progress of France.

Some such thought seems to have come across the mind of Polignac himself, for he burned for a pretext to draw attention from his domestic mismanagement by some brilliant exploit. The rupture with Algiers afforded the pretext. A sum of 2,000,000 francs was due by the Dey to French merchants, and when reminded of this debt by the French consul his highness gave the consul a slight blow with his fan in the presence of the other European functionaries. An expedition on a large scale was determined on. The land forces consisted of 37,500 men, with 180 pieces of artillery; the naval of 11 sail of the line, 23 frigates, 70 smaller vessels, 377 transports, and 230 boats for landing the troops. The command of this expedition was solicited by Marmont Duke of Ragusa, but M. de Polignac gave it to the minister at war, Bourmont. The embarkation was completed on the 11th May, and the Duke d'Angoulême, who superintended the armament and sailing in person, declared on his return to Paris that all was triumphant, the army being animated with the best spirit.

Expedition to Algiers.

Battle of Sidi-Feruch.

The disembarkation was effected on June 14th at Sidi-Feruch, within five leagues of Algiers, and on the 19th the Mussulmans advanced towards the invaders' lines. The

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[1] Lamartine, *Hist. de la Restauration*, tom. viii., p. 159.

French had placed stakes in the ground to break the violence of the enemy, but such was the vigour and fury of the Bedouins that they broke through stakes and lines. The conflict was doubtful, when Bourmont brought forward his reserve and charged the assailants in flank, while the French infantry reforming in the rear advanced against the Turks engaged with their assailants in flank. This was decisive. The enemy were driven back in confusion, and the French succeeded in entering the Osmanli camp, making themselves masters of cannon, ammunition, and baggage. The loss of the Turks was above 3000, while that of the French did not exceed 500.

For four or five days after the victory of Sidi-Feruch, Bourmont continued to strengthen his position, disembarking his heavy artillery. On the 24th, however, 20,000 Mussulmans advanced with loud shouts to attack the French. But the French divisions of Loverdo and Berthezene moved out of the trenches to attack them, and with a terrible fire of grape threw the enemy into disorder, pursuing them two leagues with great loss. In this affair Amédée Bourmont, the son of the commander, fell gloriously. The advance of the French to Algiers was still impeded by the light troops of the Arabs, but on the 30th June ground was opened before the town. The attack against the emperor's fort was opened on the 4th July. The French ships kept up an incessant fire on the sea defences, while the land batteries, armed with 100 guns, directed their fire on the emperor's fort. The superior fire of the besiegers soon made itself felt, the walls fell with a terrific explosion, and the French grenadiers rushing to the assault were soon in possession.

The Dey attempted to obtain concessions, preserving his independence, but Bourmont would not listen to mediation, and on the 5th July the gates were surrendered. In the treasury were found gold and silver to the amount of 48,500,000 francs, and 1542 pieces of artillery. The value of the entire booty was 55,684,000 francs. The total loss of the victors was 2300 men, of whom 600 were killed.

Dissolution of the Chambers.

Five days after the expedition, whose success we have chronicled, sailed from Toulon, and immediately after the arrival of the Duke d'Angoulême, who brought tidings of the favourable disposition of the army, a dissolution of the Chamber was resolved upon.

The determination to dissolve produced the resignation of two ministers, Courvoisier and Chabrol. Courvoisier was succeeded as keeper of the seals by Chantelauze, and Chabrol as minister of finance by M. de Montbel. The violent Peyronnet succeeded Montbel as minister of the interior.

New elections.

The new elections were all in favour of the opposition; 202 members who had voted with M. Agier in favour of the address were returned. The opposition, it was calculated, numbered 270 votes, while the ministry had but 145, some of which were uncertain. It was thus evident that a majority was out of the question. A memorial was addressed to the king by the cabinet on the state of affairs, and his Majesty, after anxious deliberation, consulted M. Royer Collard, who answered, "that possibly the Chamber might not reject the budget, but that the discussions on the finances would shake the monarchy to its very foundation." The king now expressed an opinion that a *coup d'état* had become inevitable. "My resolution," said he to his ministers, "is to maintain the charter; I will not depart from that charter on any point, nor will I permit others to do so."

First Cabinet discussion as to coup-d'état.

It was on the 29th June that the question of a *coup-d'état* was discussed in the cabinet, and on the 7th July it was finally agreed under the seal of the most solemn secrecy that the blow should be struck. M. de Chantelauze, the orator of the cabinet, and the man who possessed the confidence of the Duke d'Angoulême, proposed to suspend the constitution—to govern in an arbitrary manner, or to declare void the elections of those deputies with various other measures, one of which was the placing of Paris, Lyons, Bordeaux, and Rouen in a state of siege. At length it was agreed to invoke the fourteenth article of the charter which conferred plenary powers on the king in extreme cases, and to suspend the liberty of the press, to dissolve the Chamber, and to establish a new electoral system. The project met with the warm approbation of the king. A report on the ordonnances intended to be issued was presented by M. Chantelauze to the sovereign on the 24th July. There were some truths in this document, for there can be no doubt that journalism had become an immense power in the state, that it had somewhat abused its influence, and that public opinion was in a degree overcharged and over-excited. But this is no justification for the king or for his ministers. There were laws to which the press was amenable, and which might have curbed and amerced its writers. But the cabinet appealed not to these laws but to ordonnances beyond the law—not to the legislature or courts of law, but to the will of the king. The first of these ordonnances suspended the liberty of the press, and prohibited the publication of journals not authorized by the government. The second dissolved the new Chamber on the pretence that the electors had been deceived as to the real intentions of the government. The third reduced the number of deputies to 258. The electoral franchise was reduced to the possession of property paying the requisite amount of direct taxes, by the exclusion of the suffrage founded on patents. The prefects were re-invested with the authority which they had antecedent to 1828, that is to say, they were to have absolute power in the preparation of the electoral lists.

Signing of the ordonnances.

The fatal ordonnances were signed on the 25th July. Polignac on that day presented them to the king. His Majesty hesitated for some time, and at length exclaimed, passing his hands over his brow, "The more I think, the more I am convinced that it is impossible to act otherwise." M. de Vitrolles, who had been so mixed up with Charles X. as Count d'Artois, went to St Cloud on the morning of the day the ordonnances were signed, to warn the ministers that the aspect of Paris was dangerous, and that what might have been attempted seven or eight months previously could not be then attempted. But M. Guernon Ranville, to whom these fears were expressed, on consulting with M. Peyronnet, the home minister, and Mangin, the prefect of police, was informed that Paris was tranquil, and would not stir.

The first person to whom the ordonnances were communicated was M. Sauvo of the *Moniteur*, an old and experienced publicist. When he received them from MM. Chantelauze and Montbel, he could not believe the evidence of his senses, and ejaculated, "God save France and the king!" Though the ministers had thus drawn the sword and thrown away the scabbard, there was a total want of preparation. Polignac, in the absence of Bourmont, was war minister as well as prime minister, and he assured his colleagues he had sufficient force to crush any rebellion. Yet there were but 12,000 men of the regular army in Paris, and of these not more than 5000 could be thoroughly depended on.

This force had but twelve pieces of cannon, with six rounds of grape shot to each gun. The ordonnances were affixed to the walls of Paris on the 26th. They excited at first rather surprise than indignation. The fact is, the leaders were not yet prepared. The chief journalists, indeed, had consulted M. Dupin, who said, "that though his legal opinion was at their service he could not join in a political consultation." They remarked, "they came to him as a deputy." "I am no longer a deputy," was his reply. Half-a-dozen deputies had met at Casimir Périer's, but almost all were more anxious to escape than to meet the difficulty. Of the half dozen was Alex. de la Borde, who proceeded to the office of the *National*. There he found the chief journalists of Paris in the act of drawing up a declaration of resistance. This protest was written by Thiers, and signed by forty-five journalists, among whom were Thiers himself, Carrel Coste of the *Temps*, and Baude. It is impossible to deny that these men hazarded their lives in resistance to what they deemed the illegal acts of the government. The ultra-royalist journals, and some of the royalist and liberal, had obeyed the ordonnances in taking out the licenses required. But the *National* and the *Temps* appeared without licenses, and this defiance of the government was followed by an order to seize the journals, and to close their printing offices. The editors and proprietors opposed a resolute resistance, locksmiths and blacksmiths refused to act in obedience to the police.

The public mind was excited to frenzy when the tribunal of commerce directed a printer, who refused to print the *Courrier Française*, to do so within twenty-four hours on pain of imprisonment. The king was not awakened from his delusion on the 27th. On the morning of that day his Majesty proceeded to a hunting party to Rambouillet. It was not till the morning of the 27th that Marshal Marmont (who had not been informed till the last moment of the onerous duties that were about to devolve on him) was invested with the command of the garrison of Paris.

Before his orders could reach the troops everything had assumed a serious aspect, and it was evident that a conflict was inevitable. Yet, though the people were arming and menacing, no additional troops were brought into Paris, though 18,000 of the Royal Guard were quartered in the vicinity. No arrangement was made by M. de Polignac, in charge of the war office, to provision the troops, or to furnish them with ammunition. It is a fact, that during the heat and fierce struggle of the three days the army remained without supplies, and was indebted for food to the citizens of Paris. On the morning of the 28th the people had in masses descended into the streets crying, "Vive la chartre! a bas les ministres!" There were also general cries of "Vive la ligne! vivent les peres et les enfants du peuple!" The line soon showed their sympathy by allowing the people to pass through their ranks. The inhabitants of the Faubourgs St Antoine and St Marceau now appeared in great numbers armed with all sorts of weapons. The streets were unpaved, trees were felled, omnibuses and carriages overturned, and barricades erected. The arsenal, the powder manufactory, the depôt of artillery were broken into, and the contents distributed. Forty thousand muskets of the National Guard were put into hands capable of using them, and many of their uniforms were rendered serviceable. The people surrounded the Hôtel de Ville, and it soon fell into their hands. A huge tricolor flag was instantly displayed from the roof, and excited enthusiasm. The gates of Nôtre Dame were soon after broken open, and another tricolor flag was hoisted from its summit, while its enormous bell, the *bourdon*, sounded the tocsin.

Taking of the Hôtel de Ville.

The tricolor flag was at this time displayed from a score of churches—barricades were erected in all the principal quarters—and the best part of Paris might be said to be in the hands of the insurgents. It was at this period that Marmont concentrated the few troops at his disposal around the Tuilleries. But the eight guns at his command had only four rounds of grape shot.

It is true, that at 11 o'clock 500 men had arrived from Vincennes, and three squadrons of *grenadiers à cheval* from Versailles, which made the force defending the centre of Paris 3000 infantry and 600 horse of the guard. But the infantry had only twenty rounds of ball cartridge each, without provisions or water, under a scorching sun and African temperature.

Notwithstanding these discouraging circumstances, Marmont resolved on offensive operations. He ordered two columns to march, the one along the Boulevards, the other along the quays, whilst a third was to occupy the great central market, called Des Innocens, from which the Rue St Denis emerges on one side to the Boulevards, and leads on the other to the Hôtel de Ville. These columns were each of them far too weak for the service demanded of them. That which advanced along the quays consisted of but one battalion of the guard, the others had each two battalions. Each brought with it two guns. Marmont employed no troops but the regiments of the guard on that service, for he already doubted, and would not put to trial the fidelity of the line. The column which was to proceed along the quays to the Hôtel de Ville was to be supported by the 15th Light Infantry, which held the Palais de Justice and the Pont Neuf. It advanced without difficulty to the Pont Neuf. Then the commander, General Talon, instead of taking the 15th Light Infantry with him, ordered them to line the opposite quays, and to fire on the crowd which barred the approaches to the Hôtel de Ville. The 15th took up the position ordered, but refused to fire upon the people, unless they were first attacked. Talon, with the guards, advanced with one division along the quays of the cité, the other on the opposite side of the river. Both met determined resistance. Every window of the Hôtel de Ville, and of the houses opposite, was filled with marksmen, and a body of students did not fear to stand before the military. But the two guns with their discharges of grape swept away popular resistance wherever encountered, and the battalion took possession of the Hôtel de Ville, and pulled down the tricolor. General Talon found it still difficult to maintain possession of the square, and to keep the insurgents at bay on the other side of the bridge, as well as up the narrow streets all around. Hearing probably of the conduct of the 15th regiment, the commander-in-chief sent a Swiss battalion to reinforce it. The column met with no obstacle along their road except a barricade, attempted near the Porte St Martin, which was entirely destroyed. No permanent obstacle presented itself till the Place de la Bastille was reached. The soldiers could not make their way from hence to join their comrades at the Hôtel de Ville, so strong were the barricades, so formidable the fire and discharge of missiles from the windows of the Rue St Antoine. The most painful and dangerous service was to clear the Marche des Innocens and the Rue St Denis intrusted to the remaining column. That portion of it which attempted the street was crushed with paving-stones, thrown upon them from the tops of the upper windows. The narrowness of the street and its windings left no play to cannon, and the enemies were above. The attack of a street of which the barriers are all occupied by insurgents, requires a large force prepared for destruction. The Royal Guards were neither in numbers nor in preparation fit for such a struggle. They were, as we have before stated, without provisions, and no preparation whatever for the supply of such an assemblage of troops had been made. The folly of intrusting the war department to M. de Polignac in the absence of Bourmont was even greater than the intrusting to him the political administration of the country.

Provisional government established.

While these sanguinary, and, for the royal cause, unsuccessful combats were taking place in the streets, a provisional government was established by the successful insurgents. Generals Lafayette, Gerard, and the Duke de Choiseul, were named as members of it, and a proclamation, signed in their names, was, without their authority, placarded on the walls of Paris.

Ultimately thirty deputies, with a view to constitute a government, met at M. Audry de Puyraveau's. M. Mauguin, the advocate, was the first to address his brothers of the Chambers, and to tell them that to lead such a movement they must comprehend it. He urged that they should choose at once between the people and the royal guards, by naming a provisional government. But the constitutionalists of the left centre thought this proposition premature, and proposed a deputation to Marmont to stop the effusion of blood. The deputation was received by the Marshal, who represented the circumstance to his sovereign in a respectful letter, but this communication made no impression on Charles X. The deputation sought to have an interview with Polignac, but that self-willed minister answered, that an interview could lead to no good result.

The afternoon of the 28th found the insurgents triumphant, and the king's party disheartened with their losses. Efforts were made by the Baron de Vitrolles and General Alexandre Girardin, late in the day, to convince the king of the perilousness of his position, but in vain. When a despatch arrived from Marmont, announcing his real position, the king sent orders to the Marshal to concentrate his troops and act in masses. In the evening the Marshal informed M. de Polignac that the troops of the line had passed over to the people and that the Guard alone was to be relied on, on which the minister replied, " Well, if the troops have gone over to the insurgents, we must fire on the troops." On the morning of the 29th, 1500 infantry and 600 cavalry of the Guard arrived at Paris, but what were these against probably 100,000 armed citizens. Against such an host as this Marmont had not much more than 5000 men and eight guns. Besides, at six in the morning of this day, it was proposed by the deputies assembled at the mansion of M. Laffitte, to declare the king and his ministers public enemies. General Sebastiani alone protested against this resolution, whilst M. Guizot remained silent. After Lafayette arrived at Laffitte's, a deputation from the republicans came to offer him, conjointly with General Gerard, the military command of Paris. Lafayette accepted the offer with eagerness, while Gerard avoided committing himself either by refusal or acceptance. On this day the Louvre was carried by the insurgents, the whole of the left bank of the Seine being in their hands. Dense masses of the people, led by pupils of the Polytechnic School, came into contact with the artillery of the Guard in the Rue St Honoré, opposite the Louvre, and a parley had taken place between them. The officer in command, whose pieces were charged with grape, sent to ask Marmont if he should fire. The Marshal forbade him to do so, and the guns immediately fell into the hands of the insurgents. The regiment of the Seine opened its ranks to the crowd to let them into the Tuileries. Marmont, informed of this, ordered M. de Salis, who commanded two battalions of the Swiss Guard, to send one of them to occupy the Place Vendome, to cut off the great entrance by the Rue de la Paix, from the Boulevards crowded with insurgents. De Salis, desirous to relieve the battalions which had combated since dawn in the colonnade of the Louvre, with the insurgents in the church of St Germains l'Auxerrois gave orders for them to retire. While the movement was taking place, the fire ceased for a few moments, and the insurgents thinking that the troops retreated, rushed across the Place St Germains l'Auxerrois, and stormed the Louvre. The windows were broken through, the gates forced open, and the inner court of the Louvre carried. Numbers of the insurgents forced their way into the gallery of the museum, from the windows of which they kept a fire on the Swiss in the Place du Carrousel. Assailed both in front and in flank, a panic seized the troops, and they fled in disorder into the garden of the Tuileries. Marmont, by his calm courage, restored order and withdrew his troops into the Champs Elysees. He covered with his own body the last soldier of his army, and was the latest to leave the garden. The taking of the Louvre was a decisive measure, even if the defection of the 5th and 53d regiments of the line had not rendered the contest almost hopeless. The treasury, the post-office, and the telegraphic departments were soon in the hands of the insurgents, and the Invalids and barracks of the Rue de Babylonne were the only points of importance occupied by the royal troops. They were both evacuated—the latter, after a severe conflict, in which numbers of the Swiss perished. A hundred Swiss placed in a house at the corner of the Rue St Honoré, had been forgotten in the retreat. They defended themselves desperately, and perished to the last man. With the exception of the sacking of the archbishop's palace, and the emptying of the cellars of the Tuileries, by men exhausted with thirst and fatigue,—there was no plunder.

Interview of Marmont with the king.

Marmont hastened to communicate to the king at St Cloud the disasters of the day. After enumerating the events that had occurred, and the panic of the Swiss, he said in conclusion, " A ball directed at me killed the horse of my aide-de-camp at my side. I regret it did not pass through my head, for death were far preferable to the sad spectacle I have witnessed."[1] The king raised his eyes to heaven, and without addressing a single reproach to the marshal, directed him to communicate with the Duke d'Angoulême, whom he appointed generalissimo. The monarch unfolded the disastrous news communicated by Marmont to his ministers. The majority of the cabinet were for yielding to a force they had no means of resisting; but though on the evening of the 28th, when victory was undecided, M. Guernon de Ranville advised an arrangement or accommodation, yet now he was not for yielding without a combat. The views of this minister were sustained by the dauphin; but the king turning to the majority said, " Do what you think best." On this the ministers deliberated, and the king signed an ordonnance revoking his former ordonnances, dismissing his ministers, and appointing M. de Mortemart president of the council, Casimir Périer minister of the interior, and Gerard minister of war. M. de Mortemart accepted the mission with reluctance, but entirely failed of success. Ordonnances of a liberal character were prepared by the new minister, and sent to the Hôtel de Ville, but it was replied, it is too late.

Ordonnances revoked; ministers dismissed.

The popular party at the Hôtel de Ville published a proclamation, signed by Count Lobau, Audry de Puyraveau, M. Mauguin, and M. de Schonen, stating, that Charles X. had ceased to reign in France.

On the 29th and 30th of July, M. de Mortemart made a last effort to open negotiations at the Hôtel de Ville through M. Collin de Sussy, and at the Luxembourg, but his propositions were received with contumely and contempt. So soon as the Duke d'Angoulême was invested with the chief command of the army, he directed Marmont, who received the order at the Barrière de l'Etoile to retire with all his troops to St Cloud, where he proposed to rally the royal guard, and to march afterwards himself with troops from St Omer and Nancy, to the amount of 38,000. It was at St Cloud that the dauphin apostrophized the marshal in vehement terms; and in attempting to seize his sword, accusing him of treason—because he had entered into a capitulation for the royal troops, by which hostilities were suspended —he wounded his own hand. A scene like this, in such a supreme and fatal moment, was not calculated to reassure the troubled and anxious spirits who surrounded the monarch. Meanwhile the excited and turbulent spirits of the metropolis were pouring out to St Cloud, and the dauphin, who was in command of the royal guard, finding the soldiers of the line not prompt to obey his orders in firing on the insurgents, who had passed the bridge, communicated to his father the disheartening intelligence. It was now resolved to retreat on Rambouillet, where the Court arrived at 12 o'clock at night with the royal guard, 12,000 strong. On his arrival at Rambouillet, the king was prepared to abdicate; and on the morning of the 2d August, he addressed a letter to the Duke d'Orléans in his quality of lieutenant-general of the kingdom (an office conferred on him by the

Scenes at St Cloud.

Arrival of the king at Rambouillet.

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[1] Lamartine, tom. viii., p. 252.

authorities of the Hôtel de Ville, and confirmed by the monarch), requiring him to proclaim Henri V. The duke consulted with M. Dupin as to the answer he should return to this communication. That eminent lawyer advised a categorical answer, which he drew up, separating the cause of the house of Orleans from that of the elder branch. "The matter is too grave," said the duke, "to decide on without consulting the duchess;" and passing into another chamber, he substituted a complying, considerate, affectionate, and obedient letter, in lieu of the harsh missive of Dupin. But instead of acting up to this letter, or to the request of the abdicating sovereign, the duke sent forward a deputation of three commissioners, with an army of 12,000 men, commanded by General Pajol, to impress upon Charles X. the necessity of his departure for England.[1]

The council which was sitting at the Hôtel de Ville had, on Friday the 30th, been much in contact with the people, and there were men among them of republican tendencies. But Casimir Périer, Sebastiani, and a considerable number of influential deputies, were almost to the last moment in favour of an arrangement with Charles X. As a sort of compromise and *juste milieu* between Carlism on the one hand, and republicanism on the other, the name of the Duke d'Orléans was put forward, and the influential banker Laffitte was prominent in urging the claims of his Royal Highness. The *National*, one of the principal writers in which was M. Thiers (then patronized by Laffitte), espoused the cause of the duke, and put forth a placard stating, that the republic would expose France to fearful quarrels, and produce a breach with Europe. The Duke d'Orléans, the document stated, was devoted to the revolution, never bore arms against France, was a combatant at Jemappes, had borne the tricolor flag, and would hold his crown from the people. While these efforts were making in favour of the duke in Paris, that personage was at his country house at Neuilly. On Tuesday the 27th, Laffitte had sent a friend to him, when it appeared the duke was undecided. He feared St Cloud—he feared the insurrection—and to escape both, he retired to another country house at Raincey. But during his absence, Thiers had seen the duchess and Madame Adelaide the duke's sister, and after a good deal of reserve and coyness at first, Madame Adelaide stated that she was herself a Parisian—that she would make common cause with the Parisians—that her family were always in opposition—that they might make anything of her brother but an emigrant—and that if the adhesion of the family was necessary to the revolution, it should be given. Madame Adelaide stated her readiness to set out for Paris, only requiring either M. Laffitte or General Sebastiani for an escort. "Madame," said M. Thiers, "you this day secure the crown to your family."[2] The Duke d'Orléans was immediately informed of what had occurred by M. Analote de Montesquieu, one of the gentlemen of his household, who proceeded to Raincey to implore the prince to forestall the republic by accepting the crown. The duke still hesitated, ordered his carriage—then stopped it half way in the avenue, returning to Raincey—then again turned his horses' heads towards Paris, where he arrived *incognito* in the dark, and proceeding up stairs to an attic in the Palais Royal, flung himself on the bed of one of his servants.

Arrival of the Duke d'Orléans in Paris.

The arrival of the Duke d'Orléans in Paris induced Charles X. to write him a letter, in which he offered the prince the position of lieutenant-general of the kingdom, with a view to preserve the crown for the Duke de Bordeaux. But the duke declined this offer, alleging to his friends that he would be a constant object of suspicion; that the Duke de Bordeaux could not have a bowel complaint without his being accused of having poisoned him. Meanwhile a meeting of deputies took place at the Hotel Bourbon, at which Laffitte was chosen president. While the deputies were assembled M. de Sussy entered with the last ordonnances of Charles X., recalling the obnoxious measures which had produced the insurrection, and dismissing the Polignac cabinet. These were not read, but the deputies present prayed the Duke d'Orléans to come to Paris (he had already arrived incognito) to exercise the functions of lieutenant-general. In the Chamber of Peers at the Luxembourg Châteaubriand made a protest in favour of the ancient monarchy. "If the question," said he "comes to be the salvation of legitimacy, give me a pen and two months, and I will restore the throne." But these words fell unheeded, and in fact the commission of the Chamber of Deputies agreed to on the motion of M. Hyde de Neuville, proposed, on consultation with a commission of the Peers, to give the authority of lieutenant-general of the kingdom to the Duke d'Orléans.

The lieutenant-general at the Hôtel de Ville.

The deputies waited on the duke at the Palais Royal, praying him to accept the lieutenancy-general, pointing out to him the dangers of delay. The duke asked for a few minutes longer delay, and retired to his cabinet with General Sebastiani, whom he despatched to consult M. de Talleyrand. The ex-bishop and ex-minister advised the duke to accept. He no longer hesitated, and his acquiescence was announced in a proclamation in the *Moniteur*. Having accepted the lieutenancy-general, the duke perfectly comprehended that the nomination required the sanction of the power installed at the Hôtel de Ville. To the Hôtel de Ville he proceeded on Saturday the 31st July, where he was received by Lafayette, and the declaration of the Chambers was read to him. When this ceremony was finished, he said,—"As a Frenchman, I deplore the evils inflicted on the country; as a prince, I am desirous of contributing to the happiness of the nation." When the prince had uttered these words, an adventurer, clothed in the uniform of a general officer, and calling himself General Dubourg, addressed the lieutenant-general, and said,—"You have entered, prince, into serious engagements. I trust you will not forget them; but it is well to forewarn you, that should you do so, we are the men to compel you to keep your word." This abrupt apostrophe produced a momentary embarrassment. But the duke recovering his sang froid, said,—"You do not know me, sir, to address such language to me. Know, then, that I am an honest man, whom it is not necessary to remind of his engagements." Lafayette, placing a tricolored flag in the Duke d'Orléans' hands, led him to the window. He waved the flag, and embraced Lafayette in the presence of the people, amidst general applause.[3]

The politic conduct of the Duke d'Orléans at the Hôtel de Ville silenced all active opposition. It was on this occasion that Lafayette said to the prince,—"What is now necessary to the French is a popular throne, surrounded with republican institutions." "That is just my opinion," said the prince. In his letter to the electors of Meaux, Lafayette stated that this mutual engagement, which he speedily published, rallied round the monarch men not disposed to monarchy, and men who wished any one but a Bourbon.[4]

In the meantime Charles X., having abandoned the idea of rallying the troops and retreating upon Tours, dismissed his ministers, and directed them, through M. Capelle, to seek their safety in flight. At Rambouillet, at the request of Marmont, Charles X. received the commissaries sent to see him out of the kingdom, and resigned himself to what he called the will of heaven, reserving the rights of the Duke de Bordeaux. At Maintenon the ex-monarch dismissed his army, telling the Guard and the other

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[1] Louis Blanc, *Dix Ans de Regne*, tom. i., p. 374.

[2] *Chronique de Juillet de* 1830, de M. L. Roget.

[3] Vaulabelle, tom. vii., p. 490.

[4] *Lettre de Lafayette aux Electeurs de Meaux.*

Arrival at Cherbourg and embarkation.

regiments to make their submission to the lieutenant-general. He continued with his family his journey to Cherbourg, resigned to what he considered the will of God. Arrived at Cherbourg on the 14th of August, he bade an affectionate farewell to his body-guard, and, with the Duke and Duchess d'Angoulême and the Duchess de Berri and her two children, embarked on board the Great Britain for Spithead. The journey of the king from Rambouillet to Cherbourg lasted twelve days, an immense time if the distance only be considered.

Character of Charles X.

The period consumed in the journey proves the considerate patience of the commissaries, who were anxious to consult the wishes and age of a monarch who had not even yet abandoned all hope of a rising in his favour. On the route the commissaries always led the way, not only to prepare suitable accommodations, but to calm the fervour of the people. The monarch did not pass through a single city, town, or village in which the national colours were not prominent, and he was sometimes fated to hear the sound of the *Marseillaise,* or the new song which Casimir Delavigne had consecrated to the Parisian victory. Sometimes Charles X. was received with a glacial silence; sometimes by a crowd more curious than sympathizing. The king was resigned and dignified in his deportment. He daily heard mass, which was celebrated at five or six o'clock in the morning. Free from the trammels of kingship, Charles appeared, as he really was, a frank, amiable, dignified gentleman, devout and religious, according to his acceptation of devotion and religion. It was evident he neither understood his age nor his country, and that he grossly miscalculated his power and the temper and feeling of the people over whom he was placed. He thought, to use his own phrase to his minister Polignac, that his cause was that of God, of the throne, and the people. In these views and opinions he was most sincere, most misjudging, and most mistaken.

Reign of Louis Philippe; Aug. 1-9.

During the first week of August the Chambers were occupied with the preparation of the constitution. On the 9th a deputation from both Chambers waited on the Duke d'Orleans, and made him an offer of the throne, which he accepted. The acceptance of the constitution by the new sovereign took place in the Chamber of Deputies. "I accept without restriction or reserve," said the new king, "the clauses and engagements which the declaration of the Chamber of Deputies contains, and the title of king of the French which it confers upon me, and I am ready to swear to observe them." His Majesty then took the oath, which was in these terms:—"In the presence of God, I swear to observe faithfully the constitutional charter, with the modifications contained in the declaration; to govern only by the laws, and according to the laws; to render fair and equal justice to every one according to his right, and to act in everything in no other view but that of the interest, the happiness, and the glory of the French people."

The king took the title of Louis Philippe. The leading articles of the charter of Louis XVIII. were agreed to, with the exception of the 14th clause, on which the authority for the *coup d'état* was founded. The age of electors was fixed at twenty-five, and deputies at thirty-one. The nominations to the peerage by Charles X. were declared void, but the question of the hereditary character of the peerage was reserved for future discussion. The legal limit of the Chamber was fixed at five years, and the annual removal and renewal of a fifth abolished. In the money qualification of voters no change was made. The electoral franchise remained with those who paid 300 francs, or L.12, of direct taxes. It was also declared that offences committed by the press should be tried by juries; that deputies who accepted office should be subjected to re-election, and that the expenses of the army should be voted annually; that laws would be presented on public education and the liberty of instruction, and on municipal and departmental institutions. Eleven peers, MM. de Montmorency, Dambray, Latour, Maubourg, La Tour, Dupin, D'Ambray, De Croi, De Châteaubriand, De Perignon, De Damas Caux, Auguste de Talleyrand, and St Romans, resigned their seats. Some royalists, as M. de Noailles, Mortemart, Martignac, took the oaths unqualifiedly.

First ministry of Louis Philippe.

The first ministry of Louis Philippe consisted of M. Dupont de l'Eure as keeper of the seals, Gerard of war, Molé of foreign affairs, Sebastiani of marine, De Broglie of public instruction and president of the council, Louis of finance, Guizot of the interior, Laffitte, Périer, Dupin, Ainé, and Bignon were named ministers without portfolios. Lyons, Bordeaux, Rouen, Marseilles, immediately acknowledged the government of Louis Philippe, and before fourteen days had elapsed all France was under his sway.

Recognition of Louis Philippe by England.

One of the first measures of Louis Philippe was to despatch General Baudrand to England. The Duke of Wellington at once informed the envoy of the king of the French that England would acknowledge Louis Philippe. The general was admitted to an audience, and was graciously received by William the Fourth.

To the emperor of Russia Louis Philippe despatched General Athalin. The despatches of Pozzo di Borgo had prepared the emperor for the accession of the king of the French as the least of evils. Under these circumstances the envoy was well received; but in his answer to the diplomatic communication of the new monarch it was plain that Nicholas only acknowledged the king on the condition of his respecting the rights and obligations of treaties, and the territorial arrangement of Europe, as determined by the congress of Vienna.

General Belliard, sent to Vienna, was well received by M. de Metternich, who stated that the emperor Francis could not sanction the breach of faith on the part of Charles X., and the minister added that Austria could feel little sympathy for that elder branch, which had thrice compromised the peace of Europe. The recognition of the king of the French by the king of Prussia was still more prompt and satisfactory. Count Lobau was well received, and all that was stipulated for was the faithful observance of the treaties of 1815. It was evident the statesmen of the cabinets of Vienna and Berlin were fully cognisant of secret negotiations which had been going on between the courts of the Tuileries and St Petersburg touching the frontier of the Rhine, which Châteaubriand was desirous of obtaining for France. The bait held out to Russia as the price of its acquiescence was Constantinople. The new king was thus speedily recognised by the principal powers of Europe. The first difficulties he had to encounter were internal, not external. Dissensions soon exhibited themselves, arising from a democratic and a moderate party. The democratic party was greatly fomented by deputations from the national guards of the principal towns in France, whilst the moderate party was sustained by the foreign commerce and manufacturing and commercial interests. Lafayette, who had been appointed commander-in-chief of the National Guards of France, sided with the democratic pary, and by his attitude awakened a good deal of uneasiness. The king, with a view to diminish the influence of the general, and to draw attention to himself, had ordered a review of the 60,000 National Guards of Paris, to whom he presented their colours; but notwithstanding some adroit flattery of the general and the troops, it could not be said that the monarch had rendered himself the more prominent figure. A number of workmen were thrown out of bread by the revolution, and the general distress aggravated the difficulties of the new government. The men assembled in great numbers, and it became necessary to have recourse to the popular authority of Lafayette to induce them to disperse.

Some of the first legislative measures of the new government were praiseworthy. The law of the 12th January 1816, with its numerous exceptions to the general amnesty, was repealed, and also the law of 1825, prescribing the punishment of death for the crime of sacrilege or theft in churches. In the division for the choice of president of the Chamber, on the resignation of Casimir Périer, M. Laffitte obtained 245 votes out of 256. The project of the government with regard to the electoral law was carried by an immense majority, only twelve members voting against it, the numbers being 234 out of 246.

Financial question.

The most pressing question for the government, however, was that of finance, for revolutions invariably increase the expenses and diminish the resources of governments. The expedition to Algiers had been attended with an immense expenditure. Ministers asked and obtained a supplementary credit of 67,490,000 francs, amounting to L.2,560,000 of our money. The receipts of the year were estimated at 979,787,000 francs, and the expenditure at 1,050,116,000, being an excess of near three millions of our money of expenditure over income. About this period an incident occurred which added considerably to the growing unpopularity of the king. On the morning of the 27th August the Duke de Bourbon was found dead in his bedroom, strangled by a silk handkerchief. The Baroness de Feuchères was the only person above the rank of a domestic in the mansion of the duke. There were appearances indicating that the duke had not committed suicide, but Madame de Feuchères strongly maintained that he had. The suspicious complexion of the affair was increased when it was announced that the whole personal property of the deceased, amounting to 4,000,000 of francs, was left to Madame de Feuchères, and his large landed estates to the Duke d'Aumale. The reception of Madame de Feuchères, who was the mistress of the Duke de Bourbon, at the Tuileries soon after, gave credit to the most distressing rumours, and did much to lower the monarch in public opinion. The movement and republican parties, too, greatly fostered these sentiments, which were artfully made use of on the 21st September, when a great procession took place in the Place de Grève to commemorate the execution of Bories and the three sergeants of La Rochelle. This assemblage passed off quietly, but a few days later the Society of Les Amis des Peuple was dissolved by force, and the president brought before the tribunals of police

Death of the Duke de Bourbon.

Attempts at revolution in Spain, a successful revolution in Belgium, disturbances at Aix-la-Chapelle and Cologne, insurrections in Dresden, Leipsic, and Brunswick, in some of which the finger of France might be traced, all tended to abate the cordial feelings with which the three northern powers at first regarded the accession of Louis Philippe.

Fall of the first cabinet.

The first cabinet of Louis Philippe, formed by a coalition of three parties, was soon torn by dissensions, and its dissolution was brought about during the trial of M. de Polignac and the other ministers of Charles X., who had been arrested and brought to Vincennes. The immediate cause of the fall of the cabinet was a difference of opinion on the propriety of dismissing M. Odillon Barrot, prefect of the Seine, in consequence of an address he had issued condemning the address of the Chamber of Deputies, which had appeared in the *Moniteur* as "an inopportune step calculated to interrupt the ordinary course of justice." This gave rise to an altercation between the king and the keeper of the seals, M. Dupont de l'Eure, who tendered his resignation if Barrot was dismissed. The king, fearing a rupture with the republican party, consented to retain him, and the consequence was that six members of the cabinet tendered their resignations.

M. Laffitte was made president of the council, and minister of France, Marshal Maison of foreign affairs, M. Montalivet of the interior, M. Merilhou of public instruction, while Dupont de l'Eure, Sebastiani, and Marshal Gérard retained their respective offices of justice, marine, and war.

This took place on the 29th October, but in scarcely more than a fortnight afterwards an ordonnance appeared, appointing Sebastiani minister for foreign affairs, D'Argout of marine, and Soult of war. Laffitte, as president of the council, concisely explained to the Chamber that the cabinet was unanimously of opinion that liberty should be accompanied by order, and that the inflexible execution of the laws was indispensable.

Trial of the ex-ministers.

The progress of the trial of the ex-ministers produced great excitement. The process was long, not to say tedious, and the ex-ministers were defended with talent and courage. M. Martignac, who had been himself a president of the council, who was the school-fellow of Polignac, and who had been succeeded, if not supplanted, by him in office, defended his early friend. "The long brotherhood," he said, "which continued undisturbed through so many events, was interrupted for a moment by political dissension. The place in which we are met to-day has sometimes resounded with our debates, not unmixed with bitterness; but of all recollections that of ancient friendship is alone retained in the Castle of Vincennes."

M. Sauzet, afterwards president of the Chamber of Deputies, and who appeared for M. Chantelauze, was particularly bold in his language. "The revolution," said he, "is a revolution which is due only to hazard, and which has succeeded only by a fortunate accident." It would not have taken place the day before, and assuredly would not have been successful the day after. The condemnation of the ex-ministers was certain from the commencement of the trial, nor could it have been otherwise, totally irrespective of popular irritation and excitement. The populace and movement party, and a majority of the National Guard of Paris were anxious that the extreme penalty of death should be inflicted, but it is to the honour and credit of the Peers that they did not pronounce the penalty of death, a sentence which would have been extremely painful to the king, and embarrassing to his ministers. M. de Polignac was sentenced by a majority of 128 to transportation for life, M. de Peyronnet to perpetual imprisonment, and M. de Chantelauze and Guernon de Ranville to the same punishment. During the trial the National Guard, and more especially the artillery, had expressed a most rancorous and turbulent spirit. At the same time Lafayette had also made demands on the government concerning the suffrage and the reconstruction of the peerage, which it was impossible to comply with. This led to decision and vigorous action on the part of the government. On the 24th December, ministers deprived M. de Lafayette of the *actual* command of the National Guard, appointing him at the same time honorary commander. This step was followed by the resignation of Dupont de l'Eure as minister of justice. The position of the ministry had been somewhat strengthened by favourable news received from Algiers. Bourmont, who it will be remembered had conquered that dependency for Charles X., and since commanded there, on receiving the announcement of the dethronement of the monarch, published an address announcing the fact to the army. He resigned his command to Clausel, who had been appointed his successor. An expedition under Clausel set out in the middle of November, and after defeating several bodies of Arabs, reduced the towns of Melideah and Medeah with a considerable territory. These conquests, and the great additions the government was obliged to make to the army, enhanced the public expenditure, and the deficit, of which we have before spoken, increased. Between July 1830 and January 1831, the five per cents. had fallen sixteen, and the three's twenty-two per cent. The clothing, arming, and equipping of 600,000 National Guards now made a large addition to the expenditure. A great increase of the regular army was also necessary in consequence of the hostile attitude of foreign powers: 148,000 new conscripts were called out, which raised the infantry to 243,000 men, and the cavalry to 45,000, making a total of 288,000 men. The position of affairs in Europe generally, and more especially in Belgium, warranted this increase to the French army. The European powers all felt the greatest interest in the question of the disposal of the vacant Belgian crown, and none more than France. The estates of Flanders made a formal tender of the crown to the Duke de Nemours. The throne of Louis Philippe was not yet sufficiently established to permit him to accept an offer which would embroil him with his allies. The monarch had the prudence to decline the offer of the States.

Financial position.

The fermentation which existed throughout the greater part of Europe in 1831 did not fail to exhibit itself in Paris. Commerce was at a stand, and industry without employment. Vast numbers of unemployed men, with threatening aspect, appeared in the public streets, whom it was impossible to succour or to employ. It was at this epoch that the budget disclosed the disastrous financial position of France. The floating debt which it was necessary to provide for amounted to 1,434,655,000 francs, £58,500,000 of our money, being an increase of nearly 500,000,000 francs, or £20,000,000 on the budget of the restoration. After allowing for all the resources of the country there remained a deficit of 211,655,000 francs (L.8,450,000) to be provided for by loan, or carried forward as a floating debt. The estimate for the army had increased three millions of our money on the estimate of 1829.

The 14th of February being the anniversary of the death of the Duke de Berri, some of the partisans of the elder branch prepared to celebrate a funeral service in memory of the prince. The ceremony was originally intended to take place in the Church of St Roque, in the Rue St Honoré, but the minister of the interior applied to the Archbishop of Paris, and it was prohibited by him as likely to lead to disturbances. But the celebrators proceeded to the Church of St Germain de l'Auxerrois. Here a miniature of the Duke de Bordeaux passed from hand to hand, but though the young man who had exhibited it was arrested, this did not satisfy the crowd, who proceeded to sack the church and the house of the parish priest. The cross at the west end of the church, which had fleurs-de-lis on it, was torn down. The archbishop's palace at Nôtre Dame was also sacked on the following day. So speedy was the work of destruction, that not only was the palace sacked before noon, but not a stone of it was left standing. Attacks were also made on obnoxious individuals. M. Dupin owed his life to the courage of one man, who defended the doorway while he escaped by a back window. When explanations were asked as to these events in the Chamber of Deputies, the minister of the interior, the prefect of the Seine, and the prefect of police, exchanged mutual recriminations. The feebleness and want of union in the ministry was still further demonstrated by its conduct in regard to foreign affairs. Laffitte and Soult had said in the Chamber that France would not permit the principle of non-intervention to be violated, and M. Dupin had pronounced a panegyric on this declaration, yet M. Appony shortly afterwards announced to the French cabinet an Austrian intervention in the Duchy of Modena. Laffitte declared in council that only one reply was possible if Austria persisted, which was war. The whole cabinet concurred with him, and Sebastiani, the minister for foreign affairs, engaged to write a state paper in this sense. To the ultimatum of France, forbidding the entrance of Austrian troops into the Roman States, Austria replied with insulting defiance. The despatch from Marshal Maison announcing this was received by Sebastiani on the 4th March, but was not known to the president of the council till the 8th, when he first read it in the *National.* The surprise of Laffitte was great. He asked explanations, but Sebastiani could only stammer forth excuses. Laffitte addressed himself to the king, who requested the president of the council to have an explanation with his colleagues, which took place on the 9th March. But all was already prepared for a change in the cabinet, for Casimir Périer now felt that his hour was come. Laffitte, coldly received by his colleagues, retired from the presidency of the council. The concealed despatch was the occasion but not the cause of his retreat. Laffitte fell because he could be no longer useful to the dynasty.

Fall of Laffitte.

Périer cabinet.

By a royal ordonnance of the 13th March, Casimir Périer was appointed president of the council and minister of the interior in lieu of Laffitte; M. Barthe minister of justice in lieu of M. Merilhou, Baron Louis minister of finance, De Rigny of marine, and D'Argout of public instruction.

The ascendancy which Périer immediately assumed over his colleagues was altogether due to his character. He was a man of exceeding firmness, a resolved and tenacious will, and had the art of acquiring and maintaining an influence over his colleagues. There were in the cabinet with him official persons connected with the government, in subordinate positions, who had much more intelligence and experience, but there was no man among them of such energy and determination of will. He entered office as a minister "of resistance," with the declared intention of putting down anarchy, and to a great extent succeeded in his object. On the 18th March he announced his programme. He maintained that insurrection was no principle of the revolution of July, and that it was of order and energy that society had need. With this view, he announced laws to repress violence and sedition. As to external questions, he stated that France wished for peace; but that it would make war if the safety or honour of the nation were in peril. As to the nations of Europe who wished to emancipate themselves, he said their destinies were in their own hands, and that liberty ought always to be a self-created privilege of home growth. This was giving the Belgians, Poles, Italians, and Spaniards, pretty plainly to understand that they had nothing to expect from France, for the minister declared that the blood of France is due to France alone. The principle of the revolution of July is that of resistance to the aggressions of power, respect to sworn faith, regard to established right. The revolution of July has founded a government, but has not established anarchy. This declaration, though it gave satisfaction to foreign governments for a period, augmented domestic difficulties.

Change in electoral law.

After a great deal of discussion and many amendments, a change was effected in the electoral law. The electoral qualification was made to consist in a payment of 200 fr. (L.8) of direct taxes, and for candidates of 750 fr. (L.30), raising the electors from 90,000 to 180,000.

A law was brought forward for the banishment of the ex-king, Charles X., his descendants, and their relations, for ever from the French territory. They were to leave the kingdom, and sell their effects within six months, under pain of confiscation. The law was carried somewhat amended, a year being allowed instead of six months for the sale of effects. In the discussions that took place on foreign affairs, and more especially on Poland, Lafayette questioned the foreign minister, Sebastiani, as to whether the French government had not categorically declared that it would never consent to the Austrian troops putting down the Italian insurgents. "Between not consenting and making war," said Sebastiani, with embarrassment, "there is a great difference." "And I," said Lafayette, "aver that after an official declaration such special pleading as this is unworthy the dignity and honour of the French people."

Journey of the king to Normandy and Champagne.

The king in the latter end of May made a journey into Normandy and Champagne. He was on the whole tolerably well received, but at Soissons was reminded by a common soldier of the precarious tenure by which he held his power. At Metz he was reminded by a member of the municipality of the wish of the nation for the abolition of the peerage and the freedom of the Poles, and this sentiment was echoed by a national guard; whereupon the king remarked to both that it was no part of the duty of the municipality or national guard to consider questions of state policy.

Opening of the session.

The Chamber of Deputies, which had been prorogued on the 20th April, was dissolved on the 3d May. The session was opened on the 23d July. The speech from the throne was distinguished by an elevation and firmness bearing the impress of the president of the council. It was remarked that while the king read the speech, Périer read a manuscript which was a transcript of it.

The opposition candidate for the presidency of the chamber was Laffitte, the ministerial Giròd de l'Ain. Périer declared that the nomination of Laffitte would be the signal for the resignation of the minister; but notwithstanding, Giròd de l'Ain only obtained a narrow majority of four votes. Casimir Périer, with his colleagues Sebastiani, Louis, and Montalivet, resigned. But on its being announced on the 4th August that the King of Holland had recommenced hostilities against Belgium, the circumstances appeared so grave that ministers determined to resume their portfolios. The discussion on the address commenced on the 9th August. The most remarkable incident of the debates was the amendment proposed by M. Bignon on the subject of Poland. In this document there was this expression—"the Chamber entertains the certainty, so dear to it, that Polish nationality will not perish." Ministers contended that the introduction of the word certainty would be a declaration of war, and declared themselves ready to resign if it were adopted. After à stormy debate, M. Bignon consented to substitute the word *assurance* for certainty. By this species of compromise the ministry avoided a defeat. Some time afterwards a rumour spread in Paris that the Russians had entered Warsaw. This produced a popular riot. On the 17th September groups paraded before the ministry of foreign affairs. A carriage in which were Casimir Périer and Sebastiani left the Hôtel. Loud cries were immediately uttered, whereupon the ministers got out of the carriage. Casimir Périer at once addressed the rioters. "Do you want the ministers?" he asked. "Here are two of us. Pretended friends of liberty, you threaten men charged with the execution of the laws." Cries of "Poland! Poland!" were now heard. "Insensate men," said Périer, "you compromise each day the cause of liberty; but do not think that government will yield to you." The energy of the man, and his intrepid attitude, produced so powerful an impression on the agitators that they were perfectly paralysed. It would be difficult to conceive the interest which the discussion on Poland excited in the Chamber. When General Lamarque exclaimed "Let us save Poland!" the whole assembly rose like one man. It was on one of those stormy debates, when Périer shook and quivered with emotion, that General Sebastiani, addressing General Lamarque, said, "C'est faux, vous en avez menti." These words led to a hostile meeting, which happily terminated without injury to either party. It must be admitted that the phrases used by Sebastiani in reference to Poland were most infelicitous. In announcing the fall of Warsaw, he said, "*L'ordre regne dans Varsovie;*" and this was uttered in reference to a city whose fall excited nearly as much grief as the fall of Paris or the battle of Waterloo. But in the midst of this tumult of the public mind the ministry of Périer not only stood its ground but acquired strength. In the Chamber there was a liberal majority, whose hostility to the monarch and government was evinced at one and the same time.

Civil list.

The civil list, amounting to 18,000,000 francs (L.720,000), excited a violent opposition, which was greatly increased by the pungent letters written under the name of *Timon*, by M. de Cormenin.

A law for the banishment of the elder branch of the Bourbons was brought forward by Colonel Briqueville. He proposed to apply the ninety-first article of the criminal code, with the accompanying penalty of death; but the commission, by its reporter, M. Amilhon, substituted banishment. The law relative to the Bonaparte family was modified in the same sense, and the penalty of death suppressed. The change produced in the Chamber in reference to the application of the article of the penal code to the elder branch of the Bourbons was due to a striking speech made by M. de Martignac, the last ever delivered by that eloquent statesman.

Foreign policy of Périer.

The foreign policy of Casimir Périer, though not propagandist, was firm and energetic. Prince Leopold of Saxe-Coburg, elected King of the Belgians, and married to a daughter of the King of the French, had solicited the intervention of the King of the French.

French intervention in Belgium.

On the very day on which the request was made, Marshal Gerard set out to take the command of the French army, and in five days afterwards entered Belgium at the head of 50,000 men. The Duke of Saxe-Weimar threatened Brussels at the head of 6000 troops at the very time that the Dukes of Orléans and Nemours entered that city at the head of two regiments and two batteries, whereupon the retreat of the Dutch troops commenced. The moral effect of this demonstration was of great advantage to the government of July and to the ministry of Périer. By the expedition to Ancona, too, Périer assured France a footing in Italy, and obtained a guarantee for the evacuation of Romagna by the Austrians. But, notwithstanding, a series of plots and street riots kept the government in a continual state of alarm. There was the plot of the Rue des Prouvaires and the revolt of Lyons, occasioned chiefly by distress. *Vivre en travaillant, ou mourir en combattant* was the device of the insurgents. The Bonaparte party, too, had ramifications which extended from the east to Paris, had partisans in the army, possessed a journal called *La Revolution*, and was aided by supplies from the ex-queen Hortense. In this party were to be found Italians and Poles, and an agent and emissary of Louis Napoleon, now Emperor of the French, named Mirandoli. The Society of the Friends of the People had also, by the dissemination of republican publications, kept up the general excitement. Between the months of April and July there were constant disturbances in the streets of Paris, besides violent collisions with the legitimists at Toulouse, Montpellier, Nîmes, Marseilles, and Avignon. The principal of the Parisian disturbances arose on the occasion of the acquittal of Godfrey Cavaignac, a captain in the artillery of the national guard, President of the Society of the Rights of the People, and brother of the general who in 1848 was President of the Republic. Bands of Chouans and Vendeans traversed the western departments, committing all sorts of excesses on the liberals. The vigour of the French government was, however, exhibited at Lisbon. Some French subjects had cause of complaint against the Portuguese government, and it was determined to demand reparation.

Expedition to Lisbon.

Admiral Roussin, who had arrived in the Tagus, sent a flag of truce ashore demanding the dismissal of the captain of the Portuguese frigate which had captured a French packet-boat, a compensation in money for Frenchmen who had suffered during the blockade of Terceira, and the dismissal of the magistrates who had violated the privileges of French subjects. These terms not being complied with, the French squadron entered the Tagus, passed the fort of Belem with scarcely any damage, and continuing their victorious course, anchored abreast of the royal palace. The Portuguese were forced to submit. The conditions as to individuals were complied with, and conditions of a general nature referred to the conference of London. But the Portuguese fleet was taken to Brest. Notwithstanding these acts of vigour, the government was unpopular at home. The opposition press declaimed against it, always with great vehemence and often with great ability, more especially on the subject of Italy and Poland. The apologists of the administration contended that the government had done all it could do for the Poles in offering its own mediation and soliciting that of the other powers.

Abolition of the hereditary peerage.

The great question of the session was the abolition of the hereditary peerage. During the progress of the revolution of 1830 the prejudice against the peerage had greatly increased. The number of deputies pledged to its abolition had been increased by the lowering of the suffrage and by the number of members of republican tendencies returned to the Chamber. The question was discussed on the 27th August, when the government proposed that the hereditary peerage should be abolished. The premier Périer was friendly to an hereditary peerage, but so strong was the public feeling that he was forced to yield to its pressure. Odillon Barrot, Bignon, Lafayette, and M. de Remusat were the principal speakers in support of the measure; they certainly carried with them five-sixths of the assembly. The views of the small minority were put forward with great ability by MM. Guizot, Thiers, Royer Collard, and Berryer. On the 18th October the Chamber divided, and the result was a majority of 346 against the hereditary chamber, the numbers being 386 to 40. A month elapsed before the question was brought before the upper Chamber. It was ascertained that as the Chamber was constituted there would be a majority against the bill. The question was as to a popular insurrection or a new creation of peers, and the government wisely chose the latter alternative. On the 20th November 1831 a royal *ordonnance* appeared creating thirty-six persons peers for life. Even after the creation of this number of peers the question was only carried by a majority of 33. Thirteen peers among the oldest families in France now resigned their seats in the upper Chamber.

Removal of Louis Philippe to Tuileries.

In the month of October 1831 the king left his residence at the Palais Royal to reside in the Tuileries, where repairs and improvements had been effected. This change of residence was not without a motive. The riots so constantly taking place in Paris were daily assuming the character of revolt, and it was advisable that the royal family should not be hourly exposed to the vociferations of the mob, who could approach to the very windows of the Palais Royal. In consequence of a change in the distribution and management of the Tuileries gardens, a trench had been dug round the chateau, so as to render popular access more difficult. It was impossible for the crowd in the Tuileries to approach the royal windows.

Towards the close of this year the manners of the king became more distant and courtly. In the receptions at the Tuileries visitors came in full dress, and it was soon understood that this costume was obligatory except for deputies. The *Journal des Débats*, at the close of 1831, began to talk of the court as a thing that had a real and actual existence, and it was not difficult to see that much progress had been made in a courtly sense from the programme of the Hôtel de Ville—the throne surrounded with republican institutions.

In the latter months of 1831, the intrigues of the legitimist party both in Paris and in the provinces became more active and persevering. The directing committee was composed of twelve persons, among whom were the Count de Florac, the Baron de Rivière, and the Baron de Maistre. The Duke de Belluno was mixed up in these plots, and was said to receive his instructions direct from the Duchess de Berri. Casimir Périer attached but little importance to the manœuvres of the legitimists. The first months of 1832 opened inauspiciously. Early in February the cholera had appeared in England, and in March the presence of the malady was revealed by four fatal cases in Paris. On the 31st March there were 300 cholera patients at the hospital, among whom there were 86 deaths; on the 5th April there were 300 deaths, and four days later the mortality amounted to 814. On the 18th the highest figure of mortality had been attained, after which it gradually diminished. One of the most deplorable circumstances connected with this scourge was the exhibitions of popular fury and ignorance to which it gave rise. In some quarters of the capital and provinces the effects of the disease were attributed to poison, and popular frenzy was directed against the medical practitioners.

1832.

On the 2d of April the Duke d'Orléans, in company with Casimir Périer, visited the cholera patients of the Hôtel Dieu; and on the 6th the minister was attacked by this alarming malady. His constitution, already shattered by the cares of office and the great excitement of debate, had not sufficient stamina to resist the progress of the disease. He died on the 16th of May, leaving in the ministry a blank which it was impossible adequately to fill up. By his courage he resisted the progress of anarchy, and re-established social order on a more solid basis. To his credit also it must be said, that he was the only man who, since 1830, had exhibited the vigour and courage necessary to resist the personal interference of Louis Philippe. He had a system, and a strong will to carry that system into effect. In his ministerial career there was neither vacillation nor irresolution. His desire was to govern by the Chambers, and by the Chambers only, and to disregard all opinion which was not the expression of these assemblies. He felt that in the then position of affairs order was of the foremost necessity. His first wish was accordingly for order, and his second for well-defined liberty, as the handmaid of order.

Interim minister.

During the illness of Casimir Périer, M. de Montalivet was interim minister at the home office. After the death of that minister he continued to hold the portfolio, and was himself succeeded in the ministry of public instruction by M. Girod de l'Ain. The place of president of the council remained vacant, and indeed the ministry was thought so weak and insignificant after the demise of Périer that it was considered as a species of ministerial interregnum. This was the first attempt of Louis Philippe to govern by men without political character or talent; for though Marshal Soult, the war minister, was a person of administrative ability in his own particular walk, and, as M. Thiers designated him, an *epée illustre*, yet he was totally without political capacity. Events soon revealed the incompetency of the men at the helm of affairs. In the capital the anniversary of the death of Napoleon was the occasion of a hostile demonstration. On the 5th May large assemblages took place at the Place Vendôme, where the rioters had designedly congregated. Blood was shed on this occasion before the public force had cleared the Place Vendôme of the republicans. Preparations for a legitimate or Carlist insurrection were simultaneously proceeding in the south and west of France. An active correspondence was going on between Toulon and Nîmes, and the Duchess de Berri and her partisans. The Duchess at that time was residing in the states of the Duke of Modena, where an expedition was preparing.

On the 30th April an armed band at Marseilles obtained possession of the keys of the church of St Lawrence, on which the white flag was hoisted amidst cries of "Vive Henri V.!" "Vive la Religion!" "Vive le *Drapeau Blanc!*"

In the month of May the Duchess de Berri, accompanied by Marshal Bourmont and twelve distinguished personages of the old court, appeared off Marseilles on board the *Carlo Alberto* steamer, with a view to effect a landing; but finding the tricolored flag flying from the tower of St Lawrence, the steamer again put out to sea. Many pages might be dedicated to the proceedings of this most restless royal personage, whose whole object appeared to be to excite civil war. Suffice it however to say, that after attempts to interest the Emperor Nicholas in her favour, and proposals of the strangest nature to Don Miguel, through the ex-general Deutz, the duchess, who had traversed the interior of France, appeared on the 15th May in La Vendée, where M. de Bourmont soon after joined her. As soon as the friends of the duchess in the capital heard of her arrival in La Vendée, they prepared to second her efforts in Paris, where a Carlist insurrection seemed imminent; but early in June, forty of the leaders (among whom were several gardes du corps) were arrested. This prevented the intended outbreak, and several of the Carlists now made common cause with the republicans.

At this period the famous *compte rendu*, a manifesto which accused ministers of having broken all their promises, of having sown division among the national guards, and many other political crimes and misdemeanours, was prepared, and received the signature of 150 deputies.

Funeral of Lamarque.

Emeute in Paris.

Till this time the republicans, though disaffected, had refrained from overt acts of insurrection; but on the occasion of the funeral of General Lamarque, who had died of the cholera a few days after his old adversary Casimir Périer, they broke out into insurrection. The funeral procession started from the Rue Faubourg St Honoré about ten o'clock in the morning. Notwithstanding the measures of precaution taken, and the numerous detachments of troops posted about, alarming symptoms were apparent. On the Place de la Bastille funeral orations were delivered. General La Fayette had just concluded his address, recommending the people to be tranquil, when a red flag was unfurled, and some of the populace cut the harness of the hearse, amidst loud cries of "To the Pantheon!" The dragoons posted around were fired on, stones were flung at, and daggers raised against them. At length they discharged their carbines. The national guards who followed the procession quitted it in disorder: the insurgents raised a cry of "To arms!" in different quarters, breaking the lamps, and raising barricades. The disturbances continued on the 6th, night having interrupted the military operations, but the national guard united with the troops of the line. The king who had arrived over night from St Cloud visited the different posts. On the 6th, however, the insurgents (who, in less than two hours on the preceding day, occupied the half of Paris) were still masters of certain quarters, of which the church of St Mery was the centre. The troops having secured the Hôtel de Ville and the Palais de Justice against the attack of the insurgents, surrounded them. Being too weak to leave their barricades, they remained behind their intrenchments. At this juncture the king, issuing from the Tuileries at the head of a brilliant staff, gave fresh confidence to the soldiers, who carried the barricades, and possessed themselves of the church of St Mery. Of the troops, 55 were killed and 240 wounded. The national guard had 18 men killed and 104 wounded, and the insurgents 93 killed and 291 wounded.

aris laced in state of iege.

A royal ordonnance placed Paris in a state of siege. A council of war was also appointed to try the prisoners arrested. But the *Cour de Cassation* declared these proceedings illegal, and remitted the affair to the *Cour d'Assises*, where a few sentences of death were pronounced, commuted however, afterwards, by the royal clemency. It should also be stated, that some of the most eminent men of the bars of Paris, Rouen, and Rennes, pronounced opinions against the Etat de Siège. Some arrests of deputies took place, among whom were Cabet, Garnier Pages, and Laboissière. Armand Carrel, editor of the *National*, was also arrested. On the 6th, after the king had traversed Paris, MM. Laffitte, Odillon Barrot, and Arago waited on Louis Philippe to press on his Majesty a change of system, and to prevent the further effusion of blood. But Louis Philippe defended the course taken by the government against their objections.

Among the insurgents were eleven scholars of the Polytechnic School. A royal ordonnance disbanded the Polytechnic and the school of Alfort. This ordonnance excited much severe comment. But public indignation knew no bounds when an *ordonnance* of the police required all medical men to make a declaration as to the names of the wounded on whom they had attended. M. Gisquet, the prefect of police, threw the responsibility of this ordonnance on M. d'Argout.

Four departments in a state of siege.

The partisans of the Duchess de Berri were so turbulent in the west, that four departments—viz., Maine and Loire, Loire Inferieure, Deux Sevres, and La Vendée—were placed in a state of siege, which continued till June 1833. Nevertheless, the duchess still continued this Chouan war, though few leaders of any mark engaged in it, and although MM. Châteaubriand, Fitz-James, and Hyde de Neuville recommended her to withdraw from the contest and quit France. Towards the end of May M. Berryer was arrested at Nantes; and on the 15th June Hyde de Neuville, Fitz-James, and Châteaubriand were arrested at Paris. M. Berryer was accused of tampering with the allegiance of Frenchmen by seeking to enlist superior officers in the Carlist cause, but he was acquitted of this charge by the *Cour d'Assises* at Blois in October.

Deutz, the adventurer.

Arrest and captivity of the Duchess de Berri.

In the autumn of this year an adventurer of the name of Deutz, a convert from Judaism, and much in favour with the Pope and the Jesuits, was confidentially employed by the Duchess de Berri. He communicated his instructions to M. Montalivet, minister of the interior, and declared his willingness to aid the government in betraying his employer. The minister, of course, approved of his proposal, and proposed a second interview a few days afterwards. This was in the beginning of October; but a few days afterwards there was a change of ministry, Marshal Soult becoming president of the council, and M. Thiers succeeding M. Montalivet as home minister. M. Thiers continued the negotiations commenced by his predecessor, and suggested to Deutz that he should remain at Paris. But Deutz explained to the minister that he could render the government more essential service when near the duchess, his still confiding employer, at Nantes. For Nantes the man set out under the name of Gonzagues, and obtained an interview with the princess on the 28th. On the 6th of November he informed the authorities that the duchess was then in the house of the Misses Duguigny. The house was surrounded all day on the 6th, and a minute but ineffectual search was made during the whole of the day and night. The authorities were about to give up the pursuit in despair, when at ten o'clock in the morning of the 7th, Madame la Duchesse was discovered at the back of the chimney, greatly suffering, as her cries indicated, from the insupportable heat. Her companions were M. Guibourg, an advocate of Nantes, M. de Mesnard, and Mademoiselle de Kersabiec. The prisoners were taken into custody, and the duchess was thence immediately placed on board a government vessel, and transferred to the citadel of Blaye. Thus ended, after many strange adventures, the political career of the Duchess de Berri.

Ministry of 11th October. Presidency of Marshal Soult.

The ministry of transition which had succeeded that of Casimir Périer succumbed to the difficulties by which it was surrounded, and to cope with which it was manifestly unequal. Marshal Soult was now appointed president of the council and minister of war, M. de Broglie was named minister for foreign affairs, M. Guizot of public instruction, M. Thiers of the interior, and M. Humann of finance. On the 9th November an ordonnance appeared, declaring that a project of law would be presented to the chambers, relative to the Duchess de Berri. The ministry, feeling the neces-

Attempt on the king's life.

sity of decisive measures, resolved on an expedition against the citadel of Antwerp. The Chamber was convoked for the 19th November; and it was on this occasion as the king was proceeding on horseback over the Pont Royal that a pistol was fired at him. The pistol, according to positive testimony, was fired by one Bergeron, who was brought to trial at the assizes in March 1833, but acquitted by the jury.

Expedition to Antwerp.

The city of Antwerp, it will be remembered, was in fact Belgian, but the citadel remained in the power of the Dutch. An expedition was therefore resolved on to liberate the town, and to carry into execution the twenty-four articles of the treaty of London, France engaging not to unnecessarily prolong the occupation of Belgian territory. Seventy thousand French crossed the frontier, whilst a reserve of 40,000 was stationed along the Moselle. On the 30th of November all the preparations under General Haxo and Neigre being completed (the breaches being opened on the 29th), Marshal Gerard summoned General Chassé, the governor of Antwerp, to surrender. This request not being complied with, the marshal regularly sat down before the place. On the 3d December the second parallel was already established, notwithstanding frequent sorties of the garrison; and on the 23d, a breach having being effected, Chassé, after a vigorous and noble defence, offered to give up the citadel, and to retire into Holland with the garrison. Gerard would not accede to this proposition till the forts of Lillo and Liefkenshoek were surrendered; but as these were not under the command of General Chassé, it was necessary to open communciations with the King of Holland. Meanwhile, however, the French took possession of the citadel, and it was now hoped by the friends and partisans of the government that the defeat of the revolutionary party in June, the pacification of La Vendée by the arrest of the Duchess de Berri, and the taking of Antwerp, would strengthen the position of ministers, and give solidity to the government.

1833.

The first months of the session of 1833 certainly announced greater calm. The labours of the session commenced by a proposition for the abolition of the anniversary of the 21st January. The Chamber of Deputies saw only in the expiatory day an outrage to the nation, whilst the Chamber of Peers recognised a homage to the principle of the inviolability of kings. After a struggle between both chambers, it was agreed that "the law of the 19th January 1816, relative to that melancholy and ever-deplorable day of the 21st January 1793, should be abrogated."

Large credit for public buildings.

M. Thiers, who had changed the ministry of the interior for the ministry of public works, presented a law for finishing the public buildings already commenced. A credit of 100,000,000 francs was allocated for this purpose, to the expenditure of which sum we owe the completion of the Madeleine, of the Arc de l'Etoile, the palace of the Quai d'Orsay, military routes in La Vendée, and other routes in various parts of the kingdom. A law on primary instruction, presented by M. Guizot, in offering instruction to those unable to pay for it, acquitted a duty of the state to the labouring classes. The imprisonment of the Duchess de Berri relieved the state of the embarrassment of a Vendean war, but it was still necessary to dispose of her case in some way or other. But an unexpected incident arose which gave a new complexion to the affair.

Pregnancy of Madame la Duchesse de Berri.

On the night of the 16th or 17th January the Duchess de Berri was seized with violent vomitings, and, in consequence of a telegraphic despatch, the doctors Orfila and Auvity received orders to set out immediately for Blaye. After a a great deal of delicate and proper circumlocution, the pregnancy of the duchess was formally stated to the authorities, and on the 28th February she herself announced to General Bugeaud a secret marriage. The declaration was officially published in the *Moniteur* of the 26th. It was a terrible blow to the legitimist party, many of whom stoutly maintained (and, among others, a writer in the *Quotidienne*) that the declaration was counterfeit. On the 8th June the duchess quitted Blaye, and embarked on board *l'Agathe*, a government vessel, which conducted her to Palermo.

In the Chamber the budget of the minister of war was sharply criticised. M. Camille Périer stigmatized certain contracts, which amounted to the large sum of 14,000,000 francs, as profligately extravagant. Marshal Soult, like a clever tactician, availed himself of the fortifications of Paris to mask the extravagance of his contracts.

The trial of the *Tribune* newspaper, conducted at this period by Armand Marrast and Godfrey Cavaignac (the brother of the general who subsequently became president of the republic in 1848), for a libel on the Chamber, which it called *Chambre prostituée*, gave rise to many curious revelations. Marrast (who was subsequently one of the provisional government of 1848, and president of the Chamber), maintained that 122 functionary deputies annually received in salaries more than two millions of francs for employments the duties of which they did not discharge. Statements of this kind, founded for the most part on fact, produced a bad impression on the public mind relative to public men. The editors of the *Tribune* called on the minister of finance to pay into the treasury the sum of 3,503,607 francs due by the civil list, alleging that Louis Philippe had on the 6th of August 1830 made a gift of his private fortune to his children with a view to save it from incorporation with the property of the state, whereby the "droit d'enregistrement" was largely defrauded. It was alleged that while the king thus defrauded the state, the man who had made him was ruined, and certainly a placard posted on the walls of Paris announced that the house of the famous banker was to be disposed of. The knowledge of this produced general regret. The liberal party and republicans exclaimed, "The man who has organized a legal resistance to the ordonnances, who has disposed of a crown, is ruined."

Secret societies.

Paris from the year 1827 was the focus and centre of secret societies, and there can be no doubt that they exercised immense influence from the year 1830 to this time. The club of the *Amis du Peuple* was now however shut. The society of the *Droits de l'Homme* succeeded to the *Amis du Peuple*, and counted in Paris alone 3000 *Sectionnaires*, with numerous affiliations in the departments. It possessed its government, its administration, its army of martyrs, of clerks, of combatants. It used every means to raise and collect subscriptions in favour of political offenders or journals condemned for liberal opinions. It was an occult and anarchical power within the state. The principal members of the central committee were Voyer d'Argenson, Audry de Puyraveau deputies: Cavaignac, Kersausie, Lebon, Vignerte. The principles of the club were extravagant and extreme to a degree. Nothing discredited it more with sensible steady men, or men who had anything to lose, than its desire to rehabilitate the character of Robespierre. The club also suffered under the imputation, justly or unjustly urged, of desiring an agrarian law, and an equal division of property. The most reasonable members belonging to the association always repudiated these dangerous and dishonest principles, but there were hot-headed zealots who proclaimed them. On the 10th April 1833 a jury condemned the society of "*Les Droits de l'Homme*," and the assize court directed the dissolution of a society whose illegality had been pronounced. About this period even men of the advanced opinions of Lafayette and Carrel did not go far or fast enough for the more ardent spirits. The republic of the *National* was not the republic of the *Droits de l'Homme*. The society of the Rights of Man was for immediate action, whereas Lafayette and Carrel thought the moment inopportune. In truth, an insurrection was prepared for the anniversary of the 28th July 1833. As it was the moment when there was a great deal of discussion about the detached forts destined, it was said, to muzzle Paris, it was agreed that there should be cries of *A bas les bastilles* during the review of the national guard. The places at which the insurrectionists should assemble were not indicated till the last moment. A proclamation, however, had previously circulated among the soldiers of the garrison to rally them to the insurrection. Arrests were made on the 27th or 28th July of six persons, among whom were four *elèves* of the Polytechnic School. An immense quantity of balls and cartridges were seized, and the insurrection was in consequence adjourned. The review passed off quietly, and the king received from the national guard the usual reception; but so grave was the event considered that the government announced in the *National* that the detached forts would not be proceeded with. The arrests during the months of July and August amounted to 150, among which number were six pupils of the Polytechnic: 27 of the prisoners were tried at the assizes in the month of December, among whom the most remarkable were Raspail, Kersausil, &c. They were acquitted by the jury, but the advocates who defended them, Dupont, Michel de Bourges, and Pinart, were suspended from the exercise of their profession, the first for a year, the two others for six months. At the end of the year 1833 the society of the Droits de l'Homme counted 162 sections of 20 members; it had therefore in round numbers 3000 men at its disposal. The spirit animating the body may be judged from some of the names of the sections—Babœuf, Les Gueux, Marat, Couthon, Robespierre, &c.

1834.

The government felt that the newsmen or public criers of journals were a fertile cause of agitation. In February 1834 a new law on criers was brought forward, which provided that no one should exercise the profession of public crier without the permission of the municipal authority.

olitical efugees n France.

Political refugees were also a standing cause of perturbation during the years 1833 and 1834. It was calculated that the soil of France at this period afforded a refuge to 6000 Polish, and 4000 German, Italian, and Spanish refugees, at an expense of three or four millions per annum to the state. A majority of these persons showed themselves little thankful for the hospitality afforded them. They mixed themselves up with factions, and took part in all the troubles of that stormy time.

roit de isite.

ussian ntrigues.

It is not necessary that we should enter into any details as to the foreign relations of France during the year 1833. In as far, however, as these relations had a bearing or influence on domestic affairs or parties, it is necessary we should shortly advert to them. With England during these years France maintained friendly and intimate relations, and the treaty of the *Droit de Visite* was arranged—an instrument of which the movement party did not hesitate to take advantage for party purposes. It was in the year 1833 that the oriental difficulty first arose, or rather that Russia first laid her hand heavily on Constantinople. The battle of Koniah had placed Syria in the power of Ibrahim, who thence threatened the sultan. Mahomet now turned his eyes towards Sebastopol, and implored the help of Russia. The czar hastened to offer the sultan six ships of war and seven frigates, and despatched General Mourvaieff with a view to prepare a Russian intervention. France had no ambassador at the Porte during these occurrences, General Guilleminot having been abruptly recalled in 1831 in consequence of his having attempted to sustain the influence of his country against Russia. As soon as the facts were known Admiral Roussin was named ambassador; and on his arrival he required that the Russian ships should be countermanded. But Russia took effectual measures not to receive the counter orders in time. On the 20th February, three days after the arrival of Roussin, a Russian squadron of ten ships of war entered the Bosphorus. Admiral Roussin, to procure the withdrawal of the Russians, engaged to induce Mahomet to content himself with the three pashalics of Sidon, Tripoli, and Jerusalem. But as the admiral had only the ship of war in which he arrived, and as the consul of France at Alexandria encouraged the pasha in his plans of conquest, Mahomet, emboldened by the real weakness of France at Constantinople, and by the difference of opinion between the consul and the ambassador, resisted the higher functionary. Another arrangement was concluded at Kutayah, which assured to the pasha, besides Syria, the pashalic of Adana, thus giving him an entrance into Asia Minor. Ibrahim then prepared to evacuate Asia Minor; and the Russians, having no longer a pretext for intervention, evacuated Constantinople, having obtained from the sultan the treaty of Unkiar Skelessi. The successes of Don Pedro in Portugal, the destruction of the fleet of Don Miguel by Admiral Napier, the triumph of Maria Christina of Spain over Calomarde, by which the throne of Spain was secured to Isabella, were all circumstances tending to the consolidation of the new dynasty in France, and to the more intimate alliance of the two great Western Powers. The Cabinet of the Tuileries at once acknowledged Isabella in opposition to the Salic law imported into Spain with the dynasty of the Bourbons. But Don Carlos was the inveterate enemy of the house of Orléans, and this was decisive to determine the policy of the Tuileries.

Acknowledgment of Isabella by France.

At the commencement of 1834 the partisans of the new dynasty hoped that the partial re-establishment of order, and the defeat of parties hostile to the government, would reassure the middle classes, and give a new impetus to commerce and industry. But it was soon apparent that it was merely a truce, not a peace, which prevailed. At the opening of the session the speech from the throne had alluded to the culpable manœuvres of the factions, and called on the army, the national guard, and the citizens to put an end to the dangerous illusions of men who, in pretending to defend, really assailed liberty. In the discussion on the address there was unwonted moderation on the part of the opposition. M. Bignon delivered a moderate speech on the question of Poland, in which he invoked the sanction of the treaties of 1814—a speech in the letter and spirit of which M. de Broglie fully concurred. But the opposition out of doors was not so moderate. It redoubled in acrimony and violence, and the government resolved to come to close quarters with the democratic press. On the 25th January ministers asked permission of the Chambers to commence proceedings against M. Cabet, deputy, for articles published in the *Populaire*. On the following day M. de Ludre denounced the despotic conduct of Marshal Soult, in consequence of an order of the day addressed to the artillery officers of Strasbourg. General Bugeaud interrupting, exclaimed, "Military men must, above all things, obey;" whereupon M. Dulong rejoined, "Must they obey even to becoming jailors?" alluding to the equivocal position held by the general at Blaye. From these observations a duel arose in which the unfortunate Dulong, a son of Dupont de l'Eure, lost his life. This circumstance induced Dupont de l'Eure to resign his position as deputy.

Law on associations.

The Cabinet and the Chamber appeared to be now determined on more aggressive measures. A law on associations was introduced on the 25th February. The debate took place on 11th March, and lasted for twelve days. The attitude of the Chamber was angry and impassioned throughout. The orator of the government during the debate was M. Persil, *Procureur-Général*. The opposition, it must be confessed, was as vehement and as impassioned as the ministerial benches; and in a few days after these angry debates the insurrection of Lyons and the Paris insurrection of April took place. The troubles of Lyons of November 1831 had no political character; but those of 1834,

Troubles at Lyons.

Troubles at Paris.

it must be confessed, had been prepared by clubs and by journalism. An immense garrison had been sent to Lyons and the neighbouring towns, the national guard had been disarmed, and the interior of the city had been fortified. In the beginning of 1834 there was the greatest distress among the silk weavers, and the result was that the association of the *mutuellistes*, a society which never discussed either religious or political questions, but was established solely to defend the rights of the working classes, made common cause with the republicans, and by their influence produced a strike among the manufacturing population. On the 14th February 20,000 workmen of Lyons and the neighbourhood ceased to labour in the manufactories, and before the end of March a majority of these men came to an understanding with the republicans. An active correspondence was established between Lyons, Paris, St Etienne, Marseilles, and other large towns, and a thorough community of action appeared to exist among the malcontents, whose movements were simultaneous with those of General Ramorino upon Savoy. But the authorities were prepared to strike a blow at Lyons, where they had 20,000 men under arms. On the 9th April every military precaution had been taken, and the troops were posted on all the important points. While M. Jules Favre was pleading a political cause, a shot was heard, and a man mortally wounded was carried into court. He was said to be an insurgent whom a gendarme had shot while in the act of raising a barricade; but on examination it was found that the dying or dead man wore under his clothes the sash of a police agent. The promulgation of this fact exasperated the workmen to madness. Barricades were erected, and proclamations were issued, declaring that the king was deposed, and that Lucien Bonaparte was named First Consul. The tocsin called the workmen to arms, and the people everywhere obstinately engaged the troops. The struggle lasted six days. The rising of the faubourgs of Vaise, la Guillotière, of St Claire, and St Just, cut off communication with Paris, with the west, and with the south. Reverchon and La Grange were the chief leaders on the part of the people: 131 of the military were killed, of whom one was a colonel, and 12 officers and 192 men were wounded. On the side of the insurgents 170 were killed and 400 republicans were made prisoners. Insurrectionary movements broke out simultaneously at St Etienne, Grenoble, Vienne, Perpignan, Poitiers, Chalons sur Saône, Arbois, Marseilles. At Luneville the *sous-officiers* of three regiments of cuirassiers essayed to direct their regiments to Nancy with a view to a march on Paris. The news of the Lyons insurrection gave the signal to the revolutionary party in Paris. On Sunday the 13th April, Kersausie, a man of determined courage, reviewed the republican forces on the Boulevards, during the course of which operation he was carried off by the police. His arrest precipitated the insurrectionary movement. There was an immediate call to arms, and men ran to the barricades. But over this insurrection, called *les Journees d'Avril*, the government was also successful. The doctrine of "*connexité*," by which (under the article 171 of the *code de procédure*) it was sought to make the revolts of Lyons, St Etienne, Grenoble, Paris, &c., one and the same revolt, ousted, so to speak, the *Cours Royales* in different parts of the kingdom of their jurisdiction, and the consequence was, that the Chamber of Peers became alarmed by the affair. The prisoners amounted to 1500. Of these 800 or 900 were set at large. It should be stated that before the hearing the opposition sought not merely to demonstrate the impossibility of trying such a multitude of prisoners, but also the illegality of arraigning them before the Chamber of Peers. The process, which lasted for several months before the Chamber of Peers, would fill a volume. We only advert to it here for the purpose of directing the legal reader to the printed reports of a memorable trial in which some strange legal doctrines were propounded. The monster process of April, whether constitutional or otherwise according to French law—whether legally conducted or not—struck a decisive blow at the republican party; and it must be added that some of the extreme members of the party itself, by their violent and absurd conduct before the court, discredited the cause to which they were attached.

Resignation of M. de Broglie, and financial changes.

Death of Lafayette.

Quadruple alliance.

The success of the government over the factions gave it apparent force, but the cabinet was torn by intestine divisions. The rejection of a project of law relative to a treaty of 25 millions demanded by America had caused the retirement of the Duke de Broglie. Lafayette, who was ill at the time, sent to the Chamber explanations in favour of the project, but it was nevertheless rejected, and immediately afterwards M. de Broglie placed his resignation in the hands of the king. His retirement produced a partial change in the ministry. MM. Barthe and D'Argout were replaced by MM. Persil and Duchâtel, who were appointed ministers of justice and commerce. M. Thiers became minister of the interior, and M. de Rigny passed from the ministry of marine to the ministry of foreign affairs, the ministry of marine being filled by Admiral Jacob. On the 20th May in this year General Lafayette died. At any other epoch his decease would have produced more impression, but the recent defeat of the republican party had discouraged and dispirited them. The triple alliance originally concluded between Spain, England, and Don Pedro, now became the quadruple alliance, M. de Talleyrand having given in his adhesion on the part of France.

Don Carlos secretly arrives in Paris.

On the 1st of July of this year Don Carlos secretly withdrew from London, arrived at Paris on the 4th, on the 6th at Bordeaux, on the 8th at Bayonne, and on the 10th had crossed the Spanish frontier without having been discovered by the police of France. So soon as the pretender appeared on the soil of Spain, Martinez de la Rosa asked for the assistance of England and France. England furnished arms and munitions, and France the foreign legion. The French army of observation quartered on the Pyrenees also received reinforcements.

Resignation of Soult.

Marshal Gerard president of the council.

The *tiers parti*.

As to domestic affairs, the violence of the factions and the extravagance of the republican party had induced many who were otherwise unfriendly to the government to side with it. When the Chambers were dissolved, and the elections took place in June 1834, the greater number of the deputies professing republican opinions were rejected. Several legitimists were returned, who ranged themselves under the banner of Berryer. But notwithstanding these favourable circumstances, there were internal dissensions in the cabinet. A struggle had commenced between M. Guizot and Marshal Soult, whose budget had been vigorously attacked in the Chambers. Soult was understood to have resigned on the 18th July, and immediately afterwards Marshal Gerard took the portfolio of war, with the presidency of the council. In the Chamber the *tiers parti* excited a good deal of attention from the apparently independent position which they assumed—a position hostile to the *doctrinaires*. The *tiers parti* was composed of deputies who had sustained government by their votes and speeches in a time of crisis, but who, now that the crisis was over, desired a more clement and liberal policy. Discreet and sensible men saw that the great danger was a want of moderation in the possessors of power, and that men flushed with victory were likely to abuse it. The principal members of the *tiers parti* were Dupin, Berenger, Etienne, Passy, Teste de Calmon, and Felix Real. Though these gentlemen had talent, industry, much acquired information, and a great knowledge of affairs, yet they wanted energy and political courage. The *tiers parti* showed itself at first favourable to Marshal Gerard, who entered the ministry with an idea of amnesty; but it ap-

1834. Resignation of Marshal Gerard. Duke de Bassano premier.

peared that General Jaquemont, as commander of the national guard, repudiated all idea of an amnesty, whereupon Marshal Gerard resigned on the 29th October, after a short official life of three months. The other ministers also resigned with the exception of M. Persil, who addressed himself to M. Dupin. Dupin, for himself, refused office, but named the Duke de Bassano as president of the council and minister of the interior, M. Charles Dupin as minister of marine, General Bernard as minister of war, M. Passy for the finances, M. Teste for public works, M. Sauzet for public instruction, and M. Bresson for foreign affairs. But this ministry lasted only three days, when the old ministers resumed office.

1835. Reconstruction of the doctrinaire cabinet. Marshal Mortier president.

The doctrinaire cabinet was reconstructed on the 18th November, under the presidency of Marshal Mortier, who was named minister of war. But never was there less of presidency in fact than that of Marshal Mortier; and at the end of three months, namely on the 20th February 1835, the old soldier resigned, and on the 30th April following surrendered the seals of war to Marshal Maison. Admiral Duperré had already been called to preside over the navy, and as MM. Thiers and Guizot now understood each other, and had numerous followers in the Chambers, their union formed a counterpoise to the royal will. From this moment the king sought to divide and sow dissension between these two able men, for the object of the monarch was to find ministers who governed more from the dictation of the royal cabinet than from the assent of the Chambers. These manœuvres of royalty rather hastened the growth of a parliamentary party, demanding a true and *bona fide* representative government, and proclaiming the sound constitutional maxim, "*Le Roi règne et ne gouverne pas.*" On the other hand, an old Napoleonic counsellor of state, M. Roederer, published a pamphlet exalting the royal prerogative, against which several of the deputies of the *tiers parti*, and among others Piscatory, Jaubert, and Duvergier d'Hauranne, declaimed.

Ministerial crisis. he Duke e Broglie resident the uncil.

The vacancy created in the presidency of the council by the resignation of Marshal Mortier brought on a ministerial crisis, which the king was not desirous to put an end to. It was necessary, however, that certain pecuniary demands of Russia should be brought before the Chamber by the minister of foreign affairs, Admiral de Rigny, who was quite unequal to the task. M. Thiers, who had studied the question, undertook the part of M. de Rigny. Guizot and Thiers now wisely agreed to postpone their respective pretensions and to accept the presidency of the Duke de Broglie, who became president of the council and minister for foreign affairs on the 12th March 1835.

lot of ieschi.

During the whole month of July sinister rumours of plots pervaded Paris. A plot was hatched against the life of the king at Neuilly, by which he was to be shot on his way from the Tuileries to the country. Information was given to the police of another plot which was to explode from a subterranean *fosse* on the Boulevards. But the plot which did really explode was that of Fieschi. On the 28th July the king, accompanied by his sons, by several of his ministers, and a numerous staff, had passed the Porte St Martin and traversed one-half of the Boulevard du Temple, when from a window there was a terrible detonation from an infernal machine, accompanied with a shower of case shot, a portion of which mortally wounded Marshal Mortier. The house was immediately surrounded by the police and an armed force. Fieschi, the perpetrator of the deed, was seized on the roof of a neighbouring house, disfigured by his wounds. Boireau a worker in bronze, Morey a harness-maker, and one Pepin, were also arrested as implicated. On the 5th of August the funeral obsequies of the victims, to the number of fourteen, one of whom was an innocent young girl, and another a marshal of France, took place at the Invalides.

al of eschi. 1835. Execution of Fieschi, Morey, Pepin, &c.

The trial of this plot of Fieschi's was delegated to the Chamber of Peers. The proceedings were opened on the 30th January 1836. On the 15th February a judgment of the Court of Peers condemned Fieschi to the penalty of a parricide, Morey and Pepin to the penalty of death, and Boireau to twenty years' imprisonment. The execution took place on the 19th. To the credit of France, it must be stated, that the attempt of Fieschi excited a universal sentiment of indignation, and voices were raised from almost every quarter demanding vigorous legislative measures for the repression of crime. Ministers did not fail to take advantage of the universal consternation to ask for exceptional laws. The result was what are called the laws of September. On the 4th August three projects of law were laid before the Chamber of Deputies by M. Persil. One of these, the project of law relative to the press, increased the security for journals, the corporal punishment, and the fine. This measure defined as a crime any offence to the person of the king, and declared such attempt punishable with imprisonment and a fine of from 10,000 to 50,000 francs. The bill expressly forbade the introduction of the name of the king into the discussion of governmental acts; and forbade the assumption of the title of republican. It was also forbidden to raise subscriptions in favour of journals condemned by the tribunals, and it was proposed to establish a censorship for drawings, engravings, and theatrical pieces. A second project for the regulation of fines reduced from eight to seven the majority necessary for condemnation, and established secret voting by a written ticket instead of orally. A third project relative to assize courts gave to the president the right to remove prisoners who disturbed the court, and to come to a decision on documentary evidence in the absence of the accused. The commission on the law on the press proposed that the security or *cautionnement* should be 200,000 francs, or L.8000 of our money. The Chamber fixed it at 100,000 francs. Royer Collard, on this occasion, broke the silence which he had maintained since 1831, to find fault with that provision of the law which withdrew from the jury offences of the press. He was seconded by M. de Remusat. The provisions of the law in reference to theatrical representations received a general assent, for the dramatic literature had sunk to the lowest ebb, and was distinguished not merely by triviality but by indecency.

Laws of September. Law as to theatrical representations.

The galleys, the jails, the gambling-houses, and *tripots*, furnished to the stage its favourite episodes. The laws of September at once brought to a close about thirty demagogue legitimist journals, and raised a bitter animosity against those doctrinaire ministers who, within a few years, had lived, moved, and had their being in that press which they now treated with such Draconian severity. For a moment these laws produced a calm, but they rendered the ministry profoundly unpopular, indeed odious; so that M. de Broglie intimated to the king, that at no distant date his Majesty would be forced to have recourse to other servants. There was an independence, a frankness, and a sense of self-respect in M. de Broglie which his Majesty did not like, and he was the less agreeable to the king from his determination to govern only by and through the Chambers. Louis Philippe and his courtiers and personal flatterers also felt that the union of three such men as M. de Broglie and MM. Guizot and Thiers threatened the personal system of the monarch, a system on which he so much prided himself. Every cunning and courtly art was therefore had recourse to to divide and sow mistrust and jealousy among men whose momentary union rendered them formidable to royalist ascendancy. These intrigues undermined the cabinet of the 11th October, and there needed but a decent pretext to dissolve it. This was furnished by the finance minister, M. Humann, who, in presenting the budget to the Chambers, declared that the moment was favourable to reduce the interest on the public debt, and to effect the conversion of the five per cents.

Dissolution of M. de Broglie's ministry.

M. de Broglie, president of the council, expressed his surprise to find so grave a question mooted without having been once discussed in the cabinet; and on being questioned four days afterwards on the subject, he declared that the ministry had no idea of converting the fives. M. Gouin thereupon gave notice of a formal motion for the reduction, which he brought forward accordingly. The proposition was supported by M. Passy, and opposed by M. Thiers, who was for delay. Humann, Berryer, Sauzet, and Dufaure supported the original motion, and the motion for adjournment was lost by a majority of two. M. de Broglie hereupon resigned, and was followed by all his colleagues. It was observed that several of the courtiers and personal friends of Louis Philippe voted against the ministry, and it is certain the king felt pleased at finding the union of three men of ability suddenly rent asunder. Almost simultaneously with the breaking-up of the Duke de Broglie's cabinet a coolness took place between MM. Guizot and Thiers.

Ministry of M. Thiers.

Just antecedent to the fall of M. de Broglie's cabinet the self-love of M. Thiers was somewhat piqued by M. Piscatory, a follower of M. Guizot, telling him that it would be impossible for him to form a cabinet without the cooperation of the *Doctrinaires*. This rather stimulated than discouraged the rising politician; and nothing daunted, M. Thiers aspired to the task, and was named by royal *ordonnance* president of the council and minister for foreign affairs on the 22d February. The first difficulty that met the new minister was the question of the conversion of the five per cents., which M. Thiers evaded by promising to bring forward a proposition for conversion in the ensuing year. A customs law, which had been for some time prepared by M. Thiers, was presented by M. Passy. It slightly modified the principle of absolute prohibition. On the 25th June 1836 another attempt was made to assassinate the king.

Attempt of Alibaud on the king's life.

A shot was fired at his Majesty as he was leaving the Tuileries, and two balls lodged in the royal carriage without wounding any one. The author of this new crime was one Alibaud, a young man who had served some time as a *sous-officier*, and was now in distress. The affair was brought before the Court of Peers on the 8th July, and the evidence adduced proved that Alibaud had no accomplices. On being asked by the president Pasquier how long he had nourished his criminal project, he answered, "From the time the king has placed Paris in a state of siege, and wished not to reign but to govern—since the time that his Majesty has caused citizens to be massacred in the streets of Lyons and the *Cloître St Mery.*"

Execution of Alibaud.

On the 9th July Alibaud was condemned to die the death of a parricide, and he was executed on the 11th. The cabinet of M. Thiers, or of the 22d February as it is generally called in France, was not perfectly homogeneous; M. de Montalivet was minister of the interior, M. Sauzet of justice, M. Passy of public works, Marshal Maison of war, Admiral Duperre of marine, M. d'Argout of finance, and M. Pelet de la Lozère of public instruction. M. Thiers, after an intimate union with the politicians composing the ministry of the 11th October 1832, presided over by Marshal Soult, had separated himself from them, and found a kind of support in the left centre with the *tiers parti.* Three of M. Thiers colleagues belonged to this party—MM. Passy, Sauzet, and Pelet de la Lozère. M. Passy, a man of sincere and honest convictions, had decided opinions on certain questions; for instance, he was against colonizing Algiers, and favourable to the conversion of the five per cents., to which M. Thiers was opposed. The expression of the king's secret views and wishes in this cabinet was found in M. Montalivet, the minister of the interior, and this was also the dissolving element. The chief difficulties arose from foreign affairs.

Question of Cracow.

There was the question of Cracow, occupied by Austrians, Prussians, and Russians, in flagrant violation of treaty. The intended occupation was communicated to M. de Broglie, in the last days of February, when on the point of resigning, and he could merely formally acknowledge the receipt of the communication; and when M. Thiers entered office on the 22d February, he found the king determined to remain passive. The progress of the Carlist insurrection in Spain also made a French intervention desirable in that country, but the king was still less disposed to such an intervention than in 1834. Viscount Palmerston invited an Anglo-French occupation of Passages Fuenterabia, and the valley of the Bastan; but instead of this a species of international interference called a co-operation was determined on, and it was proposed to establish a foreign legion, commanded by a Frenchman.

Events of La Granja.

While this legion was in course of being recruited from the corps of General Harispe, the events of *La Granja* took place, by which *Estatuto Real* was abolished, and the constitution of 1812 proclaimed. The king now withdrew the unwilling acquiescence he had given to co-operation.

Resignation of M. Thiers.

M. Thiers counted on the support of M. Montalivet in the cabinet, but finding that minister (who was known to be possessed of the king's entire confidence) opposed to him, resigned office on the 25th August. He was succeeded by M. Molé, who, in conjunction with M. Guizot, formed the cabinet of the 6th September.

Molé cabinet, or ministry of 6th September.

The king's political man of all work, M. Montalivet, having overturned the ministry of the 22d February, on the question of a Spanish intervention, a question on which M. Molé had always maintained a different opinion from M. Thiers; it appeared a thing quite in course that the chief of the new cabinet should allow the monarch's favourite to retain the ministry of the interior. But as M. Guizot aspired to have an influence equivalent to that of the president of the council, he required the ministry of the interior for himself, or for one of his friends if he remained minister of public instruction. After a fortnight's parleying, M. Molé yielded, and the portfolio of the interior was given to M. Gasparin, who, under M. Montalivet, had filled the functions of under-secretary of state. M. Duchatel took the finances, M. Persil justice, General Bernard war, Admiral Rosamel the marine, and M. Martin du Nord commerce. M. Molé assumed office with the intention of proposing an amnesty, but the affair of Louis Napoleon Bonaparte (now Emperor of the French) at Strasbourg, and the attempt on the life of the king by Meunier, not only forced him to abandon his project, but to propose to the Chamber laws of a repressive character. On the Strasbourg affair, in which the principal mover was the present Emperor of the French, it will not be necessary to dwell long. Louis Napoleon had won over to his cause at Baden Colonel Vaudrey, who commanded the 4th regiment of artillery. On the 25th October he quitted Arnenberg, and arrived on the 28th at Strasbourg, where the commandant Parquin awaited him. On the 30th, at five in the morning, the movement began. Colonel Vaudrey presented Louis Napoleon to his regiment, which received him with acclamations. They proceeded in marching order to the residence of General Voiret, who, on refusing to join the movement, was made prisoner. The plot, however, altogether failed at the Feukmatt barracks, where Louis Napoleon, Colonel Vaudrey, Commandant Parquin, and some others, were arrested. The Cabinet decided that the author should not be tried. Indeed it appeared difficult to bring him before the Chamber of Peers, which contained among its members a great number of old servants of the empire. On the 9th November he was removed from Strasbourg to Paris, where he was only allowed to remain two hours. He left France on the 21st November, and was removed to the United States on board a ship of war.

About the same period, namely, on the 6th November, Charles X. died at Goritz, in Illyria, at the age of seventy-nine years. The discrowned monarch bore his misfortunes

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with resignation, and died under the impression that he had fulfilled a great duty. He was a perfectly honest and sincere man, narrow-minded, and entertaining high prerogative notions more fitted for the 15th than the 19th century.

A remarkable change took place in the Parisian press this year. Journals were published at less than one-half the price previously demanded. This revolution was brought about by M. Emile Girardin, the proprietor of the *Presse*. Whatever may be the political effect of cheap journalism, it must be allowed that it has been rather detrimental to solid literature. Armand Carrel attacked the cheap journalism of Girardin. The result was a duel, in which the eminent republican publicist received a mortal wound. Carrel was a man of a somewhat capricious temper, but of high honour and lofty spirit. He had a rare talent as a journalist, and was master of a style distinguished by perspicuity and force. He was a person of excellent sense, and saw clearly enough the absurd extremes and exaggerations of opinion to which the democratic party was tending.

The previous ministry had left a serious difficulty to their successors in the Swiss question. The French ambassador, M. de Montebello, had strenuously demanded the expulsion from Switzerland of certain Italian refugees. Out of this question and other misunderstandings arose a rupture of diplomatic relations between Switzerland and France. Switzerland, thus placed between the difficulty of a retractation and a commercial blockade, replied pusillanimously to the French note. The French government expressed itself satisfied, but deep resentment rankled in the heart of the Swiss.

A royal ordonnance of the 6th October opened the gates of Ham to the ministers of Charles X. De Peyronnet and De Chantelauze were authorized to reside on parole, the one at Monferrand and the other in the department of the Loire. On the 23d November the sentence of M. de Polignac was commuted for twenty years of banishment. M. de Guernon Ranville was allowed to reside on parole in the department of Calvados. Acts such as these paved the way to an amnesty. A fourth attempt to assassinate the king was made on the 27th December, by a man named Meunier, a wretched being without intelligence, and belonging to the very lowest class of the population. He was condemned to transportation, but pardoned at the end of April 1837.

A previous design on the life of the king had been discovered before this regicide could put his plan into execution. The author of the attempt, a working mechanic named Champion, on being arrested, strangled himself in prison. An insurrection had been attempted at Vendôme by the sub-officer Bruyant. Two attempts to assassinate the king, the affair of Strasbourg, the disaster of Marshal Clausel at Constantine, the commercial crisis, and the Spanish question, were not favourable circumstances for the ministry. Yet the mere establishment of tranquillity had produced a prosperous condition of trade and manufactures. The excess of income over expenditure in 1835 had been 25,000,000. In 1836 it amounted to 43,000,000, and 60,000,000 francs were ordered for public works. In the discussion on the address the principal topic touched on was the affairs of Spain. M. Thiers took his stand on the question of the quadruple alliance, and proceeded to show that in defending Spain France sustained the cause of constitutional government. The government, after having expatriated the Prince Louis Napoleon without bringing him to trial, indicted his accomplices at the assizes. But Colonel Vaudrey, Commandant Parquin, M. de Bruc, Laity, De Querelles, De Gricourt, and Madame Gordon, a singer, were all acquitted, the jury considering that they could not condemn the agents and instruments when the principal was not punished. For a considerable time no very good understanding existed between MM. Molé and Guizot. The latter could ill brook the superior position which the presidency of the council gave to M. Molé; and when the president intimated to M. Gasparin, who was incompetent to afford explanations in the Chamber, the necessity of his retiring, M. Guizot at once put forward his claims to the ministry of the interior. This produced an open rupture with M. Molé and the dissolution of the ministry. The ministerial crisis lasted a considerable time, and various essays were fruitlessly tried at the construction of a new Cabinet. Marshal Soult required the withdrawal of the law of appanage which had provoked public animadversion. M. Guizot, who had been requested to form a Cabinet, addressed himself to the Duke de Broglie, who consented to accept if M. Thiers were invited to form a portion of the Cabinet, but he refused. Propositions were then made to M. Montalivet, who, after four-and-twenty hours' reflection, declared he could not accept the presidency of M. Guizot. Ultimately M. Molé succeeded in forming a Cabinet, in which M. de Montalivet resumed the portfolio of the interior, M. Barthe the ministry of justice, and General Bernard the ministry of war. The finances were intrusted to M. Lacave-Laplagne, public instruction to M. de Salvandy, public works to M. Martin (du Nord), and naval affairs to Admiral Rosamel. This was in effect almost the last ministry to the exclusion of the doctrinaire party—MM. Guizot, Duchâtel, and Gasparin, being left out of the new combination.

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Ministry of 15th April.

The new ministry, of frail and feeble constitution, felt that some measure was necessary to conciliate towards it the suffrages of a divided Chamber, and M. Molé came forward to announce the marriage of the Prince Royal with the Princess Helena of Mecklenburg-Schwerin, an accomplished personage of an ancient house. The marriage was not effected without difficulty. Russia had raised many obstacles, and even in the family there were not wanting those who were ill-disposed to the match. The King of Prussia, however, had exerted his influence to bring about a happy and successful solution. An additional income was asked for the Prince, and as an inducement to the granting of it, it was announced that the appanage for the Duke de Nemours would be postponed. Conciliation was now the order of the day with the ministry, and on the 8th May the ordonnance granting the amnesty appeared. This was the prelude to a series of bills which were called *les lois de famille*. The marriage settlement of the Prince Royal was raised to two millions, to which was added a million francs for the expenses of the marriage, and 300,000 for the dowry of the Princess. Rambouillet had been asked as an appanage for the Duke de Nemours. But this request, which had elicited a caustic pamphlet from the pen of M. Cormenin, was withdrawn. A million was required for the Queen of the Belgians. When this proposition was under discussion, M. Cormenin remarked that the private domain was 74 millions, and he asked whether, out of such an income, a dowry of a million could not be paid to the Queen of the Belgians. The Duke de Broglie had been named ambassador extraordinary to conduct the Princess Helena to France. She entered the French territory on the 24th May, and on the 29th arrived at Fontainebleau; on the 30th May the high contracting parties were married, and the princess entered Paris on the 4th June. On the 10th the museum of Versailles was opened, and turned into a species of Pantheon, with a view to represent the heroes and celebrated men of the nation.

On the 17th May, in this year, Talleyrand died at the age of eighty-four. Either from compunction or complaisance to the existing authorities, he wished before death to be reconciled to the church. To this end it was necessary that he should sign a retractation of his errors. The day before his death his grand-niece, who had considerable influence over him, insisted on having the retractation signed at that particular moment. Talleyrand replied, "I have never yet been in a hurry, and yet I have always arrived in time." The

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paper was not signed till five o'clock on the following morning. At eight o'clock the king came in person to visit him. Talleyrand, faithful to etiquette, and always acting a part, wished to receive his royal visitor standing, and had strength enough to say, “Sire, this is the greatest honour which my house has ever received.” An hour afterwards the great actor was no more. He was a man of exquisite tact and great talent, but without a moral sense; justice and injustice, good and evil, were distinctions unknown to him. He worshipped success only. The Chamber successively voted during the remainder of the session a law of departmental organization, upon the constitution of the staff of the army, &c. The principle of the conversion of the *rentes* was also voted by the Deputies, but the bill was thrown out by the Peers. The question of railways occupied a good deal of the attention of the legislature, and it was much debated whether the lines should be undertaken by the state or by companies. Ultimately it was decided in favour of the latter.

1838.

A plot against the government was the subject of solemn inquiry before the Peers in the month of May. The principal conspirator was one Louis Hubert, and he had for accomplice a Swiss mechanic named Steuble. Amongst his accomplices figured Mademoiselle Grouvelle, who was also mixed up in the conspiracy of Alibaud, Pepin, Morey, &c. Hubert was condemned to transportation; Steuble and Mademoiselle Grouvelle to five years' imprisonment. Mademoiselle Grouvelle lost her reason during her captivity, and Steuble committed suicide by cutting his throat. About the period when this affair of Hubert was before the Peers, Marshal Soult was sent over as ambassador extraordinary for the coronation of Her Majesty, and the old warrior was enthusiastically received by the English people. It was in this month that Louis Napoleon Bonaparte, now Emperor of the French, returned from America to Arenenberg. The French government summoned Switzerland to expel him, when the grand council of Thurgovia declared he was a citizen of the canton. This resistance led to the formation of a corps of 20,000 men on the Swiss frontier. In order to put an end to this state of things, Louis Bonaparte left Arenenberg for London on the 20th September. On the 24th August the Duchess d'Orléans gratified the hopes of her family and the nation by giving birth to a young prince, who received the name of the Comte de Paris. The French troops evacuated Ancona on the 15th October. To this measure M. Molé unwillingly consented, as the occupation of Ancona by the French was not merely a guarantee against the Austrians, but in some sort a satisfaction to the inhabitants of Romagna.

Negotiations were renewed for imposing on Holland and Belgium the execution of the treaty of the 24 articles. The king of Holland found resistance so onerous that he resigned himself to his fate, and Belgium, after some modification in the financial conditions, also submitted.

Session of 1839.

The session of 1839 opened on the 17th December 1838. The speech from the throne announced the resumption of the conference of London on the affairs of Belgium and Holland, the evacuation of Ancona, and the despatch of fresh naval forces to obtain from the Mexican government the justice and protection which French commerce required. The speech dwelt on the prosperous state of the finances and the progressive increase of the public revenue. A majority of the commission nominated to draw up the address in answer to the speech, was hostile to the government. This document expressed a regret that Ancona was evacuated without the guarantees which a proper foresight would have provided. Allusions were made to the condition of Spain and of Poland—to the differences with Switzerland—and above all to the direct and undue influence of the crown on public affairs. While the discussion on the address continued, news arrived of the taking of St Juan de Ulloa by Admiral Baudin, an exploit in which the Prince de Joinville participated. The address was carried by a majority of thirteen, 221 having voted for it and 208 against it. So small a majority must have ended in a dissolution of the ministry had not the king sustained the Cabinet and resorted to a dissolution. The parties formerly most hostile to each other united against M. Molé, and with them MM. Guizot and Odillon Barrot co-operated with zeal and energy. Nor was the ministry idle.

1839.

Resignation of the ministry.

Every expedient was resorted to in order to obtain a majority, but without success, and M. Molé and all his colleagues resigned on the 8th of March 1839. The Molé Cabinet had lasted nearly two years, and deserved praise for an amnesty which was calculated to put an end to the state of war which divided the people into two hostile camps. The defect of the Cabinet was its weakness in parliamentary talent. With the exception of the chief of the Cabinet, an experienced, grave, and capable man, respected for his moderation and high character, there was not in the ministry a single parliamentary notability, or an efficient debater. The coalition was now in possession of the field, and it was necessary to satisfy the three sections whose momentary alliance had gained the victory. There was the left represented by Odillon Barrot—the left centre represented by Thiers—and the doctrinaires represented by Guizot. M. Guizot aspired to the Home Office, and was offered Public Instruction. His answer was that he could not accept a secondary position without lowering his party. M. Thiers was sent for by the king, and presented a list which contained the names of Marshal Soult, Dupin, Humann, Passy, Dufaure, Villemain, and Dumon. M. Thiers submitted that ministers should not be interfered with by the king in the distribution of employments; and secondly, that some protective measures should be taken in reference to Spain. The first difficulty of the king was as to persons. He objected to three of those named by M. Thiers, who in his turn sought to remove the repugnance of the king, but without success. M. Thiers had given up all hope of succeeding in this task when Marshal Soult summoned him to the Tuileries along with the colleagues named by him. These, however, at the first meeting could not settle preliminaries, when the king said, “Gentlemen, try to agree among yourselves,” and dismissed them. A new combination, into which MM. Thiers, De Broglie, and Guizot were to enter, was next attempted. But M. Thiers was for making M. Barrot president of the Chamber, a proposition not held to be admissible by his colleagues. There was a long interregnum, during which public opinion pronounced itself against the court. The king, it was said, wished to sow dissension among parliamentary leaders, for the purpose of exalting the prerogative, and there is reason to believe that there was ground for this suspicion. A provisional ministry to expedite affairs was appointed on the 1st April, and various combinations with the view of forming a ministry were attempted, but they all failed; and it was not till an insurrection broke out in Paris that the crisis was put an end to.

Insurrection of 12th May.

The 12th of May fell on Sunday, and a great part of the population of Paris, as well as the royal family, were at the races at the Champ de Mars. Blanqui, Barbès, Martin-Bernard, and other members of the secret societies, judged the occasion favourable for an insurrection. The shop of the gunsmith Lepage was pillaged, cartridges were distributed to the insurrectionists, who seized on the Palace of Justice, occupied the Hôtel de Ville and the post of St Jean. The insurgents also wished to march on the Prefecture of Police, but measures were taken there to resist them. Some barricades were erected, and for several hours a running fire was kept up with the troops, who soon gained the advantage over these two or three hundred insurgents. This attempt at revolt excited astonishment in the population of Paris, but it had the good effect of putting an end to the hesitations of public men. On the evening of the day of the *emeute* a ministry was composed in which Marshal Soult occupied the position of president of the council and minister for foreign affairs.

Trial of the insurgents.

The trial of the insurgents of the 12th May commenced on the 29th June before the Chamber of Peers. On the 12th July sentence was pronounced which condemned Barbès to the penalty of death, but this sentence was commuted. Martin Bernard was condemned to transportation, Mialon to the galleys for life, Blanqui was tried by the Peers in January 1840, who condemned him, but he likewise obtained a commutation of the sentence.

Eastern question.

It was during the ministry of the 12th May that the eastern question became so menacing for Europe. After the arrangement of Kutayah, which had left the Pasha of Egypt in possession of Syria, each party regarded the other with mutual distrust. The sultan was desirous of regaining Syria, while all the efforts of the pasha were directed to obtain hereditary possession of Syria and Egypt. Politicians in Europe were for maintaining the existing arrangements in the East, whilst at Constantinople and Alexandria every thing breathed war. The sultan pushed his preparations with ardour, and notwithstanding his pacific preparations, the Captain Pasha Achmet fortified the Dardanelles. A levy of 60,000 soldiers was ordered, and a movement was made on the frontier of Syria. On the 21st April 1839 the Turkish advanced guard passed the Euphrates, and was within twenty-four hours' march of Aleppo, so that at the period of the appointment of the French ministry hostilities were imminent between the Turkish and Egyptian troops. Marshal Soult despatched two of his aides-de-camp MM. Foltz and Caillier, to the scene of action—one was to proceed to the camp of Hafiz by way of Constantinople, the other to the camp of Ibrahim in passing by Alexandria. It was generally admitted by English and French statesmen that there was a European question to be solved at Constantinople, and that Russia could not be permitted to obtain the control of the Bosphorus, thus possessing the keys of the Black Sea and the Mediterranean. Viscount Palmerston made overtures to the French Cabinet on the subject, and suggested that a joint representation should be made by England and France to the Austrian Cabinet, soliciting that power to co-operate for the preservation of the Ottoman Empire, and he further suggested that a similar proposition should be simultaneously made at the court of Berlin. A despatch of Lord Palmerston of the 17th June proposed that the English and French fleets should unite in the Mediterranean with orders to force the Dardanelles in case the Russian troops should appear on the Turkish soil.

Battle of Nezib.

The answer of Marshal Soult was that he regarded the junction of the French and English fleets before Constantinople as most desirable, but that he doubted if so grave a question as the declaration of war against Russia and Turkey—the inevitable consequence of a forcible entry into the Dardanelles—could be left to the discretion of the respective admirals. A counter project was suggested by the French Cabinet, namely, a proposal to ask permission for the united fleets to enter the Sea of Marmora in case of a Russian invasion. England, in a complaining spirit, accepted this timid proposition, unworthy of bold and able statesmen. While the French cabinet was thus vacillating and undecided, impeding the vigorous resolves of Lord Palmerston, the army of Ibrahim was advancing to attack the Turkish army, which occupied a formidable position to the south of the village of Nezib. On the 24th June was fought the battle of Nezib, in which the Turks were wholly defeated. Some days after the battle the victorious Ibrahim was proceeding beyond the Taurus, when the aide-de-camp of Marshal Soult appeared to stop his march, having obtained from Mehemet Ali an order that even though victorious the Egyptian general should not advance. The sultan never learned his defeat. He was in the agonies of death at the period of the battle, but lived to the 1st July, when he expired, after having endeavoured to reform an empire which he left partially dismembered, a prey to open enemies and pretended friends. The French Cabinet did not act a straightforward part in the Eastern question. In seeking a European co-operation on the Turkish question against Russia, it flattered itself with the ultimate hope of finding a lever in London against a Russian occupation of Constantinople, and a lever at St Petersburg against an English occupation of Alexandria. The refined cunning of Louis Philippe defeated his object, and laid his Cabinet open to the imputation of double dealing. The conduct of the King and the Cabinet of the 12th May were among the promoting causes of the fatal events that led to the ruin of the French monarchy a few years afterwards. French official men, in consequence of the direct interference of the king, held two languages, and the consequence was misunderstandings and mistrust. The mistrust was justifiable on the part of England, for after French functionaries had explained themselves in the sense of the Cabinet, there was a secret diplomacy that unconstitutionally spoke the wishes and desires of the king. These discreditable manœuvres of Louis Philippe led to a coldness between the representatives of England and France, of which Russia was not slow to profit. A Russian envoy, M. Brunnow, arrived in London in September 1839, and an understanding was soon arrived at between these two courts, which led to the momentary isolation of France.

During the tortuous progress of the Eastern negotiations, Louis Philippe never lost sight of the settlement of the Duke de Nemours. He insisted on the ministry asking an annual income for the prince of 500,000 francs, and an additional 500,000 francs for the expenses of his marriage with the Princess Victoria of Saxe-Cobourg. This sordid conduct excited general disgust, and led to another caustic pamphlet from the pen of M. Cormenin, entitled *Questions scandaleuses d'un Jacobin au sujet d'une dotation.* On the 20th February the discussion on this question of the "*dotation*" commenced. The ministers, wishing to avoid a debate, only one speech was delivered, when a division was taken, and the project was rejected by 226 votes. This majority brought about a dissolution of the ministry, and led to the formation of a new Cabinet.

Ministry of 1st March 1840.

M. Molé was sent for by the king, and named M. Thiers as the person most likely to succeed in forming a ministry. M. Thiers summoned the principal members of the left centre and of the *doctrinaires*, who had opposed the Molé ministry (M. Guizot was at this period ambassador in London), and after having fruitlessly solicited the co-operation of the Duke de Broglie, presented to the king the list of his Cabinet. M. Thiers held the foreign office, with the presidency of the council. It is a curious fact that this ministry obtained from the opposition a vote for the secret funds. Many laws of public utility were passed during the session, such as the law on sugars, on the salt mines, on the renewal of the privilege of the Bank of France, on the transatlantic packet boats, on the conversion of the rentes, &c. In this session, and while the Chamber was discussing the sugar question, M. de Remusat announced to the Chamber that the king had commanded the Prince de Joinville to proceed to St Helena to bring back to France the remains of the Emperor Napoleon. For this translation the permission of the British government had been solicited, which generously answered that it desired that the promptitude with which the request was complied with should be considered as a proof of the wish of her Majesty that the last trace of the national animosities which during the life of the emperor armed both nations against each other should be effaced. The Belle Poule frigate accordingly proceeded to St Helena, and brought back the remains of Napoleon to France. A splendid military funeral was decreed for these remains, and a mausoleum dedicated to them at the Invalides from the public purse. For a moment the king and the government derived a passing popularity from this dramatic exhibition, in which it was declared that liberty did not fear a comparison with glory; but as neither the king nor the ministers were sincere in these demonstrations, but merely wished to create political capital out of all that was mortal of Napoleon, the whole spectacle was soon regarded in its proper light.

The Bonapartists proclaimed that the king and M. Thiers were merely acting a comedy, and that the only sincere worshippers of the emperor were the members of his family, who were exiled or proscribed, and the glorious debris of that army which he had led so often to victory. The king, in the exercise of a sinister wisdom, doubtless considered that the measure was a master-stroke of policy, but in the homage which he affected to pay to the remains of a great conqueror, he only served the purposes of those who wished the restoration of an imperial rule.

But the most important fact connected with the ministry was the rupture of the English alliance. There was considerable soreness and excitement throughout France so soon as the provisions of the treaty of the 15th July were known, it being considered that this treaty indicated a bad disposition towards France at a period when M. Thiers had settled the Sicilian sulphur question to the satisfaction of England. The effect of the treaty was to enable England, Russia, Austria, and Prussia to settle the Eastern question without the co-operation of France. As soon as the provisions of this treaty became generally known, M. Thiers obtained from the crown permission to raise the army to 500,000 men, and to increase the fleet by ten vessels. A diplomatic note was written by M. Thiers, in which France refused to acknowledge the treaty, though she was not prepared to oppose its execution within certain limits. The English government sent a fleet to the coast of Syria without delay. The victories of Beyrout and St Jean d'Acre were the results. To these measures France replied by fortifying Paris. Though the law of the fortifications was discussed and voted under the subsequent ministry of M. Guizot, yet the conception and design was of M. Thiers, who induced the left to give an approbation to the *enceinte continue* which they had refused to the detached forts. The king was exceedingly anxious that the law should pass, and he employed all his influence, and also the influence of the queen, to that end. A European war now seemed inevitable, and M. Thiers did not seem to shrink from the responsibility; but the king, who at first approved of energetic measures, and who appeared penetrated with the warlike sentiments of his Cabinet, suddenly changed his views. Upon this change of opinion M. Thiers offered his resignation, and only consented on reiterated requests to hold power for a short time. A few days afterwards he issued the diplomatic note of the 8th October, which almost amounted to a proclamation of war. Circumstances becoming more and more critical, the minister proposed the immediate convocation of the Chambers, with a view by their co-operation to strengthen the hands of government. But the king having signified his marked dissent from warlike views, the entire Cabinet resigned; not, however, before the words electoral reform had been heard at more than one public banquet in Paris, and in many of the principal cities of France, such as Bordeaux, Toulouse, Metz, Lyons, and Nantes.

It was while the minds of men were engaged by the Eastern question, that on 6th August 1840 M. Louis Napoleon Bonaparte disembarked with about sixty followers at Boulogne. After making a vain appeal to the population, Louis himself and the major part of his followers were within three hours in the hands of the authorities. For this attempt, the present emperor of the French was tried before the Chamber of Peers on the 6th October, and condemned to perpetual imprisonment in the fortress of Ham.

On the 6th October 1840, about six o'clock in the evening, another attempt was made on the life of the king as he was proceding to St Cloud, by one Darmes, a *frotteur*. The carbine of Darmes burst in his hand, wounding him grievously, without injuring his Majesty. Darmes was condemned to death by a sentence of the Court of Peers of the 29th May 1841, and was executed on the 31st May.

Ministry of 29th October 1840.

M. Guizot, who had shown himself, as French ambassador in London, the obsequious servant of the sovereign rather than the organ of the Cabinet, became the chief of the new ministry. Marshal Soult, indeed, was president of the council with the ministry of war, but the moving spirit of the Cabinet was M. Guizot. It first became its duty to reassure the commercial and trading community, alarmed on the subject of a general war deemed all but imminent, and at the same time to have regard to the honour of France, wounded by the treaty of the 15th July 1840.

In the first of these attempts M. Guizot completely succeeded, and in the month of February 1841 he showed himself disposed again to enter into concert with the European powers. The result was the treaty of the 13th July 1841, which substituted a European protection of Turkey for a protection exclusively Russian. Relieved from an external difficulty, the Cabinet encountered a domestic difficulty. Serious troubles had arisen at Toulouse touching the *recensement* (or valuation), which ultimately broke out into open revolt. The accession of Sir Robert Peel to power in 1841 at the head of the Conservative party, smoothed the difficulties of M. Guizot. The Whigs, the authors of the treaty of the 15th July 1840, were by the attitude of France compelled to incur additional expenses both for the army and navy estimates, and this increased expenditure, joined to the expedition to Syria, produced a deficit. The elections consequent upon the dissolution gave a clear gain of 25 seats in the House of Commons to the Conservatives, affording to Sir Robert Peel a majority of between 50 and 60 votes. Although Sir Robert was believed to be animated by more friendly feelings to the older governments of Europe than his predecessors, yet he had sufficient tact and sagacity not to exhibit towards France the sentiments entertained by his predecessor. The Cabinet of France wished to take advantage of these more friendly dispositions to propose the question of a disarmament, which, in lessening the amount of the public burdens, would enable the country to undertake the execution of the great lines of railroads so necessary to the inter-communication and prosperity of the people. The object of the king and his ministers was to turn the attention of the people to their material interests, and thus to wean them from the discussion of principles and politics. The time had not yet come to accomplish these desirable objects. M. Guizot resolved, however, to regain some portion of the public opinion he had lost by using a bolder language in the royal speech. It was with this view he introduced into the royal speech, in the opening of the session in December 1841, the words, "Algeria is henceforth and for ever French." Till this period the king, remembering the assurances given in 1830, had declined to pronounce that Algeria was irrevocably French, and these hesitations gave colour to the accusations of a too obsequious condescendence towards England. The election of president of the Chamber was one of the first difficulties which the ministry encountered. The *Presse*, formidable to its enemies, and, in the hands of M. Emile Girardin, still more formidable to its friends, put forward the pretensions of M. de Lamartine against those of M. Sauzet. The ministry, for a time timorous, hesitated what part to take, but at length determined to stand by M. Sauzet, who was re-elected. One of

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the most important discussions of the session was relative to the *droit de visite*, or right of search. In 1831 and 1833, General Sebastiani and the Duke de Broglie had signed a convention on this subject, into which important modifications were introduced, on the motion of M. Lefebvre, a Conservative deputy. The principal measure of the session, however, was the law on railroads, which passed on the 11th June 1842. The projects on railroads started in 1838 had all failed. Only two lines were now in course of construction, that of Paris to Rouen, and Paris to Orleans. In the month of February, in this session, M. Teste, minister of public works, presented a project of law comprising five grand lines radiating from Paris to the frontiers of Belgium by Lille and Valenciennes, from the channel towards England to the frontiers of Germany by Strasbourg, to the Mediterranean by way of Marseilles, and Cette to the Atlantic by Nantes and Bordeaux. The minister proposed that these great lines should be executed by the state, allowing the localities interested and private industry to cooperate to a certain extent. The commission appointed by the Chamber to report recommended important modifications. M. Daufaure the reporter (subsequently home minister during the Republic) proposed adding three new lines to those of the government; 1*st*, from Tours to the frontiers of Spain by Poitiers, Angoulême, Bordeaux, and Bayonne; 2*dly*, to the centre by Bourges, Nevers, and Clermont; 3*dly*, from the Mediterranean to the Rhine by Lyons, Dijon, and Mulhausen. The government accepted this latter line, as well as that from Paris to Strasbourg by Nancy. It also consented to modify the original line from Paris to the Atlantic. The ministry asked credits for four principal routes. The commission granted credits for six, and augmented the credit required by 24,000,000 francs. It was plain the commission sought to interest each locality in the formation of the line, whilst the ministry was more occupied with the strategical question, more especially for the east and the north. The commercial, banking, manufacturing and brokering interests were all anxious that the lines should be thrown open to companies. M. Thiers vigorously supported an amendment of M. de Mornay which proposed a single line from north to south.

Dissolu-ion of the Chambers.

The Chambers were dissolved on the 13th June, the elections took place on the 9th July, and the Deputies were again convoked for the 3d August. In the interval, a sad accident caused profound regret throughout France.

Death of he Duke 'Orléans. 1842.

On the 13th July the Duke d'Orléans was to have set out for St Omer, where he was to have inspected several regiments intended for the corps of the army of the Marne, of which he was to have the command-in-chief. The duke had proceeded to Neuilly to take leave of his family, when, in jumping out of his calèche (the horses having taken fright and run away), he fell on his head and fractured his skull. He expired a few hours after the accident, without having regained his consciousness. His loss was mourned by the country generally, and more especially by the army, in which service he was deservedly popular. The prince was educated among, and mixed with his countrymen, and understood the wants and wishes of France. In consequence of this melancholy death, the Chambers were convoked somewhat earlier to provide for a regency. They met on the 27th July. The project of law presented by the government provided that the regency should devolve on the nearest male relation of the king, altogether excluding females. The reporter was M. Dupin, and he fixed the majority of the king at eighteen, the guardianship till that time to belong to the queen or princess his mother, remaining unmarried, and in her default, to the queen or princess her paternal grandmother, likewise unmarried. After the vote on this law, which made the Duke de Nemours regent, the session was adjourned till the following January.

1843.

In the opening of the session of 1843 the king in his speech accepted the protectorate of Otaheite. Queen Pomaré, however, declared that she had been the victim of deception and violence, and struck the French flag. Whereupon Admiral Dupetit-Thouars declared the queen deposed. This proceeding of the admiral produced a strong protest and some disturbance at Tahiti, in which blood was shed. A consular agent of the British government named Pritchard was expelled from the island, and his property injured. This act of the admiral, complained of by the British government, was disavowed by the French Cabinet; and, after a long negotiation, it was agreed that France should pay to the consul Pritchard an indemnity of 25,000 francs. This indemnity the Chamber voted, but the discussion of the question gave rise to debates of extreme violence, in which not merely party but national animosity was displayed. Nothing more tended to augment the unpopularity of M. Guizot in France, or served more to loosen the bands of the *entente cordiale* in England, than the discussions and comments to which the Pritchard indemnity gave rise. Meanwhile the French were extending their conquest and colonization of Algiers. The province of Tittery was in their possession, and by the successive occupation of Cherchell, Médéah, and Milianah, a line of defence was completed. But, on the other hand, while Caiffa was destroyed, and Beyrout bombarded by Admiral Stopford and Commodore Napier, the French fleet was sent off to the Bay of Salamine. If the ministry of M. Guizot, as was alleged, exhibited an undue complaisance towards foreign powers, the rein of authority was held somewhat tighter at home. The annual banquet to the Poles, which had been held for ten years, was prohibited if either the chairman intended to preside, or the persons designed to propose toasts, should be Frenchmen.

Dreadful inundations devastated the valleys of the Rhone, the Saône, and the Gard, during the months of November and December. The city of Lyons was converted into a vast lake, on whose bosom floated fragments of houses, boats, and furniture. No fewer than 160 houses were carried away. At Macon the ruin was not less astounding. The ravages of the floods extended for 60 leagues, and more than 100 villages had disappeared. In the higher town 6000 peasants, who had lost their all, encamped in the streets and squares. The departments of l'Aix, l'Isère, Le Gard, La Drôme, and La Vaucluse, all severely suffered. Subscriptions were everywhere opened for the sufferers, and a credit of 1,600,000 francs was voted by the Chambers. From the period that M. Guizot accepted the portfolio of foreign affairs his object was to prove that Europe, by the treaty of the 15th July, in no respect menaced France, or sought to attack her revolution. These being his views, he called on the Conservatives in the Chamber to aid him in a policy calculated to restore a more perfect harmony between France and the other great powers. Such a call would have been natural and proper in the mouth of a statesman who had not been the ambassador in London at the time of the treaty of July; but this language was considered strange in the mouth of a functionary who, in reference to this treaty, must either have been an accomplice or a dupe. The majority of public men, and indeed the intelligent public of France, had more faith in M. Guizot's talents than in his character, but in reference to the treaty of July he appears to have been ill informed of the proceedings of the other great powers.

The project of the fortifications of Paris (pursued with immense activity) now began to excite the attention and the apprehensions of the *bourgeoisie* and the working classes. As a complement to the fortifications, it was determined to place the ports and the frontier towns in a respectable state of defence, and 500,000 francs were asked from the Chambers for that object. This increase of the estimates considerably augmented the budget; but it was one of the results of an armed peace—a system which produced all the inconveniences without any of the advantages of war. In the discussion on the law on supplementary credits, M. Humann, the finance minister, maintained that the greater part of the deficit arose from former budgets. He maintained that in 1833 there was a deficit of 255,000,000 francs, which had ever since increased. M. Thiers in reply only admitted a deficit of 175,000,000 as fairly chargeable to the account of the ministry of which he was the head. It was, however, made clear from all these personal discussions that the deficits increased year by year with frightful rapidity. The deficit of 1840 was 170,000,000 francs, and of 1841, 242,000,000. As the budget of 1842, notwithstanding the reductions of the commission, reached the figure of 1,275,435,340 francs, whilst the budget of receipts was fixed at 1,160,516,942 francs, there was a deficiency of about 115,000,000. Extraordinary public works figured in the estimate for 53,000,000, making a grand total of a milliard, for which it was necessary to provide. 256,000,000 francs were to be added to the floating debt for deficits anterior to 1833. It was the uneasiness inspired by this deplorable financial state that induced M. Humann to have recourse to a new valuation of buildings, doors, windows, and what are called *valeurs locatives.* The cry against the finance minister on this account became so loud and general, that he deemed it necessary to offer his resignation. But the king refused to accept a resignation which would have been interpreted as a signal of weakness in the Cabinet.

Election of Ledru Rollin.

The unpopularity of ministers was still further increased by persecutions against the press. Early in the year MM. Lammenais and Thoré had been condemned, and a prosecution was commenced against the *National* for its remarks on these trials, and on the Chamber of Peers. About this period one of the most eminent of the democratic leaders, M. Garnier Pages, died, and M. Ledru Rollin was selected by the second college of Mons, in the department of La Sarthe—the only college in France in which republican opinion had a decided majority—to stand for the vacant seat. A rival candidate presented himself in the person of M. Garnier Pages the younger, but it was felt that he was not sufficiently known as a public man, and M. Ledru Rollin was elected on the 24th July, every elector, with the exception of four, having polled for him. The speech of M. Rollin, in returning thanks, was too remarkable not to be noticed. It was impassioned and defiant. The avowals of republicanism were so open and undisguised, that the prefect and functionaries of the department could not conceal their dismay. The speech, in a word, excited such an immense sensation in the west, that the royal court of Angers directed the *procureur-général* to indict M. Ledru Rollin for having delivered the speech, and M. Hauréau, chief editor of the *Courrier de la Sarthe*, for having published it. The question was referred by the *procureur-général* to the cabinet council, and a prosecution was decided on. Deputies, however, of all shades of the opposition took up the question as one affecting the rights of speech of a representative, and among these MM. Arago, Berryer, Marie, Odillon Barrot were chosen to defend M. Ledru Rollin. M. Marrast, chief editor of the *National,* and afterwards, under the republic, president of the Chamber, defended M. Hauréau. The question, on the demand of the *procureur-général,* was not tried before a jury of La Sarthe, but before a jury of *Maine-et-Loire.* But even this jury took fright at the doctrines of the attorney-general, and acquitted the utterer, but found guilty the publisher, of the incriminated speech. M. Hauréau was in consequence condemned to three months' imprisonment and 2000 francs fine, whilst M. Ledru Rollin was fined 4000 francs, and sentenced to be imprisoned for four months for the part he took in the publication. Ledru Rollin appealed to the court of cassation, before which the sentence of the court below was, for a defect of form, annulled. The worst prosecution that had yet been instituted, however, was that against Dupoty, the editor of the *Journal du Peuple.* One Quenisset had been arrested for firing on the Duke de Nemours. The ball did not take effect, but wounded the horse of General Schneider, who was on his royal highness' left. A person of the name of Lannois had been arrested as one of the accomplices of Quenisset, and Lannois invoked the protection and assistance of M. Dupoty, the editor of the *Journal du Peuple,* writing thus to him,—"I beg of you, citizen, to defend us as much as in your power, as the *National* does." On this sentence, in a seized letter, the *procureur-général* and the ministry raised a capital charge of complicity against Dupoty, a man of gentle and inoffensive manners, a man of refined and almost effeminate tastes,[1] who would be about the last person to enter into a conspiracy. Dupoty had never in his life seen any one of the persons with whom he was alleged to have conspired; but Quenisset having declared that it was the perusal of the journal which incited him to the commission of the act, the monstrous doctrine of complicity was invented to bring Dupoty within the meshes of the law. Forced interpretations, specious presumptions, audacious sophisms, were all had recourse to by M. Hébert; but some of the peers, among others M. Cousin, were just and manly enough to cry aloud against the iniquity of condemning a man because a conspirator and a would-be assassin was in the habit of reading his journal. "Show me any overt act of Dupoty," said M. Cousin; "give me any proof of his being engaged in this affair, and I will deal severely with him; but I cannot condemn him for his opinions, however detestable." It was impossible to produce any proof of direct complicity against Dupoty, and M. Hébert was on the point of failing, when M. de Broglie and the Bolognese, but naturalized Frenchman, Rossi (then a professor of law and political economy, and subsequently French ambassador at Rome, in which city he was assassinated in 1848), came to the aid of the vanquished functionary, and invented the doctrine of moral complicity. "Dupoty," said the Italian Rossi, with insidious and Machiavellian ingenuity, "was not aware of, or privy to the plot, but his wishes, his *tendencies,* his writings, his previous history and antecedents, all demonstrated that he approved of it." But approving, argued MM. de Broglie and Rossi, he afforded a moral complicity to the execution of the design, and was guilty in fact, without knowing that the crime had been committed. Such was the monstrous doctrine, stripped of all oratorical disguises, maintained by Signor Rossi and M. de Broglie, from which latter politician the Chamber and the country expected better things. A doctrine more infamous than this, was never avowed in the atmosphere of Morocco. M. Cousin indignantly spurned the frightful theory, and concluded by exclaiming,—"I am then guilty of moral complicity also, since I defend Dupoty against you." The judgment of the Peers declared a complicity without entering into the question whether it was moral or physical, and Dupoty was condemned as the accomplice of persons whom he had never seen or had intercourse with. M. Hébert, the attorney-general, pled for his life; the Peers sacrificed his liberty, awarding him five years' imprisonment. This sentence produced, as well might be expected, an immense sensation in the capital, and a general cry of indignation issued from the press. The *Débats,* as though ashamed of so discreditable a triumph, was silent; but the *Presse,* a vigorous supporter of the ministry in general, energetically condemned this act of the Peers. The editors of sixteen Parisian journals signed a collective protest, and were joined by the delegates of the provincial press. The greater number of the journals whose editors

Prosecution of Ledru Rollin.

Prosecution of Dupoty.

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[1] *Histoire de Huit Ans,* par Regnault. Paris, 1851.

had appended their names to this document resolved to give no account of the future debates of the Chamber of Peers. Various prosecutions had been commenced by the government against the provincial press, but the country unequivocally showed its opinion by acquitting the *Emancipator* of Toulouse, the *Impartial du Nord*, the *Progres* of Calais, the *Courrier de la Moselle*, and other journals.

The triumph of Espartero, not merely over the queen-mother Christina, but over the generals who sided with, and conspired in her favour, was a check given to the French influence in Spain. The Cabinet of the Tuileries extended its sympathies, if not its direct aid, to Maria Christina, and encouraged Diego Leon, Concha, O'Donnell, and Ubisondo. The election of Espartero, therefore, as sole regent, could not be regarded by the French government otherwise than as another proof of its lessened influence.

Death of M. Humann.

A partial change in the Cabinet was occasioned by the sudden demise of M. Humann, who was found dead in his study, surrounded by papers and documents, the evening before the discussion of a motion of a project of law on railroads. The vacant portfolio was conferred on M. Lacave Laplagne.

Railway accident.

In the course of the month of May, and during the fêtes of Versailles, a frightful accident occurred on the Versailles railroad, by which more than 50 persons were killed. Among the victims was one of the most distinguished officers of France—Admiral Dumont d'Urville.

One of the reproaches uttered against the ministry of the 1st March by M. Guizot was, that M. Thiers had thrown France out of the European combination of great powers. The main effort of M. Guizot and of the king now was to re-enter into that concert and combination at almost any price. France, wearied of her isolation, asked neither separation nor disavowal, but merely a treaty in which her name might stand as a testimony of reconciliation by the side of the four great powers. The convention of the 13th July, signed at London, afforded to the minister a compensation which he was willing to acknowledge to a Conservative English ministry by signing a treaty on the *droit de visite* on the 20th December 1841. But this complaisance of Guizot appeared to the merchants of France an unworthy concession, of which the opposition in the Chamber, and more especially the member for Nantes, M. Billaut, at present minister of the interior, was not slow to take advantage. M. Guizot drew a distinction between the right of search conceded by this treaty and the old *droit de visite*, which had been protested against by France, and endeavoured to show that the present measure was signed in the interests of the slave, and with a view to put an end to negro-slavery; but so unpopular was the minister, and so little were his asseverations regarded by the majority of his countrymen, that these assertions met with little credence; and an amendment of M. Jacques Lefèbvre was carried expressing the hope that in the desire to repress a criminal traffic the government would have regard to the interests of French trade, and the honour of the French flag.

This language was considered by an immense majority not too strong to address to a cabinet which rendered itself the docile instrument of the king in obdurately resisting the very smallest measure of electoral reform, no matter how trival.

State of the wine growers and wine trade.

The administrative and commercial measures of the government caused great discontent among the representatives of some of the most important interests in the state. The king lending a too willing ear to a number of wealthy monopolists, proprietors of forges and sugar manufactories, used all his influence to retard every project of commercial freedom. The consequence was that the nation at large suffered, while a few great proprietors and manufacturers only profited. One of the most important trades of France, the wine trade, was grievously injured from this narrow system. Belgium, Great Britain, and other countries, were willing at this period to enter into commercial treaties with France; and King Leopold made a journey to Paris to smooth the way to certain fiscal arrangements; but such was the influence of the monopolists over the mind of the king and his ministers that the project of a customs union with Belgium, and of a really liberal commercial treaty with England, became hopeless. M. Dufaure and Passy, who were the advocates of a greater freedom of trade, and also for a more liberal and tolerant policy in internal affairs, withdrew their support from the ministry. M. de Lamartine also took occasion on the discussion of the regency law to dissociate himself from Conservatives whose policy, he remarked, was pregnant with revolutions.

Official corruption.

This narrow and illiberal system, cradled in monopoly, and caressed by king and ministers, fostered all sorts of corruption—corporate, parliamentary, and official. A celebrated trial in which a certain M. Hourdequin of the *Grand Voirie*, or Sewers Commission, of Paris was the accused, revealed a state of frightful official corruption. Hourdequin was condemned, but more guilty and more influential official criminals escaped. In the session of 1843 it appeared, from certain revelations made in reference to contracts for railways, that corruption had penetrated to higher sources than the Sewers Commission. The disclosures made in reference to M. Teste, and his decision on the contracts for the Orleans and Tours railway, are exceedingly discreditable. The history of this affair, to which we can merely allude, is given at length in a late work, to which the reader is referred.[1] The proximate, if not indeed the promoting cause of the revolution of 1848, was the official corruption engendered for ten or twelve years previously. Under the guise of leading Frenchmen to think of their material interests, the king and his ministers had succeeded in suppressing a chivalrous national feeling, and substituting in its place a sordid and money-getting spirit. Universal cupidity became the order of the day. The desire to get rich speedily, no matter by what means, possessed all classes; and there were not wanting ministers and politicians who were guilty of more flagrant peculation, and of greater dishonesty, than M. Hourdequin of the Sewers office.

The king and his family.

In the midst of the national demoralization the sovereign exhibited an intense desire to look after the interests of his family. On the 20th April he married his daughter, the Princess Clementine, to the Prince Augustus of Saxe-Cobourg, and in May the Prince de Joinville espoused the sister of the emperor of Brazil. This was at the time a politic match; for it was hoped that the influence of France in Brazil would daily augment, and that an advantageous commercial treaty with Brazil and South America would be the consequence. Nor was Louis Philippe without some compensation of glory as well as interest. His son, the Duke d'Aumale, had the good fortune by a brilliant charge of cavalry to carry off the family tents, flocks, and baggage, of Abd-el-Kader. But this misfortune did not break the spirit of the intrepid Arab chief. His mother and his wife escaped capture by a miracle, and he himself had scarcely more than time to mount his horse, and with some chosen followers to seek safety in flight. For some time nothing was heard of the emir, but after a little he reappeared on the south-west of Tlemcen, ready to effect a junction with Sidi Embareek, the most active of his lieutenants, and, after himself, the most inveterate enemy of France. Colonel Tempoure dispersed the troops of Sidi, and deprived the emir of his best resource. Sidi was killed while fighting with desperation; and the death of this renowned chief produced a great impression on the Arabs. Abd-el-Kader was forced to retire within the frontiers of Morocco, and all the tribes of the little desert made their submission. Perfect security now reigned within the French colony from Algiers to Boghar, and from Constantine to Tlemcen. For this service General Bugeaud, the commander of the French troops in Africa, received the baton of a marshal.

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[1] *Histoire de Huit Ans*, par Regnault. 1851.

Visit of the British Queen to Eu.

The most remarkable incident in this year was the visit of Queen Victoria to Eu. This was a less important event than the visit made to Paris in 1855, for it was the visit of one constitutional sovereign to another *en petit comité*. But even though the journey was regarded in this light by the premier, yet care was taken that the new minister for foreign affairs (the Earl of Aberdeen) should accompany her Majesty.

The minister for foreign affairs of Louis Philippe also accompanied his sovereign on this occasion; and it is known from confidential letters found in the Tuileries after the revolution of 1848, and since published, that not merely the question of the Spanish marriages was talked over, but also the projected visit of the Duke de Bordeaux to London, and his reception by the court.

Visit of the Duke de Bordeaux to England.

At the close of the year 1845 the Duke de Bordeaux paid a visit to England, and for a short period rented a house in Belgrave Square. The visit of this young prince to the British shores singularly alarmed Louis Philippe. The king of the French dreaded above all things that the descendant of the elder branch should be received at court, and with a view to prevent this he wrote to the king of the Belgians on the 4th November to interfere against such a step. This circumstance might well be doubted had we not evidence of the fact in the king's own hand. After the revolution of 1848 several private papers and letters of the king of the French were published, and among the rest certain letters of his Majesty to his "Tres cher frère et excellent ami," the king of the Belgians. The Duke de Bordeaux, says Louis Philippe, "va en Angleterre pas comme *visitor abandoned and interesting*, mais comme *pretender*, cela est certain. Dès lors il faut qu'il ne soit pas reçu par la Reine." Further on, in the same communication, his Majesty says, "Pour resumer je dois donc franchement dire que le Duc de Bordeaux ne doit pas être reçu par la Reine. Qu'on mette le plus de formes dans cette décision que l'on voudra, cela on le pourra, pourvu qu'on necede pas sur le fait."[1]

The interference of King Leopold was crowned with complete success, and on Sunday the 12th November the king of the French wrote to "his very dear brother and excellent friend" from St Cloud, thanking him for his efforts to keep Queen Victoria in the favourable dispositions she had manifested at Eu, relative to the reception of the Duke de Bordeaux.—"Elle y a," says Louis Philippe, speaking of Queen Victoria, "most nobly persisted, et Lord Aberdeen nous ayant donné l'assurance qu'il en donnerait le conseil officiel à la Reine nous n'avons plus d'inquiétude sur ce point."[2]

Her Majesty did not receive the Duke de Bordeaux, a circumstance that excited considerable surprise in England, and still greater surprise on the Continent, where it was remarked that the ex-regent Espartero had been shortly before received by her Majesty. If the reception of the duke were considered as an act of pure and simple courtesy merely, it cannot be conceived that there could be any difficulty about it. But as it would be looked on and interpreted as a political act, and as the visit of a pretender (the king *de facto* being Louis Philippe), her Majesty was advised by her ministers not to receive the descendant of the elder Bourbons.

The Duke de Bordeaux was not without some compensations for royal and official neglect. The Tory and territorial aristocracy reserved for him the homage usually paid to crowned heads, and the legitimists of France journeyed from all parts of that kingdom to assure him of their loyalty and devotion. The Duke of Fitzjames, M. de Châteaubriand, M. de Valmy, M. de Preegne, and M. Berryer, were foremost in these manifestations. M. de la Rochejacquelin also presented himself, and demanded an audience; but as he was known to speak of such things as the voice of the nation and the consent of the people, his reception was most frigid.

Assured of the disposition of the British court towards himself and his family, the king of the French caused the Duke de Nemours to proceed to London in the second week of November. The official reception of this favourite son of the monarch was most cordial. Previous to the parliamentary session, a slight change had taken place in the French ministry. Admiral Roussin had been replaced as minister of marine by Admiral Mackau, and M. Dumon took the portfolio of public works in the place of M. Teste, promoted to the peerage, and to the presidency of a chamber in the court of cassation. No sooner had the Chambers met, than Louis Philippe was anxious that a question which had already compromised the existence of two cabinets should be again brought forward. This was the question of the "dotation" of the Duke de Nemours. M. Guizot was anxious to avoid the discussion of a subject in every way so delicate and difficult, but the very oratorical successes of this gentleman on public questions awakened anew the cupidity of the king of the French. His Majesty could not see why a minister who defended so well a policy or a principle should not prevail in advocating a dowry. But such was the invincible repugnance of the nation to the measure, that notwithstanding the urgency of the king, ministers were forced to abandon the measure. In the Chamber of Deputies there was a stormy discussion on the words *flétrit de coupable manifestations*, applied to the legitimist pilgrims who had carried their devotion to Belgrave Square. For a moment M. Guizot wished to soften the expression, by the employment of a less offensive epithet, but the king would hear of no concession, and the minister yielded to the affected indignation or real choler of the king. In these painful discussions the minister for foreign affairs gave further proofs of high talent and indomitable courage; but he was reproached by 150 voices with having gone to Ghent, and with having returned to France in the wake of a foreign army. Neither the talent of the man, nor the courage of the eloquent orator, were appreciated by the nation, for the public was under the impression that the minister spoke rather as advocate for the king than from conviction.

The injurious epithet with which the legitimists were branded induced them to resign in a body. They were all again elected without opposition, notwithstanding the efforts of the ministry to provoke a contest. The constitutional and radical parties abstained from contesting any of the vacant seats.

The speech from the throne had alluded to the cordial understanding (*entente cordiale*) which existed between France and England. These expressions became the subject of controversy both in the Peers and in the Chamber of Deputies. The Peers substituted the words "amicable understanding," the deputies "agreement in opinion." The speech contained no allusion to the right of search, though the former Chamber had formally demanded that negotiations should be opened for the abolition of the treaties of 1831 and 1833. But, after reflection, the commission on the address, which was friendly to the ministry, fearing that an amendment might be proposed, introduced a paragraph which had been voted a year before. While the discussion on the address was proceeding, the news of Admiral Dupetit Thouars' taking possession of Otaheite arrived in Paris. The announcement of this fact embarrassed ministers. The question of the protectorate had given rise to much trouble, and how would the actual possession be regarded by the monarch? Ministers were not long in suspense as to the royal opinion. This, said Louis Philippe, will breed another quarrel with England, and we have enough on hands already with the right of search. In a non-official conversation with Lord Aberdeen and Sir Robert Peel, M. de St Aulaire learned that the English ministry looked on the proceeding of Admiral Dupetit Thouars in an angry and hostile spirit. The peace of the world, said the king, is the national interest, and the proceeding must be disavowed. The minister of foreign affairs declared to the Chamber that the conduct of the admiral had been over hasty, and that the taking possession of the island was an act of violence, neither required by the necessity of the case, nor authorized by the instructions of the commander. M. Billaut, the present minister of the interior in France, attacked the policy of the Cabinet on this question with great vigour and logical acumen, and was followed in the same sense by M. Dufaure (the minister of the interior under the republic), whose calm, logical, and moderate language produced a great impression. The fidelity of the centres of the Chamber seemed shaken when M. Ducos proposed a resolution to the following effect:—"The Chamber, without approving the conduct of the Cabinet, passes to the order of the day." The censure, though indirect, was formal. M. Guizot asked for an adjournment, stating he had fresh facts to produce; but on the following day he produced neither facts nor documents, but threatened resignation if the indirect censure was carried. The proposition of M. Ducos was lost by a majority of 46. But this majority did not absolve the minister in the eyes of the country, for the voice of the 187 who voted with M. Ducos found an echo in every town and city in France.

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[1] The letters were published in the *Revue Rétrospective* by M. Taschereau, in 1848.

[2] *Lettre de Louis Philippe au roi des Belges.*

Harassed in the Chamber, M. Guizot was not without disquietude regarding the French possessions in Africa. Retiring on the frontiers of Morocco with the remnant of his regular troops, Abd-el-Kader, ever fertile in expedients, sought and found little difficulty in raising the undisciplined hordes of the desert against a Christian foe. The emir surrounded the emperor Muley-Abder Rhaman with his emissaries, and sought to excite him against the French. There had been differences between France and Morocco as to the frontier; and in the state of irritation in which the emperor was, Abd-el-Kader found little difficulty in inclining him to believe that France was confederate with Spain against him. The construction of a fort at Lalla Maghrina, on the left bank of the Tafna, by the French, convinced the court of Fez that the emir was right. The governor of Mogador called on the faithful to combat the infidels; and soon after Berber and black troops, to the number of 10,000 men, were seen in the environs of Ouchda. Among these irregular forces was Abd-el-Kader, with 500 regulars and a number of wandering tribes. General Lamoricière, who commanded the camp of Lalla Maghrina, was forced to concentrate his troops to avoid a surprise. General Bedeau arrived from Tlemcen to co-operate with Lamoricière. On the 30th May Lamoricière gained a signal advantage over Sidi el Mamoun-Ben Chérif, who was at the head of 500 horsemen, and pursued him to the banks of the Mouilah. A constant harassing gucrilla warfare was kept up. Marshal Bugeaud, feeling that this state of things must be put an end to, had arrived from Tlemcen to await the approach of the son of the emperor at the head of 30,000 men, and to determine on the spot whether he should negotiate or recommence hostilities. General Bedeau was directed to seek an interview with the Caïd of Oudcha, El Guennaouï, to settle the question of the frontiers. The interview was unsatisfactory, and, on the part of some of the irregular troops, menacing to the negotiation; but neither Bedeau nor Lamoricière would take upon themselves to pronounce that the conduct of the irregulars was a cause of war. But when the facts were reported to Marshal Bugeaud, the commander-in-chief, who was weary of ministerial weaknesses and vacillations, he resolved to strike a blow, and advanced at once against the enemy, chastising him, and occupying the Oudcha. On the 12th August the marshal marched against the son of the emperor, who had arrived on the banks of the Isly, occupying with his troops a space of two leagues between Djerf-el-Akhdar and Condiot. Each day the enemy expected new contingents, and he now summoned the marshal to evacuate Lalla Maghrina, proclaiming the holy war. To remain longer on the defensive was impossible. Crossing the river, the marshal fought the battle of the Isly, in which the French speedily gained an important victory. The army of the emperor of Morocco left 800 dead, and from 1500 to 2000 wounded, on the field of battle. The French had 4 officers killed, 10 wounded, besides 25 soldiers killed and 86 wounded;—10,000 French had in this battle vanquished 30,000 Africans. Nor were these the only triumphs. The Prince de Joinville had received orders to cruise on the coast of Morocco with a view to destroy the maritime towns and stations, and thus to second the operations of the army. On the 23d June the prince sailed from Toulon with eight ships of war. On the 6th of August, at day-break, he was before Tangier. At half-past eight the bombardment commenced, and at ten the fortifications were destroyed. The French had only 3 men killed and 17 wounded, whilst the emperor of Morocco had 150 killed and 300 wounded.

The prince subsequently attacked Mogador, destroyed the fortifications and magazines, captured three flags and ten brass cannon, and left a garrison of 500 men in possession of the island.

The account of these successes was received in France with immense rejoicing, but the credit of them was given, not to the Cabinet, but to the officers commanding, whose patriotic conduct was contrasted with the pusillanimous attitude of the king and his government. The news of these achievements arrived in Europe whilst the account of the arrest of the English consul Pritchard by Captain d'Aubigny (an event which gave rise to long and angry discussions in the French Chambers, and to still longer and as angry discussions in the French press) was still fresh in ministerial as well as in the public memory. The Count de Jarnac, attached to the French embassy in London, in writing to M. Guizot concerning the French attack on Tangier, intimated that Lord Aberdeen was preparing a despatch in which he would intimate to Lord Cowley the resolve of the English government to send back Mr Pritchard on board an English ship of war at any hazard to Tahiti.

A treaty was signed between France and the emperor of Morocco, the principal bases of which were, the withdrawal of the emperor's troops from the neighbourhood of Oudcha, the expulsion of Abd-el-Kader from the territory of Morocco, and a definitive regulation of the frontiers of Algeria and Morocco as both existed under the dominion of the Turks. This treaty, without any guarantee on the part of Morocco, was signed on the 10th September. 20,000,000 francs had been expended by France in the war, yet before the ratifications were exchanged she withdrew her fleet, raised the blockade, and evacuated the island of Mogador. The fact was, that the proceedings of the fleet and army of France had excited the mistrust of the English Cabinet, and the king of the French, who was most desirous of affording to Europe a striking testimony of the harmony existing between the two nations, resolved that the *entente cordiale* should be most speedily re-established.

A private personal reason also was not without its influence on the French monarch. Ever since the visit of Queen

Victoria to Eu, Louis Philippe had clung to the hope of returning the visit at Windsor, and no moment appeared more favourable for putting the project in execution than one in which France had shown a readiness to meet the wishes of the English government in respect to Morocco.

Arrival of Louis Philippe in England.

The king of the French disembarked at Portsmouth on the 8th October, where he was received by the Duke of Wellington accompanied by a numerous suite. Exclusive of the desire of his Majesty to exhibit this good understanding between England and France, there was a secret motive connected with the journey. The marriage of the queen of Spain at this moment occupied the attention of the principal cabinets; and although Louis Philippe was well aware that the rival powers, and above all England, would not quietly see a son of the king of the French a candidate for the hand of Isabella, yet his Majesty felt that Spain was so near a neighbour to France, and had so many common interests, that it was incumbent on him to interfere actively in the question. He was not without the hope, too, that the infanta of Spain, a year younger than Queen Isabella, might become the bride of his son the Duke de Montpensier. The ambition of a father and a monarch were equally interested in this arrangement, but dexterity and management were necessary to the success of these hidden and as yet scarcely avowed hopes. The subject had been hinted at, if not fully opened at Eu, and it was now resumed at Windsor. The wily monarch dexterously insinuated that in reference to the principal marriage he had exhibited the utmost disinterestedness, for that the hand of the queen—and in this he spoke truly—had been actually offered to a member of his house by Maria Christina some years before. The certainty of this brilliant alliance he had renounced, he said, to prove his friendly sentiments towards England, but he would not conceal the satisfaction it would afford him to obtain the hand of the infanta for the Duke de Montpensier. Her Majesty, with that tact and good sense which never desert her, raised no objections to propositions which ought never to have been broached in private, but politely hinted that Windsor was not the spot nor that the occasion for discussing serious diplomatic affairs. Lord Aberdeen, who had at Eu been often sounded by the king of the French, forgot not his characteristic prudence on the occasion; and while he protested his desire to act in harmony with France, added that England wished to pronounce no exclusion of any candidate for the queen's hand, and did not acknowledge the right of France to limit the choice of the Spanish government. "The marriage of the queen of Spain," said the English statesman, "is a question that concerns Spain alone, and in which no other power has a right to interfere, unless an attempt is made to marry the queen to a French prince—an alliance which, in augmenting the power of France, would compromise the tranquillity of other states." Louis Philippe at Eu renounced any pretensions on the part of his son to the hand of the queen, but was for limiting the choice to Bourbon princes. Lord Aberdeen intimated no obstacle to the selection of those princes, but did not recognise the right of veto of any other prince assumed by France.

At Windsor the king of the French resumed the subject with the British minister for foreign affairs, and openly expressed his desire that the Duke de Montpensier should marry the infanta some time after the marriage of the queen her sister. Lord Aberdeen, pressed on this point by paternal as well as kingly pertinacity, saw no objection to this proposal after the queen of Spain had issue. To this arrangement the king of the French assented in October 1845, whilst Sir Robert Peel was first lord of the treasury, and Lord Aberdeen minister of foreign affairs; yet on the 10th October 1846, when Lord John Russell was first lord of the treasury, and Viscount Palmerston minister for foreign affairs, the two marriages, namely, the marriage of the Queen Isabella of Spain and of her sister the infanta, took place on the same day and at the same altar, notwithstanding the previous engagement of the king in 1845, and the promise of his minister M. Guizot subsequently made on the 1st September 1846 to Lord Normandy, the English ambassador at Paris. This uncandid proceeding of Louis Philippe and his minister again separated the two courts, and what was still worse, the people of England and France, and permitted the northern courts to accomplish the last spoliation of Poland by incorporating the free city of Cracow with the empire of Austria.

Absorption of Cracow.

The minister of foreign affairs, Lord Palmerston, loudly complained of the disingenuous and quibbling conduct of a high personage and his minister in the affair of the Spanish marriages, and the sympathy of public opinion gave immense force to the strong state papers and just comments of the English minister. The conduct of the king was not only in violation of an ancient treaty, the treaty of Utrecht, but what was still less creditable, was in flagrant violation of his own royal word. From this moment the character of Louis Philippe sunk in general estimation, not merely in England but on the Continent generally. The northern courts neither liked the person nor admired the system of the citizen king; but from the epoch of the Spanish marriages they assumed towards him an attitude more reserved and distrustful. Even M. de Metternich, who had previously shown some disposition to a better understanding with France, now adopted a more haughty and distant language. In a word, the Spanish marriages more fully isolated the monarch of France from European co-operation than any previous act of his reign. The whole proceeding was worse than diplomatically criminal, for there was a disingenuity and a quibbling which attached to the personal character of two of the most remarkable men of the French nation—the one the very first in rank, the other the very foremost in learning, eloquence, and general intellectual capacity.

The parliamentary conduct of M. Guizot on the question of the right of search on the Marchesas Island, and on the indemnity to Pritchard, had rendered his name odious in France. His conduct on the Spanish marriages rendered him unpopular in England. Louis Philippe himself, too, seemed weary of a servant who constantly postponed the question of the *dotation* of the Duke de Nemours, and who, in so doing, seemed more chary of his portfolio than of the interests of the crown and of the family of Orleans, an interest which was all in all to Louis Philippe. Intrigues were set on foot to get rid of the unpopular minister, but the incontestable talent of M. Guizot as a debater saved a statesman who was not popular either with the monarch, with the people, or with foreign courts.

The *parti prêtre.*

In proportion as the French government departed from an honest and manly course abroad, and from a popular and liberal course at home, in the same degree was it obliged by a kind of fatal necessity to seek allies in a camp naturally hostile. The majority of the nation repudiated the system of the king and his ministers, and they now turned to the clergy for support. Till the period when M. Guizot became minister the government had sustained the university against the clergy. But in February 1844 M. Villemain presented to the Chamber of Peers a project of law by which the smaller ecclesiastical seminaries were erected into schools at once private and public, remaining all the while exempt from the conditions to which every other class of schools was subjected. This privilege, which even the government of Charles X. had refused to grant to the clergy, was energetically attacked by M. Cousin. But the clerical and ultramontane party were encouraged by the queen of the French, who interfered in the quarrels between the bishops and the university, lending her powerful aid to the order of Melchisedec. There was now an additional but a selfish reason for the government clinging to the priests. Ministers were in need of clerical support in the electoral struggles. When ultramontane priests cannot dictate in Roman Catholic countries, they look upon themselves as in a state of slavery. The *parti prêtre* in France had accordingly daily required fresh concessions, and worried and harassed M. Villemain to such an extent that his health gave way. Not content with assailing him in the Chamber and in their press, they exercised a secret and mysterious influence against him, and in the beginning of 1845 he was replaced in his high office as minister of public instruction by M. de Salvandy, a person of a more pliant, priestly, and servile nature. Antecedently to M. Salvandy's inauguration in office, the Jesuits, though formally excluded from the French territory, appeared in the towns and villages without noise or ostentation. Now they openly acknowledged themselves the owners of large and spacious houses. They counted twenty-seven extensive and wealthy establishments in France, from which they carried on an immense correspondence with the Père Roothaan, the head of their order at Rome, who had under his immediate influence and direction every Jesuit establishment in Europe. The friends of liberty and political independence in France were alarmed at this state of things, and resolved to commence the offensive against a system which had roused the anger of the nation in the time of Charles X.

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It was M. Thiers who opened the discussion in the Deputies on the 2d May; and after tracing the history of the order—their expulsion by decisions of the parliament—their condemnation by the court of Rome—their clandestine return under the empire—their quasi re-establishment in 1814—their discredit and decay from 1826 to 1828, and their audacious and encroaching spirit since 1830, the speaker called on the government to put the laws in execution, and not to shut their eyes to a real danger. "If," said M. Thiers, "ministers encounter a difficulty in applying the laws, they will find in this Chamber a zealous and unanimous adhesion. We will strengthen the hands of the government by every means in our power, and afford them the means of vanquishing difficulties, for I and my friends believe that our first duty is to give force and effect to the laws of the country." The answer of the minister of public worship, M. Martin du Nord, to this speech was evasive, shuffling, and jesuitical. He admitted there were laws against illegal religious associations, not one of which had fallen into desuetude, laws which had been always applied. But M. Martin contended that the danger was not so pressing now as to call for the interference of the executive, and that the government ought to be allowed a certain liberty as to the choice of time and means. This answer neither satisfied the liberals nor the ultramontane Roman Catholics. To the one it appeared a subterfuge, to the others an act of weakness. M. de Carné, the organ of the ultramontanes, maintained that the accusations against the Jesuits masked a project to attack the church itself. M. Dupin, in an able speech, maintained that the laws which existed ought to be put in force. "The Jesuit," said he, "is not an individual, he is a complex being—he exists as a member of a congregation. Other Frenchmen take an oath of obedience to the king and the laws of the kingdom, but the Jesuit is not a Frenchman in this sense. He takes an oath of absolute obedience to a stranger who is a foreigner. To him he sacrifices his individuality; he is in his hands as a mere corpse. The society of Jesuits," said he in conclusion, "possesses a character essentially political, and is imbued with a dominant and turbulent spirit which causes it to be feared by sovereigns, and even by popes themselves."

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M. Berryer attacked the laws which affected congregations, and maintained they were contrary to principles of liberty. This is the argument of the legitimists when they are the weaker party. The word liberty is then ever in their mouths. The discussion terminated by an order of the day, proposed by M. Thiers, to the effect that the Chamber, in the conviction that the government would cause the laws to be executed, pass to the order of the day. This proposition was carried by an immense majority, a majority proving the force of public opinion; for the Jesuits were so powerful in the country that it needed no common exercise of courage to vote against them. The vote was a check and an embarrassment for the government, which feared to act without having the support of Rome, that is to say, of that superior spiritual power which is the essence of Catholicism. A member of the Royal Council of Public Instruction, a Signor Rossi, a Bolognese by birth, and therefore a subject of the Pope, though a naturalized Frenchman, was despatched on the part of the French government to Italy to beg that the establishments of the Jesuits, their chapels and noviciates, might be closed, and that they might no longer live in common but be dispersed. He was further instructed to ask that such of the fraternity of Jesuits as continued to reside in France should enter into the category of the ordinary clergy, and submit themselves to the authority of bishops and parish priests. The answer of the Romish court consisted of subterfuges and evasions. The extraordinary congregation of ecclesiastical affairs unanimously decided that the Holy See could not and ought not to take any part in measures which concerned the constitutional rights of French citizens. Thus foiled in his first attempt, M. Rossi addressed himself directly to the Pope, and pointed out to him the dangers of a struggle in which the whole body of the clergy might be involved. Gregory XVI. yielded to these arguments, and entered into negotiations with Father Roothaan, for even the Pope was obliged to temporize with this formidable order. Roothaan counselled a seeming submission to the disciples of his order. The Jesuits ostentatiously shut up some of their principal houses in France and changed their names, as they have often done before, to *Paccanaristes* and *Pères de la foi*. But under a change of name and designation they maintained a real influence which they exercised sometimes openly but more frequently occultly. They still, in conjunction with the ultramontane Roman Catholic party, headed by M. Montalembert, continued their war against the university, and were neither disarmed by the complaisance of M. de Salvandy, nor by the seeming composure but real timidity of M. Guizot.

Several propositions of electoral and parliamentary reform were brought forward this session with no better success than in the preceding years. M. Ledru Rollin proposed the abolition of the census of eligibility, and a daily stipend by way of indemnity to each member of the Chamber. These propositions were rejected. A slight modification was, however, introduced into the mode of voting. On the motion of M. Duvergier d'Hauranne, an open balloting of divisions was agreed to, but secret voting might always be resorted to on the demand of 20 members. The session was closed on the 21st July, after a series of parliamentary vicissitudes which threatened the existence of the ministry. The Chamber had been far too servile. It was now condemned to a premature dissolution, and was in a short time, as will be seen, dissolved by ordonnance.

Close of the
session.

The constitutional left formed, in anticipation, an electoral committee, inviting the different sections to unite against the common enemy. When the dissolution took place, manifestoes were written and addresses delivered to the electors; and among the rest, M. Guizot delivered, on the 10th August, a speech to the electors of Saint Pierre-sur-Dives, in which he vaunted his own policy, and replied to the charges of corruption which were on every side urged against his ministry. It must be admitted that the Cabinet by its conduct had given too much cause for these complaints. The *arrondissements* which returned ministerial members were loaded with favours. Their schools were better endowed, their churches repaired; their roads kept in perfect order. The public money was distributed, not according to the wants of localities, but according to the votes of the deputies. The corruption was collective, and in the gross, but it was not on that account the less dangerous. Nor were there wanting hundreds of instances of individual favours bestowed from political causes totally irrespective of merit. Thus influential electors obtained bursaries at colleges for their children, government employments for their relatives, post-offices, *bureaux de tabac*, &c. No locality in France had been more satiated or less satisfied with these favours than the place which M. Guizot himself represented. Addressing the electors, in order to parry these accusations, he exclaimed,—"Do you vote less freely, less honestly, because I have helped you to repair your churches and schools, or because I have opened a career to your children? Do you feel yourselves corrupted because of these things?"

There was one portion of M. Guizot's speech, which specified a public question, in which he had made a little progress. On the 24th May 1845, a treaty had been signed by the Duke de Broglie on the part of France, and Dr Lushington on the part of England, by which the reciprocal right of search was done away with, each nation exercising this right over the ships carrying its flag. This treaty was to have a duration of ten years, and if at the end of the tenth year the treaties of 1831 and 1833 had not been put in force they were to be considered as abrogated.

1846.

In the interval between the dissolution and the new session M. de Salvandy had exhibited a pernicious activity in regard to the university. On the 8th January 1846, M. Cousin, in the Chamber of Peers, exposed the system of ministers in regard to the university, and showed that day by day the clergy were possessing themselves of a monopoly of teaching, and by their writings and preachings were exercising all the influence of hierarchy and priesthood to discredit and destroy the university of France.

Letters were at this period published in the *National*, stating that Poland had again risen, and was in arms for her independence. On the basis of these letters some spirited articles were written by M. Armand Marrast, and such was the effect produced in the excited state of public feeling, that a sum of 200,000 francs was raised for the benefit of the insurgent Poles in the space of a few days.

M. de Remusat again brought forward, before the dissolution, his proposition against public functionaries sitting in the Chamber. He was supported by M. Thiers in a speech of great boldness and vigour. M. Duchâtel feebly replied; but the government, notwithstanding, obtained a majority of 48, the numbers being 184 in favour of the proposition, and 232 against it.

On the 16th April 1846, another attempt was made on the life of the king by one Lecomte, who had been employed as a kind of gamekeeper in the Royal Forests. He fired two shots at Louis Philippe, as the monarch, accompanied by the queen and several princes and princesses of the royal family, was taking an airing in the forest of Fontainebleau. Lecomte had been discharged from his employment for a breach of duty, and his act was dictated by a wild species of revenge. Such, however, was the blindness and bitterness of party spirit—such the over-anxious zeal of flatterers, that there were not wanting government scribes to charge the attempt on the writers and speakers of the opposition. The trial of Lecomte disproved these rash assertions. He paid the penalty of his guilt by suffering as a parricide.

Escape of M. Louis Napoleon Bonaparte.

Whilst the indictment against him was in the course of preparation, an unexpected event caused some alarm to the partisans of the Orléans dynasty. On the 25th May Louis Bonaparte escaped from the castle of Ham, in which fortress he had been for six years a prisoner, and in a few hours was at Valenciennes, on the road to Brussels, whence he proceeded to London.

About the period of the escape of M. Louis Bonaparte, the Duke de Bordeaux espoused the Archduchess Maria Theresa of Modena, eldest sister of the reigning duke. This was the only prince in Europe who had refused to acknowledge the royalty of Louis Philippe.

More serious matters than the escape of one pretender, or the marriage of another, occupied the French ministry. A few days after the closing of the session an *ordonnance* for the dissolution of the Chambers appeared. The elections were fixed for the 1st August, and the Chambers were convoked for the 19th of the same month. The left centre and the Constitutional left having coalesced, operated together against the ministry. The radicals, without using the word republic in their addresses, demanded republican institutions. The legitimist party directed all their efforts to the question of *la liberté de l'enseignement*, which in their mouths simply meant the surrender of public instruction to the ultramontane Jesuits. This party was led by MM. de Montalembert, de Vatismenil, and de Riancey. The object of these politicians was to ruin the university, and to stifle all freedom of thought and of opinion, by giving full sway to the ultramontane clergy.

No one was keener in the electoral struggle than M. Thiers. The political rival who had supplanted him had hitherto resisted all parliamentary attacks, either eluding or meeting difficulties, and sometimes even making a merit of his faults. The opposition of M. Thiers was whetted by personal impatience, for the ministry of M. Guizot had now lasted for six years—a ministerial existence altogether more prolonged than had been granted to any ministry since July 1830. Attached to representative government, M. Thiers saw that the system ran the risk of perishing in the hands of a man who never opposed an energetic resistance to the will of the king—a king who did not dissemble his disdain for a constitutional system—a king who, during his sixteen years' reign, did everything in his power to nullify and corrupt representative institutions. M. Thiers therefore composed an address to the electors of Aix, in which he not merely criticised the acts of the government, but warned it of the perils which must await it at no distant future. This document was communicated to MM. Duvergier d'Hauranne, de Réumsat, and Léon de Malleville, but these gentlemen found it too hostile even to royalty. The letter is given *in extenso* in a recent history;[1] but we doubt whether it would have exercised much influence on the electors. It is, however, to be regretted, that M. Thiers, yielding to timorous and unwise counsels, suppressed the document in July 1846. In serious and solemn crises of a nation's fate a public man ought to give his country and its rulers the benefit of his candid and honest advice and opinion. A few days after M. Thiers' address was written, another attempt was made on the life of the king.

Attempt on the life of Louis Philippe.

On the 29th July, whilst from the balcony of the Tuileries his Majesty was saluting the crowd assembled for the July *fêtes*, two shots were fired at him by a person named Henri, who remained hidden behind one of the statues in the garden. The man was a lunatic, and his madness was caused by a reverse of fortune. He had fired without taking aim, and from a pocket pistol which would not carry half the distance. The ministry, however, converted the attempt into political capital, and gained many votes among the timid.

Result of the elections.

The result of the elections surpassed the most sanguine expectations of the ministry. The Conservatives were returned in a compact majority, and the position of M.

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[1] *Hist. de Huit Ans*, par Regnault, 1852.

Guizot seemed for the moment unassailable. Yet there were monitions sufficiently audible. Among candidates, as well as among electors, the word reform was everywhere confidently and hopefully pronounced. Even the Conservatives in their programme promised moral and material improvements. It may be taken as a sign of the times, that M. Emile de Girardin, the editor of the *Presse*, made his promise of support of M. Guizot conditional, and stipulated that either political or material reform should be promised by the minister. Some Conservatives also, as MM. Desmousseaux de Givré, Sallandrouze, and others, formed a conservative opposition, with a view to stop the progress of what they feared to be a counter-revolution. M. Guizot endeavoured to render them passive by a discourse which he delivered at Lisieux. When the newly elected Chamber met at the close of August, the government candidate for the presidency, M. Sauzet, had a large majority. He obtained 120 votes, whilst M. Odillon Barrot, the candidate of the opposition, obtained only 98 votes. M. Guizot finding he possessed a considerable majority, thought no more of the promises made at Lisieux, and because he could manage the Chamber, believed himself in a position to master France. Blindly and obstinately he resisted all reform or promise of improvement, asserting that the country was perfectly content with his system. The session lasted only a few days; but soon after the deputies separated, it was evident that the nation was threatened not merely with a pecuniary crisis but with a famine. The harvest of 1845 had been but a scanty one, and the evil was considerably aggravated by the disease in the potato. The harvest of 1846, now in course of gathering in, was much inferior to the harvest of the preceding year.

The commercial community made an appeal to the minister, with a view to the opening of the French ports, but the minister of commerce, the slave of routine, was perplexed and confounded by an unexpected crisis, and adopted a course of action too tardily. Instead of looking abroad for corn, M. Cunin Gridaine looked to the prefects for statistics to prove that the harvests of 1843 and 1844 had made up for the deficiencies of 1845 and 1846. The complaisant functionaries and bureaucrats of France proved, in the very teeth of a famishing people, to the satisfaction of the minister, that supplies were abundant. But ministers soon found their illusions and official fictions dispelled. A royal ordonnance opened the ports, but opened them too late. When corn might freely enter Marseilles and Arles, frightful inundations cut up the roads, stopping the internal traffic. Communications between the Black Sea, the Sea of Azoff, and France were also interrupted by the frost. The war department, which annually consumes 500,000 quintals of wheat, however, decided on obtaining its stock of provision for 1846 and 1847 from abroad, and the navy adopted a similar course, ordering 100,000 quintals. In the different towns and cities of France, where the sufferings of the poor were severest, the municipal authorities took measures to diminish the price of bread to the indigent working classes. In Paris the municipal council maintained the price of bread at 80 centimes the two kilogrammes. The enormous sums paid in consequence of this arrangement obliged the city to contract a loan of 25,000,000 francs. To add to the general misery, there was a deficiency of bullion in France, caused by improvident and ruinous speculations in all kinds of joint-stock companies. The monarch and the minister wished to unduly develop and stimulate material prosperity, with a view to suppress all political yearnings, and the result was, that all the viler and more sordid passions of the community were excited into a perfect frenzy of inordinate and reckless speculation. Gold and silver specie rapidly disappeared, and the Bank of France was shaken to its centre. On the 31st December 1846 its unguaranteed *billets* amounted to 258,000,000 francs, and the accounts current of the treasury and private individuals attained an amount of 110,000,000. There was a total of liabilities amounting to 368,000,000, represented only by 71,000,000 of specie. In order to establish an equilibrium between Paris and other cities, it was necessary to give money a higher value, by raising the rate of discount. From the commencement of January 1847 the Bank of France raised its rate of discount from 4 to 5 per cent. Even this measure would have been insufficient had not the Emperor of Russia, on the 17th March 1847, purchased *inscriptions de rente* of the Bank of France for 50,000,000 of specie, at 115 f. 75 c. This operation caused a great sensation, and "sent up," to use the phrase of the stock exchange, the public funds. Some there were who saw in the operation a political move. But there was nothing political, though there was a good deal of policy in the transaction. The Emperor of Russia merely wished to embark in a speculation which was doubly profitable to him. By obtaining 50,000,000 of specie, France was enabled to extend her operations in the purchase of Russian corn, and Russia having vast magazines of corn to sell, found a fresh vent for it to the extent of 50,000,000. So that the Emperor of Russia, vender of corn and purchaser of *inscriptions de rente*, realized a double profit on these operations, preserving his specie and selling his corn.

Absorption of Cracow.

Great was the emotion in France at the absorption of the free city of Cracow. All parties condemned this act of audacious spoliation, which presented a new complication to M. Guizot. The French minister for foreign affairs instructed M. Jarnac of the French embassy in London to invite the co-operation of Viscount Palmerston to a joint note to the northern powers; but the English minister of foreign affairs laconically replied, that he had already prepared one, which he would communicate to the English minister in Paris. No English minister at that period could have felt safe in jointly acting with M. Guizot. The affair of the Spanish marriages had produced a worse feeling than distrust. The language of Viscount Palmerston on the question of Cracow was strong and indignant; but as Great Britain was justly isolated from France, there was less effect produced by her strong language. The note of Viscount Palmerston was forwarded on the 23d November, that of M. Guizot on the 3d December. To the French people, amazed and indignant, the state paper of M. Guizot appeared a feeble and puling protest. The dissension existing between England and France, in consequence of the Spanish marriages, produced more extended evils. In the affairs of Switzerland M. Guizot was completely influenced by the policy of M. de Metternich. France, in concert with Austria, combated everything like a liberal spirit in Switzerland, favoured the Jesuits, and protected the old feudal aristocracy. The Protestant cantons in Switzerland wanted reform and unity, the Catholic wanted Jesuitism and federalism. Lord Palmerston gave his support to the first cause, but M. Guizot, though a Huguenot, sided with M. de Metternich and the disciples of Loyola, and threw all his influence into the Sonderbund.

Session of 1847.

The session of 1847 presented difficulties both at home and abroad. Different doctrines and different chiefs appeared for the first time in the arena. Various professors of St Simonianism, Fourierism, Icarianism, contended for public favour, and there was a party of Conservatives who preached what they called *la politique des interéts*, and called for *les reformes matérielles*. The most bustling and active among these was M. Emile Girardin, editor of the *Presse*, who was supported in the Chamber by MM. Desmousseaux de Givré, de Castellane, and other deputies. M. Odillon Barrot attacked the conduct of the government in reference to Cracow, and even M. Dupin expressed himself as not satisfied with it. M. Thiers reserved his speech for the discussion on the Spanish marriages. That question

New parties.

Party discussion.

was opened on the 4th February, and M. Thiers, in a long and able speech, proved that the marriage of the Duke de Montpensier to the infanta produced not one advantage to France, whilst it was the cause of many disasters. The alliance with England—so absolutely indispensable to protect the menaced nationalities, and liberty itself—was broken. This alliance, desirable whether Tories or Whigs were in power, was most especially desirable when the liberal spirit of the Whigs was so directly opposed to the absolutist northern powers. "To break with the Whigs at such a juncture in the state of Europe, in the state of the world," said M. Thiers, "is to proclaim a reactionary spirit."

M. Guizot replied to M. Thiers with consummate oratorical ability. Everybody admitted he possessed the talent of expressing himself in the ablest and happiest manner; but it was generally observed that the man who spoke with such apparent candour and simple straightforwardness was generally involved in awkward dilemmas. As to the Spanish marriages M. Guizot attempted to turn the tables on Lord Normanby, but in this effort he failed to obtain the adhesion of any but mere political parasites. The English government and the English people, as well as dispassionate Frenchmen, gave Lord Normanby credit for frankness and fair dealing. The very best disposed among the partisans of the French minister felt that he was getting his majority into difficult and untenable positions, not merely dragging his political followers and adherents through the mire, but compromising the peace of the world. The discontent of the Conservative section of the Chamber was general. It was, however, muttered in the theatres and whispered in society rather than loudly expressed. So great, however, was the number of functionaries in the Chamber, and the secret means possessed to influence votes, that when a division on the address took place it was carried by 248 votes against 84.

Letter of Viscount Palmerston to Lord Normanby.

We have said that M. Guizot, in his speech on the debate, had attempted to cast imputations on the English ambassador, Viscount Normanby. So soon as a report of the speech of the French premier reached England, the principal secretary of state for foreign affairs addressed a letter to the English ambassador informing him that his government placed the utmost reliance on the fidelity and exactness of all his reports, and that nothing said in the Chamber of Deputies would have the least effect in disturbing the conviction entertained by her Majesty's government of the entire and perfect truth of Lord Normanby's detail of the conversations held with M. Guizot. The entire British Cabinet felt the stain attempted to be cast on the English ambassador as a wound, to use the words of Burke. Lord John Russell intimated to M. de St Aulaire, the ambassador of France, in the presence of two of his Cabinet colleagues, that the entire Cabinet made common cause with Lord Normanby, and that unless reparation were made to him the indignant feeling of the English ministry would be manifested in a more direct manner. Ultimately, through the good offices of M. Appony, the Austrian ambassador, M. Guizot entered into explanations with Viscount Normanby, and disavowed any intention of impeaching his veracity or personal honour.

Scarcity-riots.

While the French premier was rendering himself unpopular, if not odious, abroad and at home, the people of France were acutely suffering from the dearness and scarcity of provisions. The dread of famine augmented daily in the departments of the west and centre of France. Various depots and warehouses containing corn were sacked. Serious riots took place at Tours, and boats laden with corn were pillaged. At Laval the insurgent populace fixed the price of corn. Venders were obliged to sell at this rate in the open market, despite the authorities. Rennes, Mans, Mayence, and Nevers were up in arms. Almost on every side bodies of workmen perambulated the country, demanding bread and labour. Hundreds of mendicants spread terror in isolated localities. In many parishes of the department of the Indre numerous bands invaded the houses of proprietors, forcing them to sign an agreement to sell corn at three francs instead of seven francs the double *décalitre*. Such proprietors as refused to yield to this absurd and wicked demand were the victims of their refusal. One landowner was assassinated at Buzançais, another at Belatre. At Châteauroux the workmen of the railroad invaded the market with their tools in hand, and had to be dispersed by an armed force. It was necessary to obtain from the Chambers an extraordinary credit to increase the effective force of the army in the interior of the country. This increase added 16,000 men to the line, and consequently augmented the public charge by a sum of 16,000,000 of francs, which would have been much better applied to the relief of the distressed.

Severity of assize courts.

It was necessary for the courts of law to terrify by the example of severe punishments. Three rioters were condemned to death, four to perpetual hard labour, and eighteen to various terms of labour, by the assize court of l'Indre. The executions took place in the presence of a silent and sullen multitude, who commiserated the victims and blamed the government. A profound hatred to the landed proprietors of Buzançais grew out of these events, and more than one Socialist excess can be traced to this origin.

Dissension in the ministry.

In the midst of these internal and external difficulties, the ministry was neither homogeneous nor united. The death of M. Martin du Nord, which took place on the 11th March, introduced into the Cabinet M. Hebert as his successor, a man whose only recommendation for office appeared to be his antipathy to the press, and his hatred of every liberal idea. The war department, since the recent retirement of Marshal Soult, had been filled by an incapable and almost an unknown general, Moline de Saint Yon, and the navy was presided over by Admiral Mackau, a person of notorious parliamentary incapacity, who had signally failed as an administrator. Both these ministers resigned on the 8th May—the minister of war voluntarily, the minister of marine to avoid the charge and unpopularity of measures for which he was not personally responsible. M. Guizot wished to get rid of the minister of finance who had not shown a sufficiently accommodating suppleness, but notwithstanding many broad hints M. Lacave Laplagne refused to resign. The fact was, that the finances of the country were in an alarming position, and to have resigned at such a moment would have been an admission that the mismanagement lay with the individual minister. M. Lacave Laplagne urged that for the financial position the entire Cabinet was accountable, as it was the Cabinet as a body which had increased the expenditure of the army and public works. He therefore refused to resign, and was dismissed by his colleagues.

Dismissal of finance minister.

Difficulty of finding new ministers.

No one seemed willing to accept the three vacant places. Even such third-rate mediocrities as MM. Bresson, Muret de Bord, and Bignon refused portfolios.

In this dilemma, when a seat in the Cabinet was a thing to be shunned, the telegraph informed General Trézel, commandant at Nantes, that he was called to the ministry of war, M. Jayr, prefect of Lyons, that he was named to the ministry of public works, in the place of M. Dumon called to superintend the finances. At the same time a steamer was despatched in all haste to Naples to announce to M. de Montebello that he was minister of marine.

Prospects of the ministers and opposition.

These nominations were scarcely considered as serious, and it was now evident that time had not strengthened, but had, on the contrary, weakened the Guizot ministry. The opposition, on the contrary, notwithstanding repeated checks, had lost no portion of its boldness and vigour. To speak truly, the vices of the electoral system—its narrow basis—its unjust exclusions—the facilities it offered to corruption and intrigue—were capital topics to engage the attention of the public. Reform was the chosen question on which the opposition meant to dwell. Though vanquished in the secret division, the opposition always had the advantage in argument. The Conservatives, who wished for progressive reforms, intimated to the minister that they could no longer continue docile and obedient instruments, and announced that they were dissatisfied with the fatal and unyielding words, *rien, rien, rien*, which M. Guizot had pronounced in debate. But the proud and obstinate doctrinaire would not retract, and gave no sign of a willingness to correct proved abuses.

The government soon received a lesson. A vacancy had occurred in the vice-presidency of the Chamber, for which the Cabinet had put forward a M. Duprat. The opposition started M. Leon de Malleville, a partisan of electoral reform, who was chosen, some even of the discontented Conservatives voting for him. M. Guizot was startled at this result, and was dismayed when some young conservatives voted in the bureaux for taking into consideration the proposition of M. Duvergier d'Hauranne for electoral reform.

In the discussion on this question M. Odillon Barrot drew a fearful picture of the progress of corruption, of the number of functionaries, of the avidity of solicitors for place always increasing in immense progression. In answering the orator of the opposition M. Guizot stated, that he could see no necessity for the motion—that no reform was needed. Fatal and obstinate blindness of a minister, who, with all his ability and powers of exposition—with all his rich and varied erudition—it was clear, comprehended nothing of the state of feeling and of opinion in France. The obstinacy of the minister was sustained by a majority of 98 voices, in a Chamber filled with functionaries, and elected out of a narrow fraction of the population.

In the discussion on M. de Remusat's proposition relative to Deputies' functionaries being again brought forward, M. de Castellane, willing to afford M. Guizot a *locus pœnitentiæ*, asked the minister what measures of amelioration he would bring forward, and when. To this personal appeal M. Guizot responded by a negative gesture, whereupon M. de Castellane rejoined, "Well, then, since all reform is in principle repudiated, we think it necessary to vote for the proposition of M. de Remusat." The obstinate pride, the unwise reserve of the minister, lost him the support of 49 votes. His majority on the motion of M. d'Hauraune was 98. On this occasion it was only 49.

Postage reform.

M. Glais Bizoin had brought forward a question, many times introduced by M. de St Priest, for a reduction in the rate of postage. But as every change, however beneficial and good, was resisted by the government, M. Dumon, the finance minister, opposed the motion. His arguments, if such they could be called, were triumphantly refuted by M. Dufaure (subsequently minister of the interior under the Republic); and such was the effect of this able statesman's convincing speech, that the Cabinet had only a narrow majority of 25.

It was now evident that the Chamber would resist all improvement and all reform. The discussion on the postage law had proved the justice, the utility, the necessity, and the facility with which such a change could be promptly effected. The Cabinet had neither pretext nor reason for their blind and stupid resistance. The more intelligent among the Conservatives lamented this blind infatuation; the more intelligent among the dynastic opposition became alarmed at it; whilst the radical reformers were comforted in the hope that this resistance to what the wiser Conservatives called material reforms, would lead to electoral reform, which would bring all other reforms in its train.

It was now evident that there was dissension in the Conservative camp among the followers of ministers—a dissension soon to be increased by the revelation of scandalous facts of corruption, which implicated persons in a high position, one of whom was a Cabinet minister. The other had already been minister of war in two separate Cabinets. For several years the existence of corruption and malversation in the public offices and establishments of France had been loudly proclaimed by the opposition deputies. But to all charges of this kind M. Guizot gave an indignant denial. But now civil and correctional processes, and even criminal proceedings, revealed the hideous plague spots in official life. For several years the press had pointed out the disorders, dilapidations, pilferings, and peculations in the department of the marine. These accusations had been repeated in the Chamber of Deputies, and the *Cour des Comptes* also had expressed itself in language which could only be misunderstood on the supposition of wilful blindness or complicity with the criminals. The Chamber of Deputies had come to a resolution that a strict system of account should be established in all the ports, arsenals, and dockyards. This decision of the Chamber was about to be put in execution when, at the close of 1845, an immense fire broke out in open day in the Mourillon, the second arsenal of Toulon. The hour at which this fire took place, the impenetrability in which all the circumstances were involved, the futility of any attempts to discover the authors of the crime, the period of its occurrence, covering as it did with a veil of darkness manifold malversations, all led to the belief that it was a concerted scheme of some criminals in office. The loss to the nation was three millions, but the official peculators were for the moment saved from exposure. Inquiries, however, were instituted in other quarters, and the most scandalous malversations were discovered at the dockyard of Rochefort. Pilferings and abuses took place in the supplies of bread, corn, wine, salted provisions, firing, candles, &c. Though first qualities of provisions were ordered, inferior were introduced. Millers brought in corn and flour of inferior quality, with which beans and dried vegetables were mixed to the extent of 38 per cent. The proceeds resulting from these frauds and dilapidations were divided between the employés and the contractors and victuallers. It appeared that in respect to wood, 4000 f. worth had been abstracted in one day's pillage. As to the salt provisions, the pillage was even on a greater scale. The notoriety of abuses of this kind at length forced the central authorities, who had been so long supine, to interfere. The guilty parties were indicted before the *Cour d'Assises* at Poitiers, and from the report of what took place the public was made acquainted with the organized system of plunder that had been carried on by the public servants. M. Sanson, comptroller of the navy, who was examined on the trial, stated that he had vainly struggled against the evil, and that all the representations he addressed to the minister and maritime prefect were without effect. At Toulon, Brest, and Rochefort, examples were not wanting of clerks with a salary of 2000 f. or 3000 f., amassing in twenty years fortunes of from 200,000 f. to 300,000 f. When all these facts became known, the impression produced was profound. Ministers could no longer remain inactive, and it was determined to prosecute the *Directeur des subsistances* at Rochefort. But the *employé* anticipated a too tardy public justice by committing suicide.

Fire in the arsenal of Toulon.

Pillage at Rochefort dockyard.

Organized plunder of public stores.

Suicide of a functionary.

Affair of Bénier.

Shortly before these deplorable discoveries, a person of the name of Bénier, who had been *directeur des vivres* at Paris, died, and there was discovered a deficit of corn to the value of 400,000 francs. Independently of this, the successor of Bénier stated that the corn in store was of so bad a quality that the soldiers could not use it. Notwithstanding all official regulations, it appeared that the authorities had dispensed with Bénier's furnishing a security. An unfortunate *chef de bureau*, named Tessier, who had several years previously reported that the accounts of Bénier were in disorder, was treated as a calumniator for no other reason than that Bénier had powerful friends among the ministers. Tessier was from that moment placed under official ban, and soon after died of a broken heart. This, however, was not the worst. Certain official men wished to retrieve the memory of Bénier, but the crime and the attempt to cloak it over were denounced in the session of 1846 by M. Lanjuinais. The Chamber, indignant at the attempt, ordered an inquiry; and the impression produced by the disclosures weakened the authority of the government, and furnished frequent arguments to the partisans of reform.

Affair of Drouillard.

The affair of Drouillard, which was heard before the Assize Court of Maine and Loire in February 1847, was scarcely needed to increase public indignation. Drouillard, a kind of discount agent and usurer at Paris, had stood for Quimperlé. The electors of Quimperlé, for the most part petty farmers, were open to the seductions of a capitalist, and he bribed them on all hands. The whole population the parish priest among the number, had all partaken of M. Drouillard's money. It was proved by the books of his principal agent that 145,000 francs had been expended. Drouillard was found guilty and condemned to a fine of 7400 francs, and to the interdiction of civil and all public functions during the space of ten years. In this instance, it is true, the government was not mixed up in the affair; but the facts serve to show the fundamental vices of a system which, in giving the franchise to a small number of electors, only facilitated bribery—opening constituencies to the corrupting influences of a capitalist who would buy the votes of others, with a view to sell his own at a considerable profit on his original outlay.

Other acts of corruption.

People were wondering at the marvellousness of these incidents, when Paris was startled by another denunciation of administrative corruption. Day by day M. de Girardin proclaimed in his journal, the *Presse*, that the privilege of a third lyrical theatre was granted only on the payment of a sum of 100,000 francs paid to the credit of the newspaper called the *Epoque*. "It was M. Duchâtel," said Girardin (M. Duchâtel was then minister of the interior), "who had himself dictated the terms of this shameful bargain." To this accusation the minister made no reply. In a debate in the Chamber he was twitted with the circumstance; and after Girardin had alleged the facts and furnished the proofs, M. Duchâtel contented himself with equivocal denials.

This was not the only scandal. The *Epoque* being in want of money, M. Granier de Cassagnac, the editor, had promised, according to the statement of M. Girardin, the postmasters, for the sum of 1,200,000 francs, to procure the passing of a project of law favourable to their interests. M. Duchâtel merely replied that the fact was not probable. The circumstance was repeated in all the journals, and not one of them was prosecuted. M. de Girardin further stated that the promise of a peerage had been sold. When cited for this scandal before the Peers, Emile de Girardin entered into very full explanations, and was acquitted, and the accusation fell with augmented force on the ministers.

Affair of Cubières, Teste, Pellapra, &c.

The most scandalous affair of all, however, was the affair of General Despans Cubières, minister of war in 1839, and again in the Cabinet presided over by M. Thiers in March 1840. In the course of a suit between M. Parmentier, director of the mines of Gouhenans, it was disclosed that the general, who had been himself twice minister of war, received certain sums to bribe the minister of public works (Teste) with a view to induce him corruptly to favour the company in which Cubières and Parmentier were shareholders. Parmentier having a quarrel with the general, which ended in a suit, certain letters were made public which exposed the affair in all its nudity. "The government," said Cubières, in one of his communications, "is in sordid and corrupt hands, and M—— insists on having 50 shares before the 'concession' is made." The agitation and amazement that prevailed in the public mind when these details were made public was very great, but it was not greater than the consternation that prevailed in the ministerial circles. M. Guizot was surrounded by deputies who implored him to dissociate himself from this scandalous affair by exposing the guilty parties, if guilty parties there were. The minister came to this resolution in a Cabinet council, but before his intentions were generally known it was announced that several members of the majority would ask explanations in the Chamber. M. Muret de Bord was the first to question the government, and M. Dumon, in reply to him, declared that the grant to the Parmentier Company had been regularly made, but in order to put an end to the alarm and anxiety of the public mind, the government would cause an inquiry into the existence of corrupt practices. In three days afterwards the minister of justice appeared in the Chamber of Peers to read an ordonnance, which directed the Court of Peers to proceed to the trial of Lieutenant-General Despaus Cubières, charged with corruption.

The men on whom the Peers were now to pronounce sentence were not subaltern clerks or *chefs de bureau*, but one of them was very recently a member of the government, and actually a president of a higher court. This man was charged with having made a base traffic of his official signature for his individual gain. The other was a lieutenant-general who had been so distinguished a soldier that he was twice entrusted with the portfolio of minister of war. The commission appointed to inquire into the affair directed summonses to be served on MM. Parmentier and Pellapra, co-shareholders with General Despaus Cubières in the mines of Gouhenans, and also against M. Teste, recently minister of public works, and now president of the Court of Cassation. The parties, with the exception of Pellapra, appeared on the 8th July, and on the day previously, Teste, in a letter to the king, resigned into the hands of his Majesty the dignity of Peer of France, and the functions of president of the Court of Cassation. The language of this letter, full of nobleness and dignity, produced for a time a momentary impression in favour of the accused, but on the second day of the trial it was apparent that Parmentier and Teste had acted in collusion, and public opinion underwent a revulsion. On the second day, too, M. Armand Marrast (president of the Chamber of Deputies under the Republic) communicated fresh letters written in 1846 by Pellapra and Cubières, clearly proving a continuing series of negotiations between Teste, then minister of public works, and the mining company of Gouhenans, represented by Pellapra as its principal agent. The examination of General Cubières disclosed an anxiety on the part of the old soldier to commit no human being, but when he was so urgently and powerfully pressed as to the meaning of expressions in his letters, "shameless extortion," "sordid and corrupt hands," the name of Teste escaped his lips. Vainly did the general afterwards try to assume a reserve. In pronouncing the name of Teste he had given the key note.

Teste resigns the peerage and the presidency of the court of cassation.

When Teste was in turn examined, he exhibited the coolest self-possession and assurance. An experienced and skilful advocate, he was not intimidated by forms, or entangled by adroit questions artfully framed. Astute and cunning to a degree, he had studied his line of defence as though he were appearing for a client whose all was at stake, and assumed the tone of injured and indignant innocence. But a bundle of accounts and letters by M. Teste having been found in the possession of Madame Pellapra, the fraudulent transactions were discovered, it was proved that 100,000 francs had been paid to Teste, and a similar sum received by M. Charles Teste, son of the minister, and a deputy. Teste now seeing that he was a lost man, and that all the subtleties of a flexible and unscrupulous talent were unavailing, abandoned all further attempts at defence. When the court rose and he was brought back to prison, he received the visit of his son, and asked his counsel, MM. Paillet and Dehaut, to partake of his prison dinner. His demeanour, generally grave, was more than ordinarily serious on this occasion. About 9 o'clock his son and his friends left him, and five minutes after their departure he seized a pistol and attempted to put an end to his existence; but the attempt, though directed against the heart, was unsuccessful.

On the following day, the 13th July, this great criminal addressed a letter to the president of the Chamber of Peers, stating, that he would allow judgment to go by default, and that he would accept without resistance any sentence that might be passed in his absence. There was therefore an end to the affair as regarded Teste. He was condemned to the penalty of civil degradation, to 94,000 francs pecuniary fine, and to three years' imprisonment. General Cubières was condemned to degradation, and 10,000 francs penalty. It is not necessary that we should record the sentences passed on the less notorious criminals. As this remarkable affair confirmed in a striking manner the charges of the opposition; as behind all the acts of the government, to use the expressive language of General Despans Cubières, were seen *des mains avides ou corrumpues;* the men in office fell into odium and contempt.

Condemnation of Lagrange.

Scandals did not end with the prorogation of the Peers, which took place on the 23d July. On the 9th of August, the council of war of the first military division condemned for five years to the galleys, and to degradation, the functionary Lagrange, convicted of having misappropriated corn intended for the hospital of the Gros Caillou.

Affair of the Duke de Praslin.

Within a month of the prorogation of the Peers, they were again convoked to try one of their members accused of the horrible crime of murdering his own wife.

The history of the affair must be briefly told. The union of M. and Madame de Praslin was an ill-assorted one. There were incompatibilities of temper and frequent quarrels about the management of their children, eight in number, who had been within a year of the catastrophe confided to a Mademoiselle Deluzy, a governess who acquired an ascendancy, not only over the children, but over their father the duke. This circumstance appears to have irritated and wounded, as it naturally might, Madame de Praslin, who was of a sensitive and jealous nature. Increased bitterness and discord were the consequences. M. de Praslin became more violent—Madame de Praslin more miserable and isolated. Towards half-past 4 o'clock on the morning of the 18th August, a great noise was heard in the Hôtel Praslin. The bells in the bedroom of the duchess, communicating with the apartments of several servants, were rung with great violence. The servants rushed up as soon as possible in confused haste, but on reaching the doors which opened upon the bedchamber of the duchess, they found them all closed. The noise of falling furniture, piercing cries, succeeded by suppressed groans, convinced them that behind those doors a murder was perpetrating, but they were unable to force an entrance, notwithstanding the desperate efforts made to break the doors open. Attempts were next made by the servants to reach the duchess's chamber by the garden, and in this they succeeded. Entering the room, extended on the floor they found the lifeless body of Madame de Praslin, with no other covering than her blood-stained chemise. Her forehead, face, neck, arms, and hands, were covered with more than thirty large and deep wounds. Hearing the cries of the servants, the duke appeared at the door of the great saloon, and asked the cause of the noise and tumult. When the lifeless corpse of his wife was pointed out to him, he exclaimed, "Ah! pauvre femme, qui l'a assassinée?" In a few moments after, the commissaries of police being summoned arrived, and subsequently the doctors Simon, Carnet, and Raymond, the *juge d'instruction*, the *procureur-général*, and the prefect of police. These experienced persons proceeded to minutely examine the apartment, and soon discovered a track of blood along the passage leading from the apartment of the duchess to that of the duke. Questioned on this strange circumstance, the duke answered, that when awoke by the cries of his dying wife, he ran towards her, assisted her as well as he could, and returned to his own room covered with blood. This strange answer awakened suspicion. Search was instantly made in the duke's room, and there was discovered linen stained and saturated with blood, and various sharp instruments red with human gore. This almost confirmed suspicion against the duke into the certainty of his crime; and on an examination of M. de Praslin's person, it was found that his body was excoriated, and the skin abraded in eight places, as though he had been engaged in some desperate encounter. Of these marks and wounds M. de Praslin could give no satisfactory account. Feigning sudden indisposition, he asked leave to retire for a moment to his apartment, in which was a medicine chest, and in an instant after he swallowed a slow poison, of the effects of which he died on the 24th August.

The French law does not permit the arrest of a duke. But M. de Praslin was kept under watch in his mansion, and as soon as a royal ordonnance could be prepared, was conveyed to the Chamber of Peers, and interrogated by the chancellor. On being pressed to acknowledge his crime, he merely replied he had not strength to reply to what would require long explanations. The chancellor intimated that a simple yes or no would suffice, to which the duke rejoined, "A force is required to utter yes or no—an immense fortitude which I have not." There was nothing political assuredly in this foul, horrible, and most unnatural murder. But as this great criminal was a member of the Chamber of Peers, and belonged to the very highest order of nobility, the people who had witnessed within a few months such revolting proofs of corruption and crime, considered this as a new proof of the immorality of the great and high born. The crime of Teste and his accomplices had struck with stupor the middle classes, and had disgusted them with a government fallen into corrupt hands. The crime of M. de Praslin touched more directly the bosoms of the multitude, and was used as an argument against the system of society as it then existed in France.

Both crimes had the effect of shaking and unsettling the convictions of men as to the stability of the political and social edifice, and were among the proximate if not among the promoting causes of that revolution which within a few months was to sweep away the younger family of the Bourbons, and even monarchy itself.

Everything induced reflecting men now to think that reform was necessary to save the monarchy and to prevent a new revolution. M. Odillon Barrot convoked at his house a meeting of all shades of the opposition, and it was agreed that vigorous efforts should be made to sound the cry of reform throughout the country. The central committee, established in 1845 to manage the elections of the capital, still existed, and this body offered its co-operation to MM. Thiers, Odillon Barrot, Abbatucci, Duvergier d'Hauranne, Gustave de Beaumont, Garnier Pages, Carnot, &c. A petition for reform was drawn up by M. Pagnerre, and it was determined in the principal towns and localities to obtain an adhesion to this petition. The government was not much alarmed at these projects. The members of the Cabinet declared that this new-born zeal for petitioning would soon expire. The king made no secret to a chosen few of the disrelish and repugnance which the very name of reform excited in his mind, and the royal aides-de-camp took care to make known his Majesty's opinion in every corner of the Chamber.

After having spread and sown petitions for reform broadcast throughout France, the central committee prepared a series of banquets to be held throughout the country. The first of these was at the Château Rouge, and consisted of 1200 electors of Paris and a great number of deputies. Among the speakers were MM. Odillon Barrot, Duvergier d'Hauranne, Marie Recurt, and Senard, afterwards functionaries under the republican government. The banquet at Paris was followed by one at Macon, at which M. de Lamartine, in a spirit of prophecy, predicted, that if the government of July did not reform its ways it would surely fall—fall not in blood, like the government of 1789, but in the very snares which it had itself laid. The banquet at Colmar was presided over by M. de Rosée, first president of the royal court. At the Strasbourg dinner 700 guests from all parts of Alsace assembled under the presidency of M. Leichtenberger, batounier of the faculty of advocates. There was scarcely a man in this assembly who was not a republican, the eastern frontier of France being somewhat in advance of the rest of the country. Soissons, Forges, St Quentin, each had its banquet. At the banquet of St Quentin M. Barrot severely criticised the speech of M. Guizot at Lisieux, and declared that if such doctrines were allowed to prevail, France would become demoralized by its government, and, losing the instinct of its great destinies, would daily sink in the scale of nations. This was another monition to the men in power—a monition which they disregarded.

Duke d'Aumale appointed governor of Algeria.

Algeria had hitherto been for the government a great embarrassment. The most experienced administrators, the most renowned and skilful generals, had there encountered the greatest difficulties, and after long efforts and immense sacrifices, peace was not assured. Marshal Bugeaud having resigned the functions of governor-general, it was necessary to replace him. The successor named was the Duke d'Aumale, a young man of five-and-twenty, whose sole recommendation consisted in his being the king's son.

Resignation of Soult.

Banquets in various towns.

People asked themselves again and again whether the revolution of July had been made to secure such a nomination—a nomination savouring of the very worst traditions of the old monarchy. It is well known that after having reluctantly signed this nomination, Marshal Soult placed his portfolio in the hands of the king. It was easy enough to find an illustrious soldier to succeed the marshal, but the king preferred braving the opposition by giving the presidency of the council to M. Guizot. This nomination added fresh fuel to the agitation. New banquets were organized in every town and village in France. At Perigeux M. Taillefer, member for Sarlat, warned the middle class that it was becoming indoctrinated with the exclusiveness of the ancient noblesse, and that it would fall like the ancient noblesse if it denied the imperious necessity of political progress. At Meaux 750 persons sat down to the political banquet, and among others M. Drouyn de Lhuys, so recently minister for foreign affairs. This gentleman, in allusion to M. Guizot, protested against the cynicism of apostates. Similar banquets were held at Coulommiers, and in other towns and departments. In fact, reform was in every mouth. M. Ledru Rollin was invited to the banquet at Lille, and there was a momentary concert between him and M. Barrot; but as Ledru Rollin seemed disposed to go beyond the limits of the constitution, M. Barrot, who desired reform and not revolution, explained his views and protested. In consequence of this discordance in the views of some of the leading men, there were now banquets of various shades of opinion. In some the socialist and revolutionary spirit prevailed—in some the reforming spirit. But at all these banquets, vituperation was directed against corruption and against corrupters—in other words, against the men in power and the system which they followed. At every fresh banquet a louder and a louder denunciation was directed against the complicity of M. Guizot with M. de Metternich.

While the banquets were still going on, the government received a fresh warning. The council-general of the Seine, on the 12th November 1847, expressed its desire that the government and the chambers would modify and reform the electoral law of the 19th April 1831

The government was, if possible, more unpopular for its foreign than for its domestic policy. In Switzerland it went hand in hand with Austria, and sustained the Jesuits of Lucerne and Fribourg and the Sonderbund. When the Sonderbund was destroyed on the 29th November the majority of Frenchmen rejoiced, for despotism and superstition received a stunning blow; but the sympathies of M. Guizot were not with the partisans of enlightenment, progress, and liberty. He looked on Switzerland, governed by liberals and freed from Jesuits, to use his own words, as "a state organized for aggression." He recognised an equal right in the vanquished Sonderbund, as in the diet, to send a representative to the conference of the five great powers on the affairs of Switzerland.

The policy of M. Guizot in Italy had been equally unpopular with the nation. He feebly approved, indeed, of the first reforms of the weak, vacillating, and insincere Pius IX. But on the question of the occupation of Ferrara, too, the conduct of M. Guizot was pusillanimous compared with that of Casimir Périer in 1832. In one line he approved of the protest of the Pope, but in the next he blamed the inexperience of a government influenced by public opinion, and seeking to satisfy it by the publication of its official acts. The conduct of M. Guizot's diplomatic agent at Rome, M. Rossi, a subject of the Pope (a man born and educated at Bologna—now a naturalized Frenchman), was altogether wanting in energy and in proper conception of his duties as the representative of France. While M. Rossi was playing a game of equivocation, management, and low cunning, the foreign minister of England showed that he understood the crisis, and despatched a Cabinet colleague, Lord Minto, to Italy. Lord Minto was everywhere received with testimonies of respect, whilst the name of Rossi was loathed by his countrymen

M. Bresson his suicide.

Among the French diplomatic corps there were men who openly murmured against the miserable part which they were called upon to act. M. Bresson, formerly French ambassador in Spain, now ambassador at Naples, had counselled a different course, but his advice and remonstrances were unheeded. In passing through Florence he expressed himself freely on public affairs, did not spare M. Guizot or even the king himself, remarking that it was a piece of senile vanity and a false move for France to co-operate with or approve of the Austrian policy in Italy. The king, who was informed of this fact, harshly reproached M. Bresson with his indiscreet words. M. Bresson, who had made such sacrifices of character to support the personal policy of the king in the Spanish marriages, was stung to the quick by these reproaches from such a quarter, and put an end to his existence by suicide.

Letter of the Prince de Joinville to the Duke de Nemours.

It is now known, from documents which have seen the light since the revolution of 1848, and which were published in the *Revue Retrospective*, that some members of the king's own family warmly disapproved of his foreign and domestic policy. In a communication from the Prince de Joinville to the Duke de Nemours, dated Spezzia, the 7th November, M. de Joinville says, "the death of Bresson appears to me a fatality; he was not ill; he executed his plan with the determination of a resolute man. He was incensed against our father. The fact is, the king is inflexible; he listens to no counsel; his will must have its way over all obstacles. There are in fact no ministers; their responsibility is as nothing. Everything proceeds from the king. He is now of an age when he will listen to no observations whatever.

History. **1847.**

Our position is not good. After seventeen years of peace, the state of our finances is not brilliant. Abroad we might have sought for some of these satisfactions of self-love so dear to our country, and with which we might have turned attention from more serious evils. We have not dared to turn against Austria, fearing that England would immediately reconstruct against us a new holy alliance. We come before the Chamber detestably as to home affairs, and as to foreign our position is not better. All this is the work of the king alone; the result of the old age of a king who wishes to govern, but who wants the energy to take a manly resolution. I had looked for compensations in Italy, but there we shall be forced to make common cause with the retrograde party, which in France will produce a disastrous effect. Alas! these unhappy Spanish marriages. We have not yet exhausted the fount of bitterness they contain. Placed between the alternative of making the *amende honorable* to Palmerston on the subject of Spain, or of making common cause with Austria to play the gendarme in Switzerland, and struggle in Italy against our principles and our natural allies; ours is a hard fate. All this is traceable to the king alone, who has tampered with our constitutional institutions. I look upon all this as very serious."

These were the terms in which the son of Louis Philippe appreciated public affairs, and the confidant to whom he poured forth his intimate secret thoughts was his brother, the future regent. Such were the effects of substituting a personal for a parliamentary government, and of falsifying and corrupting representative institutions.

At Dieppe there was a vacant seat, and the ministerial candidate was beaten. A more significant circumstance occurred at Rochefort. M. Dumas, one of the king's aides-de-camp, who had represented the electors in 1846, asked for a renewal of their suffrages on his promotion as *maréchal-de-camp*, but they chose in his place M. Baroche, an advocate of the Parisian bar, distinguished for his talents as well as for his liberal opinions. At Toulouse and Florac also opposition candidates were successful against ministerialists. In Paris the government received a still more significant lesson. Twelve opposition candidates were elected for the offices of mayor and adjoint for the second arrondissement. This circumstance caused a fall of forty centimes in the bourse. The minister of the interior (Duchâtel) imputed all these ministerial misfortunes to the conduct of M. Guizot, whose subserviency to the will of the king had placed him in opposition to the wishes of the people, and rendered him most unpopular both in the metropolis and in the provinces. The friends of M. Guizot, on the other hand, were not slow in imputing all the evil to the account of M. Duchâtel.

The Chambers were summoned for the 28th December. The king opened the session in person, and read in a faltering voice the speech from the throne. It was a rapid and unmeaning production, and said little on any subject. There was not a word of encouragement of the then reforming and since retrograde Pope; of the then reforming and since retrograde Duke of Tuscany; there was no expression of opinion or of hope regarding Italy, or of complaint as to the flagrant violation of treaty in the absorption of Cracow. There was a paragraph, indeed, announcing that France had, in conjunction with the other powers, offered mediation between the parties in the civil war in Switzerland.

The salient passage in the speech, however, was in reference to the banquets. In this passage the king condemned them, and pronounced himself virtually against reform. "In the midst of the agitation fomented by hostile and blind passions, one conviction," said his Majesty, "sustains and animates me: it is, that in the constitutional monarchy, in the union of the great powers of the state, we possess the most assured means of surmounting all obstacles, and of satisfying the moral and material interests of our dear country."

History. **1848.**

Death of Madame Adelaide.

On the first day of the new year, the king experienced a domestic calamity in the loss of his sister Madame Adelaide, who died rather suddenly. The king lost in his sister not alone the companion of his youthful trials and struggles, but a friend whom he consulted on state affairs. Madame Adelaide was a woman of strong and masculine mind and of sound judgment. She had a decided taste for politics, and generally gave her brother good advice. The king was four years older than his sister, and her death came upon him as a warning. He now more than ever felt the effects of age in waning strength and want of energy.

Submission and capture of Abd-el-Kader.

The submission and capture of Abd-el-Kader was also announced on New Year's Day. For some time the emir had been on the frontiers of Morocco, and had formed the ambitious project of conquering that empire. The son of the last emperor, who complained of being cheated of his birthright by Muley-Abd-er-Rhaman, joined the standard of the emir, who for a time had some success; but the emperor of Morocco and his two sons took the field at the head of considerable forces, and ultimately Abd-el-Kader retired upon the river Malouiä, some leagues from the French frontier. Crossing the river without obstacle, he proceeded towards the French possessions in the hope of regaining the desert. But General Lamoricière was informed of his project, and barred his passage on every side. On the 23d December Abd-el-Kader made his submission to the Duke d'Aumale, in the presence of Generals Lamoricière and Cavaignac. Having placed his sandals outside the door of the apartment, the emir was introduced before the prince, and addressing him said, "I had wished to do what I do today before now, but I awaited the hour marked by God. The general has made me a promise in which I have put faith. I fear not that that promise will be violated by the son of a great king like the king of the French." The emir offered to the duke a steed in token of his submission. The promise which General Lamoricière had given, and which was confirmed by the Duke d'Aumale, was to the effect that the emir should be transported to Alexandria or St Jean d'Acre. The promise possibly was a rash one, but it afforded no excuse for its non-fulfilment by the government. The emir was transferred to the interior of France, where he was confined in the Château d'Amboise.

The commission charged with the task of drawing up an answer to the address was composed of a majority favourable to the ministry. M. Guizot was consoling himself with the hope that the debate would be less stormy than was expected, when another remarkable suit in the courts of law was the cause of another scandal.

Case of Petit.

This was the case of M. Petit, *ex-directeur des postes*, who had asked in 1844 for the receivership of Corbeil. The private secretary of M. Guizot, M. Génie, intimated to him that the actual occupier of the place would be advanced, but that a previous condition was attached to the obtaining the receivership. The government required to have an employment of *conseiller maitre* in their hands, and M. Petit could only obtain this by giving a life annuity of 6000 francs to the retiring *conseiller maitre*, with a reversion to the *conseiller's* wife in case of his death. It thus appeared that employments in the *Cour des Comptes* were the objects of an ignoble traffic, and that the government sold receiverships to reward with the proceeds of the sale services which would not bear the light of day. This announcement produced a great effect, and served to astound M. Guizot. He sent M. Achille Fould (now one of the ministers of the Emperor of the French) to the counsel of M. Petit, with a view to have the affair hushed up; but to this course M. Petit would not consent. People inquired whether the president of the council could be ignorant of matters that happened in his own Cabinet, and in which his private secretary was a party.[1] It was while these things were going on that M. de Salvandy suspended the course of M. Michelet, and that the French Academy submitted to the requirements of the ministry by placing M. Vatout, the king's librarian (and, it was said, his Majesty's natural brother) in the chair of Fenelon.

The discussion on the address opened in the Chamber of Peers on the 10th January. M. Guizot was attacked by M. de Boissy concerning the affair of Petit. The minister did not defend these practices, avoided as much as possible to enter into the question of principle, and pleaded extenuating circumstances with great address. But the adroit rhetorician was followed by MM. Molé, Passy, and D'Argout, who had all been ministers, and who severally stated that they had never authorized such a shameful traffic as this.

M. de Montalembert in his speech reproached M. Guizot with having timidly served "the good cause of the Jesuits in Switzerland." The address presented by M. de Barante in answer to the king's speech was a feeble echo of the royal words. The Chamber modified it in one important particular by felicitating the Sovereign Pontiff, the King of Sardinia, and the Grand Duke of Tuscany on the reforming spirit they had exhibited.

In the Deputies M. Dupin, in allusion to the Petit affair, laid on the table of the House a project of law on the sale of offices. M. Barrot, the leader of the advanced opposition, went over the history of the Petit affair, commenting in indignant terms on that scandalous traffic. "France," he said, "had not till now seen a minister authorizing such shameful transactions, the bartering one place against the resignation of another of which he had need." The denunciation was precise; the crime manifest. M. Guizot did not reply to the charge, but in a melancholy voice implored the majority to put an end to a debate raised out of trifles by an aggressive opposition. "Do you, president of the council and political minister of the Cabinet, call sordid and shameless negotiations and traffickings for place trifles," rejoined the opposition orator? The majority, however, absolved M. Guizot.

M. Thiers confined himself to exposing the state of the budget, showing that for a series of years the expenditure had exceeded the receipts. The floating debt amounted to the enormous figure of 750,000,000 francs, and a rumour of war, the menace of a revolution, a scarcity of corn, or even a less calamity, might throw everything into confusion.

M. Duchâtel replied that the Bourse and the commercial classes had confidence in the government. "So far from this," rejoined M. Thiers, "all kinds of property is depreciated. Railway shares which had reached 900 francs are now at 500 francs." M. Garnier Pages added that the state had borrowed 200 millions from the savings-bank, which was immediately exigible, and that thus the amount of the floating debt was 950 millions.

M. de Tocqueville on the moral of late events.

M. de Tocqueville touched on the moral side of the question with the hand of a master. "Public morals are depraved," said De Tocqueville, "and private morals are deteriorating to the low level of the public. The sense of morality is daily becoming feebler. It is true the working classes are not troubled by political passions as they were formerly, but their politics have become social. They no longer seek to upset such a minister, to overthrow such and such a government, but they wish to uproot and overturn society itself. When such opinions become prevalent, and sink into the minds of the people, they produce sooner or later—one knows not the moment—one knows not how—the most formidable revolutions."

M. Billaut, now minister of the interior, and one of the most formidable opponents of M. Guizot, also followed on this fertile theme in a masterly way.

On the question of foreign affairs, M. de Lamartine spoke at length and eloquently. He sought to demonstrate from the diplomatic correspondence that in all the affairs conducted by M. Guizot at Rome, Florence, Turin, and Naples, from the accession of Pius IX. to the rising in Sicily, the Cabinet of the Tuileries had served the interests of Austria, and betrayed those of Italy and France. The Spanish marriages, in the opinion of the future member of the provisional government, had been the cardinal cause of these errors and omissions, if not grievous crimes.

M. Guizot in his reply exhibited boldness, and, as usual, incontestable talent. He vehemently declaimed against revolutions and revolutionists, and was pungently answered by M. Mauguin. "Why all these big words against revolutions and revolutionists?" said the deputy for the *Cote d'Or*. "Are not our government, our chambers, our ministers—the very crown itself—are not all these revolutionary?" The speech of M. Thiers on foreign affairs, though energetical in expression, was in substance moderate enough. He accused the government of indifference in regard to Italy, but he did not require that a new Ancona expedition should be undertaken, or that the standard of French protection should be opposed to the standard of Austrian oppression. M. Thiers had already been a minister, and did not despair of again becoming one. M. Guizot had, therefore, no difficulty in agreeing with him in opinion. M. Guizot blamed, as M. Thiers had done, the Italian princes, who did not spare the blood of their people; he declared, as M. Thiers, the presence of the Austrians at Parma and Modena to be irregular. Odillon Barrot wound up the debate, and declared, midst the deafening cheers of the left, that if Austria dared to renew the outrage on Ferrara, it would be a necessity, an obligation, and a duty of honour for France to oppose her by force of arms. M. Guizot was careful not to gainsay these memorable words. This was another check for the ministry, for after two days' debate and the most haughty language, the government allowed it to be believed that they were about to do what they had been accused of not doing.

On the affairs of Switzerland M. Thiers declared the politics of M. Guizot absurd, and took occasion to say, though not a radical he would always be of the party of the revolution, and that even though the government passed into the hands of radicals, still he would always be of the party of the revolution.

M. Thiers pronounced these words with great energy, his arm extended and his head directed towards that portion of the Chamber dedicated to the press. The words appeared to be especially addressed to M. Armand Marrast, editor of the *National*, who, with his brother editors and journalists, joined their applauses to those of the Assembly. In thus offering his co-operation to the ardent friends of the revolution, M. Thiers indicated the real gravity of the situation of affairs. No sooner had he made this approach to the radical party, than M. Guizot took, under the guise of moderation, an opposite course, declaiming against radicals, the enemies of the Jesuits, the revolutionary and demagogical spirit, &c.

It was now the 4th February, and there was no prospect of the debate closing. Day by day the most vehement speeches of the deputies against the ministry were read aloud in cafés and public places and rapturously applauded. A few days previously M. de Tocqueville (subsequently one of the Cabinet ministers under the republic of 1848) said he scented the wind of revolution, and he said truly. The discussion on the paragragh "les passions ennemis et les entrainements aveugles" called up M. Duvergier d'Hauranne, who declared that the opposition did not come there to plead before the majority against the minister, but to plead before the country against both the minister and the majority The country heard and approved, and very soon declared itself.

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[1] Regnault, tom. iii., 336.

Some members of the majority seeing the difficulties and dangers surrounding not merely the ministry but the crown itself, were for bringing forward an amendment which, without overthrowing the ministry would gently lead it into the path of reform. The amendment was denounced by M. Guizot. It was hoped that his colleague M. Duchâtel would be more conciliatory. But M. Duchâtel only envenomed the debate by fresh provocations, declaring that the banquets would be forbidden, and that the government would not yield to such manifestations. M. Barrot answered M. Duchâtel. His language was full of nobleness and elevation. He cited the text of the law in support of the perfect legality of the banquets, and something more powerful than mere precedents—principles long consecrated. It amazed him, he said, to find ministers putting into the mouth of the sovereign outrages and insults addressed to a great number of deputies behind whom were 60,000 citizens. This was a crime against the constitution, and must lead to a *coup d'etat* and to resistance. "I have devoted my life," said the leader of the constitutional opposition, "to defend the principles of 1830, and I throw on the ministry the fearful responsibility of events."

This speech produced an immense impression,, and some members of the majority, such as MM. d'Arblay, Desmousseaux de Givré, and Sallandrouze, were for a compromise, and for suggesting to the government wise and moderate reforms.

But MM. Guizot and Duchâtel would hear of no middle course. M. de Remusat conjured the ministry not to put in peril the person of the king, the institutions of the country, the last guarantees of public peace. But the ministry was obstinate, and the amendment of M. Givré was lost by a majority of 43, and the amendment of M. Sallandrouze by a majority of 33.

On the day on which the discussion on the address terminated, the opposition deputies met at the Café Durand, in the Place de la Madeleine. Armand Marrast proposed that the deputies of the opposition should send in their resignation in a body. This would cause the election of 102 deputies, each of whom would discuss in the presence of the same number of constituencies throughout the kingdom the misdeeds of the ministry. The liberal papers proposed to give these speeches to the exclusion of the parliamentary debates. This project of M. Marrast was supported by MM. Marie and Chambolle; but Garnier Pages and Martin de Strasbourg were of a different opinion, and Duvergier d'Hauranne, de Lamartine, and de Remusat spoke against the project of resignation at the meeting presided over by M. Barrot. The majority was therefore for holding the banquet and accepting the challenge of M. Duchâtel. A commission was named to organize the banquet, who fixed upon the locality in which it was to be held. All commercial affairs were meanwhile suspended in Paris. The great majority of the inhabitants of Paris undoubtedly wished to avoid extremities, but no one advised the opposition to prevent the effusion of blood by a sudden retreat. The Conservatives themselves, alarmed and cast down, admitted that the government had provoked the contest by imprudent provocations, and that it ought to yield—that it would disarm the self-love of the opposition by the least concession. On the 14th February the *Débats* announced that the ministry would pursue a conciliatory course, and that before the end of the session there would be reforms. The king, however, disapproved of this article, and would not hear of the least concession.[1] The very name of the word reform rendered his Majesty furious. "All the world is for reform," said the king, "but I will never yield to this weakness. Reform is the coming in of the opposition—and the entry into power of the opposition is war and the beginning of the end. As soon as the opposition assumes the reins of government I will retire."[2] But this was mere make-believe. The king had not the least idea of retiring. General Jacqueminot answered for the National Guard, and the army was animated with an excellent spirit. Such were the ideas and feelings of the king, and no one dared to contradict him. The minister, it was thought, dictated the article in the *Débats*. But being disavowed by the king and the courtiers, M. Duchâtel dared not justify it, and M. Guizot hastened to disavow it. Each day, each hour, now seemed to render a conflict more imminent. The place chosen for the banquet was the Rue Chemin de Versailles, Champs Elysées. Tents were prepared on the 20th and 21st, when M. de Morny and M. Vitet sought an interview with M. Barrot, to say that if the opposition could not draw back, so neither could the government yield; but that there was a *via media* to avoid a collision by placing the question in dispute before the *Juges Correctionelles*. M. de Morny (the same who took so prominent a part in the *coup d'etat* of December 1852) promised, in the name of the government, that the opposition might freely go to the banquet, that it would meet with no impediment; but that, on the other hand, the government would perform its part in summoning the guests to disperse, and would draw up a *proces verbal* of the unlawful act, with a view to render M. Boissel, the president of the day, M. Barrot, and the most prominent of his friends, accountable before the Correctional Judges. All this was done with the sanction of M. Duchâtel, and the opposition agreed to the terms. But at the last moment, the court party would not hear of these conditions. The king was indignant, and complained that he was surrounded by men without courage, that he was no longer served but betrayed.

Everything seemed to announce that there would be an immense concourse of people. This, as well as the convocation of the National Guard by the committee of the banquet, and the certainty that it would answer to the call, caused no small alarm to the government.

The reports of the police informed the home minister that a considerable number of National Guards of Paris, Montmartre, Belleville, Sceaux, St Denis, and Bercy, would accept the invitation of the central committee, and it was intimated from the same source that the number of citizens who would take part in these manifestations would amount to more than 100,000. This account filled the government with terror. The ministry thought that if the opposition succeeded in managing such a number of people, it would become far too powerful, and would be in effect a government overshadowing the real government. This was the language of the king, of the princes, of the aides-de-camp, and of the ardent Conservatives. M. Duchâtel was accused by these people, and by the whole camarilla of the court, of having by his weakness compromised authority. Under these circumstances he charged his envoys MM. Vitet and de Morny to withdraw the promise they had given to M. Barrot. M. Barrot, on again seeing these gentlemen, informed them, that if the minister by this conduct speculated on aggravating the shame of retreat or the seriousness of resistance, he calculated without his host. The conduct of the opposition, even of the most advanced portion of it, was throughout moderate and dignified. All shades of opposition were willing to insert a paragraph or note in the journals, stating that in convoking the National Guard for a great manifestation, the opponents of government did not mean to usurp any of its powers or functions. M. Armand Marrast, who was present, concurred in these views. The opposition, therefore, had by this proceeding assumed a more moderate and submissive attitude, yet when

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[1] Regnault, tom. iii., p. 382.

[2] Abdication du Roi Louis Philippe, racontée par lui meme et receuillée par Ed. Lemoine.

MM. Vitet and de Morny returned to M. Duchâtel they found his views changed. The only individual in the Cabinet who appeared to desire a peaceable solution had in the interim been gained over by his colleagues. M. Guizot, sustained by the court, was more unbending and peremptory than ever, and M. Jacqueminot, the commander of the National Guard, was boastful and combative. M. Barrot and his friends were deeply grieved when they learned that their explanations were unavailing. The government rejecting the conditions which their commissaries had proposed the night before, a collision appeared inevitable if the opposition persisted in its design—a collision, too, not at the door of the banqueting hall on the question of the right of meeting in a private house, but a collision on the Place de la Madeleine, and upon a very different question, the right of assembling in a public thoroughfare. The circumstances and conditions were not, in this state of affairs, so favourable to the opposition; and it was now the day before the banquet, the 21st February. About half-past four in the evening, M. Barrot proceeded to the Chamber and asked of the minister a public explanation. M. Duchâtel replied, that at the commencement he only wished a judicial solution of the question, that the deputies of the opposition might still proceed in their individual capacities to the banquet, but that no crowd or gathering of people would be allowed in the public street. M. Barrot replied, that intentions were imputed to the authors of the banquet which they never entertained; that the government wished to construe a lawful and pacific manifestation into an act of insurrection, and that the putting Paris into a state of siege upon so frivolous a pretext would excite the very tumult the government professed a desire to quell. The impression left on the mind by the perusal of these explanations is, that the government was at once provocative and perfidious, and that the banqueters, bold at the beginning, now began to exhibit somewhat of weakness and fear.

As soon as the Chamber adjourned, the opposition met to determine its course of action. Their deliberations were short but stormy. They resolved neither to go to the banquet individually nor at the head of a vast procession and cortege as had been proposed. They preferred being absent and subject to all manner of reproaches rather than incur the responsibility of a sanguinary struggle. It should be observed that in their characters of deputies, the opposition, in thus momentarily foregoing a right, pledged themselves to use every constitutional effort to cause that right to prevail, at no distant day, over what they termed a corrupt, violent, and anti-national ministry.

On the day fixed for the banquet two proclamations were affixed on the walls of Paris, one by General Jacqueminot, addressed to the National Guards of the Seine, the other signed by the prefect of police Delessert, written, it is said, by M. de Morny, in which the government, founding itself on the provisions of a law of 1790, forbade the banquets, declaring, in addition, that it was prepared to disperse by force all assemblages and processions encountered on the public thoroughfares.

The opposition also in its journals published a manifesto, stating that in abstaining from the banquet they were governed by feelings of moderation and humanity, but that there remained for them yet to accomplish a great act of firmness and justice. This great act, thus distinctly alluded to, was a demand for an impeachment of the ministry. The proposal was immediately drawn up and signed, and was in the following words:—"We propose to impeach the ministry as guilty—1. Of having betrayed abroad the honour and interests of France. 2. Of having falsified the principles of the constitution, violated the guarantees of liberty, and attacked the rights of citizens. 3. Of having, by systematic corruption, attempted to substitute for the free expression of public opinion the sordid calculations of private interest, thus perverting representative government. 4. Of having trafficked in public functions and privileges 5. Of having ruined the finances of the state, and thus compromised the national grandeur and strength. 6. Of having violently despoiled citizens of an inherent right, guaranteed by the charter, by the laws, and by precedents. 7. Of having, by a counter-revolutionary policy, placed in jeopardy the fruits of two revolutions, and thrown the country into perturbation."

The energy which the opposition now exhibited in this act of firmness was meant to atone for the too great moderation exhibited in the affair of the banquets. There were not wanting resolute men, such as MM. de Lamartine, Arago, de Malleville, Marie, and L'Herbette, who still counselled the opposition to take an heroical decision, and commit themselves with the executive; but the leaders are not to be blamed for not following this advice.

On the 22d February, an immense multitude arriving from all the fauxbourgs, proceeded to the Madeleine, the Champs Elysées, and the Place de la Concorde. There were workmen and artisans who came to offer to the reforming deputies their active co-operation. The greater number of them were ignorant of the determination taken the night before to abstain from the banquet. Some, however, who knew the intention of the opposition, still hoped that it might in some way be modified; some again were animated with those vehement emotions, the precursors of political storms. Every means was employed to calm these over-excited citizens. Even the *Reforme*, the most advanced of the Parisian journals, called on the people to remain calm and impassible, and to consider all turbulent and vehement men as police spies. The officers of the National Guard and the delegates of the schools assembled at the house of M. Perrée, manager of the *Siècle*. Another meeting was held at the office of the *Reforme*, where were collected the leading men of the secret societies. Even at this meeting, notwithstanding the efforts of some violent talkers, gained over by the police, it was decided to remain passive. So that on the part of the opposition, every effort was made by all men having influence to keep the people quiet. Nevertheless, notwithstanding all these efforts, the people were agitated, and looked as though they would appeal to arms. The troops were kept in readiness to act. The government, living in narrow cliques, and knowing nothing of the feelings of the people, was, from first to last, free from all alarm, more especially since it had learned the resolution come to at the meeting at Barrot's, Perrée's, and at the office of the *Reforme*. The king was in great good humour, felt the most perfect confidence, and laughed with the courtiers at the idea of M. Barrot and the reformers being at all formidable. But, meanwhile, vast gatherings had taken place in places where there were no troops. An immense phalanx of students and workmen had already, in tolerable order, traversed half Paris, singing the Marseillaise, and crying "Vive la Reforme! à bas les ministres." This crowd had reached the Chamber of Deputies, had forced the doors open, and withdrew across the Place de la Concorde to the residence of M. Barrot. When the troops appeared in the quarters in which the crowd was most compact, the soldiers were received with hisses, and saluted with a shower of stones. The excitement increased every moment, especially in the neighbourhood of the Chamber of Deputies, and the Rue Royale, Rue de Rivoli, and Rue Saint Honoré. A couple of hours later these streets were occupied with cavalry. The populace, driven into the middle of Paris, and into the back streets, constructed several barricades, and shot responded to shot between the army and the insurrectionists. This, however, was but the beginning of the fray. It could hardly as yet be considered very grave or serious. There had been some victims undoubtedly, but they were not many. Yet the attentive observer could discern from the different circumstances of the struggle, and from the manner in which it had been conducted, that it would have serious results. It was the people, the real veritable downright people, the very sinew, muscle, brawn, and bone of Paris, which everywhere began the encounter. All other classes held themselves aloof, and counselled submission, but the people would not submit. Wherever the uniform of the abhorred municipal guards was perceived, it was observed the struggle at once furiously commenced. As the municipals spread themselves far and wide, the encounter became general, vehement, ruthless, sanguinary, almost savage. The second day, Feb. 23, was more fruitful of incidents and results than the 22d. The people showed themselves everywhere with aspects more grave and sombre, daring and determined. New barricades were raised in all the narrow steets in which the working people lived—streets wholly inaccessible to cavalry, and in which a much more murderous struggle commenced than had been witnessed the day before. General Jacqueminot had boasted the day previously that he was sure of the National Guard, and counting on that force with certainty, had not summoned it. It was, however, at length irregularly convoked by the orders of mayors, *chefs de battaillon*, and captains; and when it assembled, some scores of National Guards cried "Vive la Reforme!" In an instant the cry became general and universal in the ranks, and was shouted almost electrically from every throat. "Vive la Reforme!" was now the rallying word sped from mouth to mouth. Behind the barricades the people shouted "Vive la Reforme!" and before the barricades, in presence of the army, the National Guard, marching in compact order, shouted the same cry. The army appeared stricken and palsied with a sudden stupor. The officers hesitated—the troops faltered—and it was already plain they would not attack the National Guard as a band of insurgents. Could they attack the men behind, who wished what the National Guard wished, and uttered precisely the same cry, "Vive la Reforme! à bas les ministres!" The army and the National Guard remained inactive and passive; the municipal guard, however, never hesitated or faltered for a moment. Detested by the people, even more than the Swiss in the time of Charles X., and well aware of the abhorrence in which it was held, the municipal guard for a while spared no citizen. But very soon the National Guard got between them and the people, and forced them to give in. As the insurrection extended, it became more and more successful. Everywhere the words "Vive la Reforme! à bas les ministres!" were understood, pronounced, and accepted with electrical enthusiasm. These undoubted facts at length reached the king's ears. Till this moment Louis Philippe had no idea of the state of public opinion. When told that the *Garde Nationale* was for reform, and the *bourgeoisie* against the government, he received the intimation of an undoubted fact with a smile of easy incredulity.

To the peers, deputies, generals, and officials, who flocked to the Tuileries, the king put but one question. Could it be true—could it be possible—that the National Guard had made common cause with Thiers, Barrot, the *National*, and the agitators for reform? The mournful, hopeless looks of peers, deputies, generals, and officials, betrayed the real truth to the wondering yet still unconvinced monarch. In this exigency M. Guizot arrived to tender his resignation. Whether this resignation was then formally accepted, it is impossible to know; but the news that it had been accepted was immediately spread abroad, and was received as a satisfaction to the popular wishes, and as a token of reconciliation between king and people. The resignation of M. Guizot and Reform were now the words. The barricades were vacated—the troops and the people shook hands and fraternized. The people were victorious and content.

The Boulevards instantly began to swarm with people—some armed—some unarmed, but all repeating the joyous news that blood had ceased to flow, and that peace was happily restored. On hearing these words everywhere repeated, old men, women, children, and the most peaceably disposed bourgeoisie sallied forth to hallow the evening which put an end to cruel civil war. Illuminations in token of rejoicing were called for, and every one was preparing to obey the call and to illuminate brilliantly. But the evening was again to hear cries of civil war, and to witness internecine strife. An immense crowd was passing along the Boulevards, increased by thousands from the streets on either side, when, all of a sudden, a shot fired by an unknown hand was heard in the precincts of the ministry of Foreign Affairs, where a detachment of infantry was stationed. Believing itself attacked, this detachment fired on the crowd, and every ball told with fatal effect on that compact, close-pressed, unresisting multitude. Fifty mangled, bleeding, wounded, groaning, and dying victims were picked up at once. The dying were carried to the neighbouring houses; the dead were placed upon a tumbril, and this rude funereal car was dragged by the people into the streets in which the insurrection so lately raging had subsided.

The hearts of that immense crowd swelled with emotions of anger and the desire of vengeance. Words fail in painting the effect produced on the multitude by the sight of this heap of corpses exposed by torch-light, from whose open wounds there trickled on the pavement blood still warm. Feelings of horror and indignation mixed in the minds of the multitude with the desire of vengeance; yet no one could tell why this causeless carnage took place. It is supposed that a false alarm was given to the troops, that they were seized with a sudden terror, or that an order hastily given was misunderstood, or that the troops conceived the random shot fired was directed against them. The populace, however, stopped not to inquire into the cause, fortuitous or otherwise, of this deplorable catastrophe. In their fury and vengeance, they only cried, "abominable treachery, inhuman barbarity, thus to draw us out of the barricades and then to massacre us and shoot us down." The cortege of corpses passed down the Boulevards to the office of the *National*. There an immense crowd, composed of working men, of artisans, shopkeepers, and superior officers of the National Guard, had already assembled. MM. de Maleville and Arago also had hastened to the spot to hear details from the editor. "Alas!" said M. Marrast, "after what has already passed, there is but one cry—the cry for vengeance. The people look upon the troop who fired as the assassins of an unarmed population, and the government can be no longer saved." New barricades were now raised at the extremity of every street, and the army, aware of what occurred—the army who received neither orders to advance nor to retreat—a prey to emotions of astonishment, terror, and grief, allowed the construction of barricades which commanded every position.

Paris on the 23d February.

At daybreak on the 23d Paris was a vast battle-field. Behind the intrenchments and barricades hastily raised by the people, were seen glistening weapons of every size and of every form. Vengeance, vengeance for the massacres, for the murders committed under the windows of M. Guizot, was the only cry. The men behind these barricades, says M. Regnault,[1] did not for a moment doubt that what occurred had been done by the order of the unpopular minister. While the people were under this impression, the news spread like wildfire that Marshal Bugeaud was appointed commandant-general of all the military forces of Paris, and that the powers of MM. Jacqueminot and Tiburce Sébastiani were united in his hands. The news was soon announced by placards, which were immediately torn down. General

Marshal Bugeaud appointed commander-in-chief.

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[1] *Histoire de Huit Ans*, tom. iii., p. 406.

Appointment of M. Bugeaud revoked.

M. Thiers sent for to form a Cabinet.

Bugeaud, said each man to his neighbour, is the pitiless man of the Rue Transnonain. Such a selection could have but one meaning. The king in placing plenary powers in M. Bugeaud's hands announced that he was ready to go all the lengths of a determined and desperate resistance. But a couple of hours after having adopted this energetic resolution, the king allowed himself to be persuaded that it was better to tender the olive branch, better to offer peace than war. His Majesty sent for M. Thiers, who hastened to respond to this proof of confidence. M. Molé had been sent for an hour previously, but had not appeared. M. Thiers was at first coldly received by Louis Philippe, but his Majesty subsequently charged him with the formation of a Cabinet, asking his opinion as to the strategetic plans of Marshal Bugeaud. M. Thiers approved of the plans of the general, but could not, he said, form a ministry without M. Barrot. "Circumstances," said M. Thiers, "imperiously require this nomination." At first the king could not believe he understood M. Thiers aright. When he heard the name of M. Barrot pronounced, he exhibited a contemptuous impatience. "To say that the people require reform," said his Majesty, "is to repeat a mere casual coffee-house remark. Turbulent demagogues may talk of reform, but the people do not, indeed they are too sensible to require it." M. Thiers respectfully declining to enter any Cabinet of which M. Barrot did not form a part, the king at length comprehended that he must accept of M. Barrot.

M. Barrot summoned.

M. Barrot was accordingly summoned, and on his appearance showed himself much more difficult to treat with than M. Thiers. The king was willing to take M. Barrot, but M. Barrot could not wage war against an army of reformers and command the massacre of men who cried "Vive la Reforme," and with whom he had recently associated at banquets and elsewhere. He could not join Marshal Bugeaud in attacking citizens with whom he had made common cause. The king was then forced to yield to the imperious necessity of his position.

Proclamation of Barrot and Thiers.

A proclamation was immediately issued, signed by Odillon Barrot and Thiers, stating that an order had been given to the army to cease firing on the people; that Barrot and Thiers were charged by the king with the formation of a ministry; that the Chamber would be dissolved; that General Lamoricière was commander-in-chief of the National Guard of Paris; and that Odillon Barrot, Thiers, Lamoricière, and Duvergier d'Hauranne were ministers. The proclamation concluded with these words—*Liberté! Ordre! Union! Réforme!* The previous evening such a proclamation as this would have calmed the most angry spirit; now it was too late, and M. Barrot deceived himself in thinking it would produce any result. In fact, the people did not believe in the sincerity of the king; and his sudden conversion appeared to them a blind or a snare.

M. Barrot explains his proclamation in person.

M. Barrot appeared himself on the Boulevards to explain his proclamation to the crowd; but the people answered that the king had a more elastic conscience than the minister, and that, having taken up arms, they would have something better than promises—in a word, the dethronement of Louis Philippe.

24th February 1848.

It was now the morning of the 24th of February, and the royal family were assembled in the Gallery of Maria, where breakfast was about to be served. MM. de Remusat and Duvergier d'Hauranne were introduced by an officer of the staff in attendance on the king. They came in all haste to announce that on the Place de la Concorde they had seen soldiers quitting their ranks and delivering up their arms. The king rose and requested MM. de Remusat and Duvergier to follow him into his private apartment. "Sire," said the queen, "*Montez à cheval*, and if necessary know how to die. From the balcony of the Tuileries the eyes of your wife and of your children will follow and speed you." The king left the room, presently re-appeared in military uniform, descended into the courtyard, mounted a horse, and passed some regiments in review. In the court of the Tuileries there were among the troops two battalions of the National Guards, and one of these received the king with cries of "Vive la Réforme." The king instantly returned to his apartments, dispirited and dismayed. The Tuileries were soon filled with crowds of deputies of every shade of opinion, of functionaries of every rank, all bearing the same intelligence. The only question now was as to abdication. The word was at length pronounced in the hearing of the king; and while some friendly voices encouraged him not to abdicate, sinister murmurs were heard on every side. The words *il faut abdiquer* were repeated, and it was added that the Ecole Polytechnique were behind the barricades; that the army had fraternized with the people, had delivered up muskets and cartouches; and that the revolution was everywhere victorious.

Conduct of the queen.

The queen alone boldly and firmly opposed the measure of abdication. Her Majesty saw none of the perils of which the advisers of the king spoke; nor did she for a moment listen to their counsels. She cared not, she said, what was said in or out of the Tuileries, but, in her estimate, revolution was ever a crime, and abdication a cowardice. "Sire," said the queen energetically, in conclusion, "a king should never lose his crown without making an effort to defend it." Louis Philippe appeared for a moment to yield to these strongly-felt, sincere, and sinewy words, and seemed wavering in his resolve, when fresh messengers brought more fearful tidings. General Lamoricière had been wounded, and the insurrectionists, encountering no resistance, were now actually attacking the last post which protected the Tuileries. The fusillade which thundered in the Carousel reverberated in the chamber in which the king stood, and already an armed multitude were entering the palace of the ancient kings of France.

At this moment it was that the king, seizing a pen, signed his act of abdication in the following words:—

Act of abdication of Louis Philippe.

"I abdicate the crown, which I held by the will of the nation, and which I accepted to restore peace and concord among Frenchmen. Finding it impossible to accomplish this task, I leave the crown to my grandson, the Count of Paris. May he be more fortunate than I have been.

"LOUIS PHILIPPE."

A few minutes after this abdication was signed, the following placard was posted on the walls of Paris:—

"Citizens of Paris,—

"The king abdicates in favour of the Count of Paris, with the Duchess d'Orléans for regent.

"A general amnesty.

"A dissolution of the Chamber.

"An appeal to the country."

The Duchess d'Orléans

After having abdicated, Louis Philippe, taking the arm of the queen, fled with her. A few minutes afterwards the Duchess d'Orléans, who was no longer safe in the Tuileries, proceeded to the Place de la Concorde, and thence to the Chamber of Deputies. As her royal highness was in the act of leaving the Tuileries the people were entering the palace, and she had scarcely entered the Chamber of Deputies when the Chamber was invaded by the insurgents. Madame d'Orléans, a stranger in France, scarcely known by the people, had not a single enemy. Under ordinary circumstances this good and amiable lady would have been much more joyfully hailed as regent than the Duke de Nemours. But who would confer on her the regency in that alarming crisis? "Neither the king, who was a fugitive;[1] nor the people, who had just reconquered their sovereignty." Some individual Frenchmen, inspired by the best motives, such as MM. Barrot, de Remusat, and Jules de Lasteyrie, were in favour of this course; but the more ardent leaders of the revolution, instead of abandoning the care of their interests to a child, and an interesting and benevolent lady who had as yet shown no special aptitude for affairs of state, determined on constituting a provisional government; and MM. Dupont de l'Eure, Arago, de Lamartine, Garnier Pages, Ledru Rollin, Marie, and Cremieux, who were named by acclamation in the Chamber of Deputies to form a government, repaired to the Hôtel de Ville. A few hours afterwards the republic was proclaimed. The truth is, that none were prepared to accept the heavy burden of affairs, with all their serious consequences, but the republicans. Some of them had perhaps in the last hours of the struggle precipitated the crisis, convinced doubtless of the excellence of democratic institutions; but the greater number, dragged along by the rush of events with a kind of vague astonishment, had allowed themselves to be carried along with the stream. When all shades of the constitutional party had renounced the hope of forming a government—when every interest in the state, appalled by the danger of the situation, cried out for a government of some kind—there was no choice, there was no possibility of anything but the republic or anarchy.

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[1] Regnault, *Histoire de Huit Ans.*

The provisional government did not for a moment hesitate, and wisely resolved to administer the only government then possible—a republic.

Escape and flight of the king.

The ex-king of the French, accompanied by the queen, escaped through the garden of the Tuileries, and arrived at the gate which opens upon the Place de la Concorde. The royal carriages were not at the obelisk to receive the party, and the square was occupied by a crowd of armed men, exasperated by the conduct of the municipal guards. The crowd, notwithstanding its excitement, commiserated the misfortunes of the man, and saw in him, not a king, but a fugitive. Every one cried, "Let him go—let him escape." This was now somewhat difficult, as the king's carriages had been seized by the people on the Place du Carousel, and committed to the flames. Two small one-horse carriages and a cabriolet at length arrived. Into these vehicles fifteen personages, comprising the ex-king and queen, were closely packed, and the cavalcade drove off, under the protection of a regiment of cavalry, to St Cloud. There the ex-king did not long remain, as he was not in safety. General Dumas now procured two public carriages, which transported the fugitives to Trianon. The ex-king intended to journey to Eu, but he had hurried from the Tuileries, leaving a sum of 330,000 francs in bank notes in his cabinet, and was without ready money. The purse of the queen contained but a few gold pieces, and the other members of the royal family were not better provided. General Dumas proceeded to Versailles, borrowed 1200 francs of a friend, and hired two berlines. Into these carriages the king and queen, passing under the names of Monsieur and Madame Lebrun, with the Prince of Saxe-Coburg, the Princess Clementine, and the Princess Marguerite, daughter of the Duke de Nemours, the Duke de Montpensier, the Duchess de Nemours, and their suite, entered and drove towards the château de Dreux, the burial place of the House of Orleans, where the ex-queen wished to weep and pray over the tomb of her eldest son.

Having passed the night of the 24th at the Château de Dreux, on the morning of the 25th Louis Philippe learned that the republic had been proclaimed.

The king now resolved to gain the coast of England. The Duke de Montpensier, the Duchess de Nemours, and her two sons, proceeded in the direction of Granville. The king, the queen, and M. de Rumigny proceeded on the road to Evreux, and stopped towards nightfall at the gates of a small château, the property of an agent of the king. The agent with all his family were absent, but a farmer opened the gates to his unknown guests. Soon after the master of the château arrived, and by his aid the king escaped to Harfleur, suffering much both physically and mentally. The weather was cold and wretched; a north-west wind blew with uncommon violence, and the ex-king was obliged to travel 24 leagues without changing horses or taking any repose. At eight o'clock on the 26th February Louis Philippe arrived at Harfleur; and after many hair-breadth escapes and fruitless efforts to set sail from Trouville, the English vice-consul at Havre at length succeeded in placing at the disposal of his ex-Majesty the Express packet boat. On the 2d March, in the evening, the king and queen embarked at Harfleur for Havre on board the ordinary packet boat among a crowd of ordinary passengers. The king, wrapped in a large cloak, had a passport in the name of William Smith. The English consul received the ex-king at Havre, and conducted him on board the Express, which at once put to sea.

Arrival of Louis Philippe in England.

On the 3d March the ex-king arrived at Newhaven, and on the 4th at Claremont. It must be stated to the credit of the provisional government that it by every means in its power sought to favour the escape of the discrowned monarch. The only orders given by the government were that, in case he was arrested, he should be safely conducted to the frontier. On the day following the revolution, when the republic had been only proclaimed in three or four towns, Frenchmen had ceased to speak of the old king, of his grandson, or of the regent. At the very moment when the ex-king was assuming a false name, adopting a false passport, and thinking his life menaced, and covering himself with all manner of disguises, the provisional government was only anxious to know the quarter to which he had directed his steps, not to retain him as a prisoner, or to demand of him a severe account of his eighteen years' state stewardship, but to facilitate and protect his departure from a country that had cast him off.

Louis Philippe prided himself on having destroyed the good understanding between public men of eminence—having made them eager rivals and jealous enemies by the allurements of office; and on having founded on the destruction of parliamentary leagues his personal system. His grand merit, no doubt, was in having so long maintained the peace of the world. But peace was more than once maintained at the expense of the dignity of France in her relations with other courts. This timid policy suited the position and temporizing character of the man, and, for a time, found favour with the middle classes, on whose support the monarch mainly relied. The *bourgeoisie* and middle classes of France have many valuable qualities—industry and a love of labour, respect for the law, and a hatred of fanaticism. They are frugal, social, and, though vain, of easy and enjoyable dispositions. But they want elevation of character, they take neither large nor broad views, but are governed by contracted ideas. Louis Philippe did not himself rise much above the level of this class, a class which he did not seek to elevate, or to inspire with better instincts than the desire to get rich, and to get rich speedily. On the foundation of this universal selfishness there arose an organized system of corruption and cupidity, which sapped and undermined public and private virtue.

The great and fatal mistake of the king was in attempting to govern as well as to reign—to be not only the king but the minister of France. At home, as well as abroad, this led to a system purely personal, and the honour of the country and its great interests were sacrificed to considerations exclusively dynastic. Louis Philippe had only one end and object in view, and that was to consolidate the dynasty of Orleans. The means by which he sought to attain this end were the most vulgar and common-place. Bourgeois in heart, citizen in mind, in tone of thought, and in habits, Louis Philippe looked only to his own narrow interests, and these he pursued in a tricky and huckstering spirit. He was a lover of peace, not so much from any higher principle, as from the apprehension that war would put to hazard his dynasty, and thwart his projects for the aggrandisement of his house. In pursuing his selfish schemes he cared little for the national honour. The question of advantage was ever with him above the question of honour; and for a most narrow and miserable view of what he deemed his family interest he lost, and ruined himself by losing, the English alliance. His personal policy and views were carried into the affairs of state. His object was in the government of France to cause what are called material interests to preponderate over the highest considerations of national policy. With this view he encouraged all manner of speculations. He effected a great deal of good in extending canals, in the building of bridges, in the opening of new means of communication, and also in improving and beautifying Paris: but he encouraged other speculations of a more questionable character, which injured the finances and burdened the resources of the state. Corruption during the eighteen years of his reign became more and more prevalent, as the taste for luxuries and material enjoyments increased.

The personal character of the monarch had much influence on the politicians around him. It had the effect of rendering public men more servile, insincere, and dishonest. The king wished to rule and govern everybody, even his ministers, so fond was he of exercising influence; and to please the monarch, more than one minister gave in to his personal views. The desire of the king to dominate and govern all was the less extraordinary, as he was by nature laborious, systematic, and self-willed even to obstinacy. He conceived that his good fortune and his success in life were altogether owing to his own efforts, talents, and wisdom, and that nobody was so capable of conducting affairs as himself. "Where is the experience," he was wont to say, "comparable to mine? Who has witnessed more startling and strange events, or come into contact with a greater number of men?"

But though Louis Philippe was self-willed and obstinate, he was not a man of firm resolve. Restless, uncertain, and undecided, when he encountered great obstacles he sometimes timidly yielded positions for which he had long struggled, and positions which, had he had firmness and moral courage, he might have long held. No man so much encouraged and sustained M. Guizot in resistance to reform as the king himself, but at the decisive moment when it was necessary to show resolution and energy, the spirit of the king faltered, and his cause was lost. To do his minister justice, M. Guizot never faltered or failed to the end.

The leisure the ex-king enjoyed at Claremont he employed in writing his memoirs. To Frenchmen who visited him he was garrulous in the extreme, but to none did he ever admit that he was in the wrong. The world did not comprehend his frankness, his disinterestedness; and kings and people, he maintained, were equally ungrateful in his estimation. The ex-monarch did not long survive his fall. In the early part of 1849, feeling himself ill, he removed to Richmond; but growing weaker, returned to Claremont in March, where he died on the 26th of August 1849, in the seventy-sixth year of his age.

After the revolution of February a provisional government assumed the direction of affairs till the appointment of a constituent assembly. This assembly proclaimed the republic, and at first delegated power to an executive commission. The assembly was invaded on the 15th May, but order was again established. After the sanguinary events of June 1848, the constituent assembly conferred supreme power on General Cavaignac, who had acted so important and so successful a part in the restoring of order. General Cavaignac assumed the title of chief of the executive power, and kept Paris in a state of siege, and his ministers introduced measures for the abolition of the national workshops, and for supplying the ways and means required by the state. The power of the press, which had been abused, was curtailed, and the intolerable tyranny of the clubs was checked by the strong hand of this honest soldier. In the month of August it was reported by a committee that Louis Blanc, Ledru Rollin, and Caussidière were implicated in the insurrection of the preceding month. Louis Blanc and Caussidière escaped to England, and proceedings were commenced against Ledru Rollin, but afterwards suspended.

After performing signal civil and military services, General Cavaignac became a candidate for the presidency of the republic, which he had faithfully and ably served. But the Prince Louis Napoleon Bonaparte was elected on the 10th December 1848 by a much greater number of votes, and Cavaignac retired, without stain and without reproach, into private life. The constituent assembly, having run its career, gave place to a legislative assembly, which, harassed and distracted by a factious, intriguing, and personal spirit, at length fell a victim to the *coup d'etat* of the 2d December 1851. For about a year or more after the *coup d'etat* the name of republic was still preserved. But in the month of December 1852 the re-establishment of the Empire was submitted to a plebiscate, which adopted it by a large majority. Since the proclamation of the Empire public works have been commenced and continued on a gigantic scale, and Paris has been greatly embellished and improved.

Happily the good understanding between France and England has not been interrupted by any of the changes which have recently taken place; and it is to be hoped that the good feeling of the people of both countries, and a just sense of their mutual interests, will more closely cement and perpetuate the national alliance. France has with England determined to sustain the integrity of the Ottoman Porte against the aggression of Russia. With a view to accomplish this object war was declared by England and France against Russia in 1854. Since that period the Emperor of the French has visited England, where he was greeted with the hearty acclamations of the people, and received the cordial hospitality of the royal family at Windsor; and the Queen of Great Britain in return has visited her ally in Paris, where her Majesty was enthusiastically received by all classes on the 18th August 1855.

The empire of France as it now exists is said to be based on the sovereignty of the people and the great principles of 1789.[1] The title of the chief of the state is Emperor of the French by the grace of God and the National Will. The crown is hereditary in the male line only, and by order of primogeniture. The Emperor exercises legislative power conjointly with the Senate, the *corps legislatif*, and the *conseil d'etat*. He is alone invested with the executive power, is completely independent of the great powers in the state, and enjoys all the prerogatives which ordinarily belong to sovereignty.

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[1] Preamble of the Constitution of 1852.

Chronological and Dynastic Table of the Monarchs of France from 418 to 1855 A.D.

Monarchs of France.

The kings of France which followed Pharamond are divided into three races :—

First Race.—*The Merovingians.*

		A.D.
Pharamond		418–430
Clodion		430–450
Merovée		451–457
Childéric I.		457–481
Clovis I.		481–511
Clodomir (at Orleans)	511–524	
Thierry I. (at Metz)	511–534	
Théodebert I. (at Metz)	534-548	
Théodebald (at Metz)	548–555	
Childebert I. (at Paris)		511–558
Clotaire I. (at Soissons 511–558)		558–561
Sigebert I. (in Austrasia)	561–575	
Childebert II. (at first in Austrasia; in Austrasia and Burgundy from 593),	575–596	
Théodebert II. (in Austrasia)	596–612	
Caribert I. (at Paris)		561–567
Gontran (Orléans and Burgundy)	561–593	
Thierry II. (1st in Orleans; in Burgundy; 2d in Austrasia, 612)	596–613	
Chilpéric I. (at Soissons, 561); then at Paris		567–584
Clotaire II. (at first at Soissons, then alone)		584–628
Caribert II. (in Aquitaine)	628–631	
Dagobert I. (in Austrasia, 622, at Soissons, 628, then alone)		628–638
Sigebert II. (in Austrasia)	638–656	
Clovis II. (Neustria and Burgundy)		638–656
Clotaire III. (Neustria and Burgundy)		656–670
Childéric II. (Austrasia 656–670); alone		670–673
Dagobert II. (Austrasia)	674–679	
Thierry I. (or III.) Neustria 673–679); alone...		679–691
Clovis III.		691–695
Childebert III.		695–711
Dagobert II. (or III.)		711–715
Clotaire IV.		717–719
Chilpéric II.		715–720
Thierry II. (or IV.)		720–737
Interregnum	737–742	

Second Race.—*The Carlovingians.*

Pepin of Héristall (Duke of Austrasia)	687–714	
Théodoald	714–715	
Charles-Martel	715–741	
Carloman (abdicates)	741–746	
Pepin, the Short (*le Bref*), with Carloman, 741; (alone, 746); king of France		752–768
Carloman		768–771
Charlemagne (with Carloman, 768–771); alone		771–814
Louis I. (*le Débonnaire*)		814–840
Charles II., the Bald (*le Chauve*)		840–877
Louis II., the Stammerer (*le Bèque*)		877–879
Louis III. and Carloman		879–882
Carloman (alone)		882–884
Charles III., the Fat (*le Gros*)		884–888
Eudes or Odon (1st Capetian king)	888–898	
Charles III., the Simple (*le Simple*), proclaimed king in 892, then alone after Eude's death...		898–923
Robert I. (2d Capetian king)	922–923	
Raoul (father of the Capetians)	923–936	
Louis IV. (*d'Outre Mer*)		936–954
Lothaire		954–986
Louis V., the Indolent (*le Fainéant*)		986–987

Third Race.—*The Capetians.*

Monarchs of France.

	A.D.
Hugues Capet	987–996
Robert II.	996–1031
Henri I.	1031–1060
Philippe I.	1060–1108
Louis VI., the Fat (*le Gros*)	1108–1137
Louis VII., the Young (*le Jeune*)	1137–1180
Philippe II. (*Auguste*)	1180–1223
Louis VIII., the Lion (*le Lion*)	1223–1226
Louis IX., or Saint Louis	1226–1270

I. *Elder Line or Philippine.*

Philippe III., the Hardy (*le Hardi*)	1270–1285

1. *The Elder Branch.*

Philippe IV., the Handsome (*le Bel*)	1285–1314
Louis X., the Headstrong (*le Hutin*)	1314–1316
Jean (the Posthumous son of Louis X.	1316
Philippe V., the Tall, (brother of Louis X.)...	1316–1322
Charles IV., the Handsome (*le Bel*)	1322–1328

2. *The Younger Branch, or de Valois* (issue of Philippe III., by Charles de Valois, father of Philippe VI.)

Philippe VI. (de Valois)	1328–1350
Jean II., the Good (*le Bon*)	1350–1364
Charles V., the Wise (*le Sage*)	1364–1380

(*a.*) *The Elder shoot of the Valois Branch.*

Charles VI., the Beloved (*le Bien-Aimé*)	1380–1422
Charles VII., the Victorious	1422–1461
Louis XI. (detested for his cruelties)	1461–1483
Charles VIII.	1483–1498

(*b.*) *The Younger shoot of the Valois Branch, or Valois-Orléans (issue of Charles V., by Louis Duke of Orléans, his second son.)*

(Primogeniture, Orléans-Orléans (issue of Charles Duke of Orléans, eldest son of Louis d'Orléans.)

Louis XII.	1498–1515

(Secundogeniture, Orléans-Angoulême (issue of Jean Comte d'Angoulême, second son of Louis Duke of Orléans.)

François I.	1515–1547
Henri II.	1547–1559
François II.	1559–1560
Charles IX.	1560–1574
Henry III.	1574–1589

II. *Younger or Robertine Line, or House of Bourbon (issue of Robert of Clermont, ninth son of Saint Louis, and brother of Philippe III.)*

Henri IV.	1589–1610
Louis XIII., the Just	1610–1643

1. *The Elder Branch of the Bourbon line.*

Louis XIV., the Great	1643–1715
Louis XV., the Wellbeloved	1715–1774
Louis XVI.	1774–1793
Louis XVII. (never reigned, but died in prison)	1793–1795
Republic (proclaimed September 21)	1792–1804
Convention	1792–1794
Directoire	1794–1799
Consulat (Bonaparte first Consul, then consul for life)	1799–1804
Empire (Napoléon Bonaparte, called Napoléon I. Emperor of the French, &c.)	1804–1814
Louis XVIII.	1814–1824
Napoleon I. (for the second time from March 20 till June 24)[1]	1815
Charles X.	1824–1830

2. *The Younger Branch of the House of Bourbon, or House of Orléans (issue of Philippe second son of Louis XIII., and brother of Louis XIV.)*

Louis-Philippe I.	1830–1848
Republic	1848–1852
Napoléon III. (Emperor of the French.)	

On December 18, 1852, the succession in default of issue from the Emperor was settled in favour of Prince Jerome Napoleon and his heirs-male.

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[1] Napoleon II. (?) was Napoleon-Joseph, son of Bonaparte and Maria Louisa Archduchess of Austria, born March 20, 1811; but though he never reigned nor was acknowledged, yet Napoleon III. designated him Napoleon II. for the sake of continuing the dynasty.

II. STATISTICS OF THE FRENCH EMPIRE IN 1855.

As many of the statistical statements are given in French measures of value, a table is inserted at the end of the article, by a reference to which the English equivalents will be easily ascertained.

I. SITUATION AND EXTENT, FACE OF THE COUNTRY, CLIMATE AND SOIL.

This important part of continental Europe extends from the forty-third to the fifty-first degree of north latitude, and from longitude 8. 25. E., to longitude 4. 43. W. The greatest length of France, exceeding 665 miles, is from east to west—from Alsace to Brittany, which projects into the Atlantic like a wedge, and without which France would approach in form to a square. Its breadth from north to south is about 576 miles; and its superficial extent, as stated in the *Statistique de la France*, is 52,768,618 hectares, equal to 204,355 square miles, or 130,787,160 English acres—nearly twice the total area of the British isles.

Though in point of extent of coast and ready access from the interior to the sea, France is far inferior to Great Britain and Ireland, she is, on the other hand, more fortunate in these respects than the vast inland territories of Austria and Russia. She has the advantage over these countries likewise in strength of natural barriers, the Pyrenees forming a great bulwark on the south-west, the Alps on the south-east, and the Jura and the Vosges Mountains on the east. The Belgian is the only open part of the frontier.

Surface. The surface of France exhibits, in general, an advantageous succession of high and low ground. Less level than Poland, the north of Germany, or the greater part of European Russia, it is, on the whole, less mountainous than Spain or Italy, and may with great propriety be compared to England, with this distinction, that whilst in the latter the mountainous tracts are in the north and west, in France they are in the south and east. Passing over the lofty ridges which form the frontier line of France on the side of the Pyrenees, the Alps, the Jura, the Vosges, and confining our attention to the interior, we find throughout Flanders, Picardy, Normandy, and the countries to the north and south of the Loire, a level tract, diversified occasionally by hills, either insulated or in succession, but by none of the massy elevations entitled to the name of mountains. These we do not meet until reaching the south of Champagne and north of Burgundy, near the sources of the Meuse, the Moselle, the Saône, and the Seine. From this bleak quarter (Lat. 47. and 48.) a very long range of mountains proceeds from north to south in a direction parallel to the course, first of the Saône, and subsequently of the Rhône, until, on approaching the Mediterranean, they branch off to the south-west and join the Pyrenees. Their greatest height is in Auvergne (about Lat. 45.), where this chain, or more properly a lateral branch of it, attains, at the mountains called Cantal and Puy-de-Dôme, an elevation of fully 6355 feet, and has its highest ridge covered with snow during the greater part of the year. Another, but a much less lofty range, extends from Bordeaux to the south-east, a distance of 150 miles, until it reaches the Pyrenees. The smaller chains are numerous in the east and south-east of the kingdom—in Lorraine, the Nivernois, Dauphiné, Provence; also in part of the interior, particularly the Limousin and Guienne. They are interspersed with extensive plains, but, on the whole, the south and east of France are rugged and elevated tracts, and may be said to be to that country what Wales and Scotland are to Great Britain.

Rivers. The course of the great rivers is easily connected with this view of the surface of the territory of France. The Moselle, the Meuse, the Marne, the Aube, the Seine, the Yonne, taking their rise on the northern side of the mountain chain, between Lat. 47. and 48., flow all to the north or north-west, until reaching the sea, or quitting the territory of France. From the southern slope of the same range proceed the Saône, the Doubs, and the Ain. These, along with many smaller streams, are all received by the Rhône, which flows almost due south, with a full and rapid current, until it reaches the Mediterranean. The Loire has much the longest course of any river in France. It rises to the southward of Lat. 45., flows in a northerly direction above 200 miles; turns, near Orléans, to the west, is joined by the Cher, Indre, and Vienne from the south, and, after receiving the Sarthe from the north, falls into the Atlantic below Nantes. The Garonne, a river of less length of course, but of a greater volume of water, descends from the French side of the Pyrenees, flows northward, and, after receiving from these mountains a number of tributary streams, of which the chief is the Arriège, turns to the westward near Montauban (Lat. 44.), and falls into the Atlantic after being augmented by the waters of the Tarn, Aveyron, Lot, and finally the Dordogne, all flowing from the western face of the mountains of Auvergne.

France has very few lakes, either in the mountainous districts of the south, or in the great levels of the north and west. It contains, however, a number of maritime inlets, forming inland bays, and communicating with the sea only by a channel of greater or less width. These occur partly on the south-west coast, in Gascony; but more in the south and south-east, in Languedoc and Provence. Their want of depth prevents them from serving as roadsteads for shipping, and they are useful chiefly for fishing, or for the manufacture of bay-salt.

Forests. France has much less of artificial or ornamental plantation than England, and much more of natural forest, the total extent of ground covered by wood being computed at seventeen millions of acres, or one-eighth of the territorial surface of the kingdom. Forests are found in almost every department. Lower Normandy contains several of considerable extent. There is a large one at Fontainebleau, only forty-five miles from Paris; and a larger one to the north of the Loire, in the vicinity of Orléans. Those situated in the neighbourhood of the sea, or of navigable rivers, or of great works, such as glass-houses and iron-foundries, have long been subjected to an improvident consumption, which is likely to be increased by the still heavy though reduced duties imposed on foreign coal, and by the undue encouragements given to the smelting of iron by the heavy duties which were in 1814 and in 1822 laid on the importation of foreign iron; so that at present the principal forests are at a distance inland, particularly in the east, in the department of Ardennes, and in the long mountainous tract that forms the boundary of France on the side of Switzerland.

Scenery. The want of ornamental plantations, and still more the almost total want of hedges, makes a great deduction from the beauty of scenery in France, and deprives the country of the cheerful aspect so striking in England. The nearest approach to the latter is seen in travelling through the fresh pastures and gentle eminences of Normandy. Of the other provinces, some, like Picardy, Champagne, Poitou, consist of wide uninteresting levels; whilst others, such as Auvergne, part of Upper Languedoc, and the vicinity of the Alps and Pyrenees, contain a bold but bleak scenery. The most beautiful and picturesque views are to be found in the Limousin, or on the borders of the great rivers. The banks of the Loire from Orleans westward are proverbially beautiful. The Rhône, bordered by mountains, has generally a bold, and occasionally a wild aspect. The Seine, equally wide, but much more tranquil, flows through a district verdant but less picturesque.

Climate.

In a country of so great extent and of such diversified surface as France, it is difficult to condense a description of the climate under a few comprehensive heads. The most natural division is into the north, south, and central regions. The north, comprehending Flanders, Picardy, Normandy, Brittany, and in general all that part of France which would be bounded on the south by a diagonal line from Lat. 47. on the west to Lat. 49. on the east frontier, bears a great resemblance, both in temperature and produce, to the south of England, rain occurring frequently, and the country being consequently fit for pasture. There, as with us, the predominant culture is wheat, barley, oats, rye, and such fruit as apples, pears, cherries; also hemp, flax, rapeseed. It is here only in France, that the natural pastures are rich and extensive; here also the species of wood, oak, ash, elm, bear a close resemblance to ours. The central region may be said to comprehend the country to the south of the Loire, or rather of the diagonal line we have mentioned, until reaching a similar line in Lat. 45. on the west and 47. on the east frontier. Here, with the exception of the mountainous parts, the winter is sensibly shorter and milder. Wheat, barley, oats, and rye, are still cultivated, but maize begins to appear, and vines become general. The weather in this great inland tract is much more steady than in the north. In the summer months there is little rain, and storms, when they occur, are frequently accompanied with hail; but, on the whole, the temperature is perhaps the most pleasant in France, being exempt equally from the oppressive heat of the south and the frequent humidity of the north. The third region, comprehending the whole breadth of the French territory from Lat. 45. and 46. to Lat. 43., and in some parts to 42. 30., approaches in climate to the heat of Spain and Italy, rendering it necessary in the summer to suspend all active exertion during the middle of the day, and to reserve it for the morning and evening. A shaded situation is here the *desideratum* for a dwelling, and a supply of water for agriculture. In this region the heat invariably produces an exuberant crop where irrigation can be applied; hence the frequency of wells, which are generally worked by a wheel and some rude machinery. Wheat is partially cultivated; barley, oats, and rye only on the high grounds; maize is very general, and vines supply not only the main article of export, but the usual drink of the inhabitants. The common fruits are olives and mulberries, and, in a few very warm situations, oranges and lemons. Pasturage is good only on mountainous or irrigated tracts. To pulmonic invalids the climate may be advantageous, but in this respect also material distinctions occur from locality, the winter in the south-east of France being at intervals very cold, from the *vent de bise*, a piercing wind that blows from the Alps and the mountains of Auvergne. Here, notwithstanding the latitude, the cold of winter is intense.

Brittany, projecting into the Atlantic, is as rainy as Ireland or Cornwall. Normandy, with part of Picardy and French Flanders, may be compared to our inland counties. In the interior of France the rains are less frequent, but far more heavy; so that there is much less difference in the quantity of rain that falls in the course of the year than in the number of rainy days. The atmosphere of France is much less cloudy than that of Britain. The most frequent wind in the north of France, as in Great Britain and Ireland, is the south-west; it prevails also, but to a less degree, in the central part of the kingdom. In the south of France the more common winds are from the north.

The difference of temperature between London and Paris is not considerable, nor is the degree of heat found to be intense along the west coast of France, until reaching or rather passing Poitou. In the interior it is much more perceptible, being strongly felt at Lyon, Bordeaux, Toulouse, and still more in the latitude of Nimes, Aix, Marseilles, and Toulon. On the whole, the variations of climate between the north and south of France are considerably greater than between the north and south of Britain, where the effect of difference of latitude is so much modified by the vicinity of the sea, and where no such variation is known as the very material one indicated by the diagonal line from east to west, the latter being two degrees colder in consequence of the breezes and vapours of the Atlantic.

The harvest begins in the north of France between the 20th and 25th July, in the central part about the middle of that month, in the south about the end of June. September and October are the months of vintage. The great hazard to the corn of the central part of the kingdom arises from violent storms of rain and hail; in the south, from the want of rain in spring. In winter the *vent de bise* often proves destructive to the olives. The great heats are in July, August, and September; a time of much annoyance in the south of France, from mosquitoes, gnats, flies, and other insects; whilst even scorpions are found in that warm latitude.

Soil.

To exhibit a classification of the different kinds of soil is a task of difficulty in any extensive country, and in none more so than in France, where a striking difference prevails, not only in contiguous departments, but in adjacent districts of the same department. In Flanders, Picardy, Artois, Normandy, and the Pays de Beauce, a fertile tract to the south of Paris, the soil consists frequently of a loamy mould; in the central and southern parts of the kingdom it is often lighter; whilst the greater part of Brittany, and of the departments along the western coast, have a heathy soil, naturally unproductive, but capable of considerable improvement. But these collective estimates are liable to great deductions; and the attempts made by Arthur Young and other statistical writers to calculate the proportion of the different descriptions of soil, whether loam, heath, chalk, gravel, or the like, are considered by the French as far from successful; even the more systematic effort made by their own government, in the beginning of this century, to compute the value of land by *masses de culture*, that is, by classing all kindred soils under one head, proved altogether abortive. We shall forbear, therefore, all such vague calculations, and proceed to state the value of annual produce in the different departments, endeavouring to class the latter in lots, according to their position and relative productiveness.

Average annual income of the various departments of France, computed by the English acre, and in sterling money, taking the words "annual income" in the most extensive sense, as including the rent of land, the farmer's profit, and the rent of houses in towns.—(Chaptal, *De l'Industrie Française*, vol. i., p. 209.)

North and north-east of France.

The fertility and high state of cultivation of French Flanders, and the near approach made to it by part of Normandy and Picardy, are apparent from the following returns. The chief objects of culture there, as in England, are wheat, oats, barley, and rye; the pasturages are extensive; the horses, cattle, and sheep are numerous.

Nord (French Flanders)	23s. 4d.	Somme	15s. 6d.
Seine Inférieure	22s. 10d.	Pas de Calais	15s. 6d.
Calvados	18s. 6d.	Manche	13s. 8d.
		Eure	13s. 7d.

The inland province, called formerly, from the rivers along its circumference, the Isle of France, comes next in the list of relative productiveness. The objects of culture are similar to those of Flanders and Normandy, viz., wheat, oats, and barley; but the pasturages are less rich and extensive.

Seine et Oise	17s. 3d.	Oise	13s. 6d.
Seine et Marne	13s. 7d.		

The district around Paris forms the centre of the above departments. There the average return is stated at 72s. 9d. per acre; but as this includes house-rent, and is altogether a peculiar case, we proceed to the next great division of open country.[1]

Alsace, though in some parts mountainous, is in others level and fertile, particularly adapted to pasture and the culture of wheat.

Bas Rhin	14s. 3d.	Haut Rhin	12s. 6d.

Brittany has in several parts good pasturage, and a soil adapted to the culture of wheat. Many other parts, however, consist of unproductive heaths. The general backwardness and poverty of the province are but too strikingly exemplified by the following return:

Ille et Vilaine	8s. 10d.	Morbihan	6s. 8d.
Loire Inférieure	8s. 0d.	Finisterre	6s. 8d.
Côtes du Nord	7s. 7d.		

Central division of France.

Here are also extensive *landes* or heaths. Vines are partially cultivated, but the general produce consists of wheat, oats, barley. The pastures are extensive, though less rich than in Normandy.

Eure et Loire	10s. 4d.	Mayenne	8s. 3d.
Orne	9s. 7d.	Loiret	8s. 0d.
Maine et Loire	9s. 6d.	Indre et Loire	7s. 2d.
Sarthe	9s. 5d.		

Champagne, Franche Comté, and part of Burgundy.

Of this great tract parts are level and parts are mountainous. The climate, though in general steady, is very different in its degree of warmth, according to the elevation of the ground. Hence a considerable discrepancy in the relative fitness for pasture, for corn culture, or for vineyards. Unluckily the water communication is limited, there being few canals, and the rivers being too near their source to be navigable.

Aime	12s. 0d.	Aube	7s. 0d.
Haute Saône	10s. 8d.	Yonne	7s. 0d.
Saône et Loire	10s. 0d.	Doubs	7s. 0d.
Jura	9s. 1d.	Marne	6s. 10d.
Ain	8s. 8d.	Haute Marne	5s. 8d.
Côte d'Or	8s. 3d.		

The six following departments, similar to the above in latitude, and not materially different in climate, are of very inferior productiveness; in some parts, from the mountainous nature of their surface; in others, on account of extensive heaths, moors, marshes, and tracts of sand. The objects of culture continue to be wheat, oats, and rye; vines and maize are raised in the warmest exposures.

Loir et Cher	5s. 9d.	Allier	5s. 0d.
Nievre	5s. 8d.	Cher	4s. 3d.
Vienne	5s. 1d.	Indre	4s. 1d.

Lorraine is a mountainous country, containing extensive tracts of sheep pasture. Its chief agricultural products are oats and wheat.

Moselle	8s. 7d.	Meurthe	8s. 0d.
Meuse	7s. 6d.	Ardennes	5s. 8d.
Vosges	6s. 3d.		

Auvergne.

This extensive province, and the departments to the south and south-west, are in general mountainous, cold, considering their latitude, and thinly peopled. The chief product of the high grounds is rye. The best departments are those of the

Loire	8s. 4d.	Ardèche	6s. 6d.
Puy-de-Dôme	8s. 1d.	Haute Loire	6s. 2d.

The following, situated to the south and west of the above, are all poor and thinly peopled:

Cantal	5s. 2d.	Corrèze	4s. 3d.
Aveyron	4s. 10d.	Lozère	3s. 8d.
Haute Vienne	4s. 4d.	Creuse	3s. 5d.

South-east division of France.

Here we attain a more genial climate, and a country in general well adapted to the growth of the vine. But a great part of this tract (Dauphiné and Upper Languedoc) is mountainous; and the export of wine is consequently attended with much more difficulty than along the banks of the Garonne. Wheat, maize, and silk, are the other principal products.

Rhône (including Lyon)	13s. 3d.	Bouches du Rhône	8s. 11d.
Vaucluse	10s. 0d.	Gard	8s. 10d.
Var	9s. 1d.	Isère	8s. 2d.
Herault	9s. 1d.	Aude	7s. 8d.
		Drôme	5s. 11d.

South-west division.

Of the following ten departments, some are indebted for the amount of their return to the extent of their vintage, which necessarily varies, and which, for the last five or six years, owing to the vine disease, has been singularly unproductive; others to their productiveness in wheat or maize. In pasture or in cattle these departments are far from abundant.

Tarn et Garonne	13s. 0d.	Haute Garonne	10s. 2d.
Lot et Garonne	11s. 7d.	Charente	8s. 11d.
Gironde (including Tarn Bordeaux)	10s. 6d.	Tarn	8s. 4d.
Charente Inférieure	10s. 2d.	Gers	7s. 8d.
		Dordogne	7s. 0d.
		Lot	6s. 2d.

La Vendée.

It remains that we notice a few departments so particularly circumstanced as not to fall under any of the preceding heads. La Vendée, so peculiar in its surface, and not likely to recover for ages the devastations of civil war, is naturally fertile. Its products are wheat, oats, and, in the warmer situations, maize.

Deux Sevres	8s. 0d.	Vendée	6s. 8d.

Lands in the south-west.

Three-fourths of this department consist of sandy downs; the remainder produces maize, wheat, and vines; but the average annual produce is only 2s. 1d. per acre.

Pyrénées.

Here the degree of fertility becomes less and less as we approach to the elevated line which separates France from Spain. This rugged region contains great tracts of pasture. The corn raised is maize, wheat, oats, or barley, according to the altitude and temperature of the district.

Basses Pyrénées	5s. 7d.	Arriège	5s. 0d.
Pyrénées Orientales	5s. 7d.	Hautes Pyrénées	4s. 8d.

Lastly comes the still more lofty barrier of France to the south-east, the products of which are a little wheat in the valleys; and in the higher grounds pasture, with corn of the higher species.

Hautes Alpes	2s. 1d.	Basses Alpes	2s. 0d.

II. DIVISIONS, CIVIL AND ECCLESIASTICAL.

Numbers of clergy Roman Catholic, Reforme and Jewi

Nothing can be more simple and uniform than the territorial divisions of France since the first Revolution. Instead of old provinces or counties, disproportioned in size, and having frequently their chief town at one or other of the extremities, the departments of France have almost always the capital in the centre, and, in their extent, approximate in a great degree to equality. Each department is divided into three, four, five, or more arrondissements; each arrondissement into seven, eight, or nine cantons; and each canton into twelve, fifteen, or more communes. The communes in France are nearly similar to parishes, though they are constituted communes by having a civil instead of a clerical functionary. The numbers of each class are as follows:—

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[1] It should be observed that since 1851 and 1852 house rent has risen in many instances a third in the better localities, and in less favoured quarters a fourth, a fifth, or a sixth, on the rents paid in 1830. In the manufacturing and commercial towns of France also, such as Lyon, Rouen, Havre, &c., rent, always high, has augmented generally ten and in some cases twelve or fourteen per cent. It should be observed generally that these averages can only be approximate, the rent of land, the farmers' profit, and the rent of houses being uncertain and fluctuating.

Departments since the peace of 1814 (including Corsica)	86
Arrondissements	363
Cantons	2,847
Communes	36,835

A far different result this from the gigantic empire of Bonaparte, which, after his latest acquisitions in 1810, extended to Rome in the south, and to Hamburg and Lübeck in the north, comprehending above 130 departments, and a population of forty-four millions. But of all these splendid conquests, none, with the exception of the Netherlands, formed a substantial addition to the power of France. The Italian provinces, separated by a vast natural barrier, were inhabited by a people who bore the ascendency of their northern neighbours only until circumstances should enable them to throw off the yoke, and become incorporated into one great and independent state; whilst the Germans, still more distinct in habits and language from the French, were indignant at their humiliation, and eager to rise with the first appearance of foreign aid. Belgium alone had no natural barrier, no political attachment, to oppose to a union with France.

The ecclesiastical division of France is into archbishoprics and bishoprics. These, before the revolution, were numerous, there being eighteen archbishops and a hundred and twelve bishops; but as that great political change bore particularly hard on the clergy, of whom, as of the *noblesse*, the great majority were adherents of the Bourbons, the number of prelates was reduced, first to eighty-five, and eventually (in 1801) to fifty,—nine archbishops and forty-one bishops. On the restoration of the Bourbons, measures were taken to augment their number; and in 1817 a new *concordat*, concluded with the court of Rome, announced the creation of nine additional archbishoprics and thirty-three bishoprics, carrying the totals respectively to eighteen and seventy-four. There are now (1855) fifteen archbishops and sixty-five bishops of the Roman Catholic faith. The eighty dioceses contain 3301 parishes, 28,201 chapels of ease, and 6486 vicarages. All religions are freely professed in France, but only the Roman Catholic, Protestant, Jewish, and Mohammedan are acknowledged and paid by the state. The Reformed and Jewish religions have a considerable number of consistories. The number of Roman Catholic clergy of every hierarchy and grade in France is 40,000; or 50,000, if the pupils studying theology in eighty-six seminaries and 120 secondary schools are included. The Protestant (Lutherans) has 388 ministers, the Reformed of the confession of Augsburg 387, total 775. There are 111 Jewish rabbis and one chief rabbi.

A further distribution of the French territory is into military divisions, or great districts, comprising four or five departments. Of these there are in the whole kingdom twenty-two, each having a general of rank and a body of officers stationed in a central town.

III. HARBOURS, NAVIGABLE RIVERS, CANALS, ROADS, BRIDGES.

In this important point France is considerably inferior to England, her long tract of coast washed by the Atlantic and the Bay of Biscay being indifferently provided with seaports, and those on the southern shore of the channel forming a striking contrast to the spacious maritime inlets on the English side. To begin from the north-east, Dunkirk has a small harbour, but improved in the interior of the town, approached on the Dutch plan by a canal leading from the sea. Boulogne has a roadstead—which, however, has been much deepened and improved—indebted for its celebrity under Bonaparte to the facility of giving protection, by land batteries near its entrance, to a numerous assemblage of small craft. The port of Dieppe is exposed, and of course unsuitable for winter; that of St Malo is better; whilst Cherbourg, on which immense sums have been expended, is now a port and arsenal of great utility and importance to the imperial navy. On doubling the projecting part of Brittany, we find, in the south-west of that province, L'Orient. Brittany also possesses Brest, the great maritime port of the Atlantic for the navy. Proceeding further to the south, we find Rochefort, at La Rochelle, a small but secure harbour, and at Bordeaux a river nearly equal in width to the Thames at London. From this there is no seaport until we reach Bayonne, a place of no easy access. On the Mediterranean, France has the ports of Cette and Marseilles, the latter spacious and secure, and the great maritime port, arsenal, and dockyard of Toulon, which, with Cherbourg, Brest, L'Orient, Rochefort, and Toulon, are called in ordinary parlance *ports militaires.*

Nantes, though a large commercial town, adjoins a shallow part of the Loire, and vessels of burden are obliged to load and unload at Paimbœuf. The great dockyards and naval stations of the kingdom are at Brest and Toulon, both excellent harbours, and at Rochefort, which is situated on the river Charente, near its mouth. In all these the accommodation for shipping is the gift of nature; but at Cherbourg the case is very different, that port containing works, of which the labour and expense (see the article BREAKWATER, vol. v. p. 302) have been very great. Its roadstead, extensive but open, has a sea-wall, affording protection from the swell of the sea; and its spacious dock, excavated since the beginning of this century, at an expense of L.3,000,000 sterling, is capable of containing fifty sail of the line. Le Havre de Grace, the best mercantile harbour in the north of France, has also been formed at a large expense.

Inland navigation.

The square form of France, favourable as it is for military defence, subjects the greater part of the country to the want of those ready and economical means of transport by sea which form the great physical advantage of Great Britain and Ireland. Unluckily, this want is very imperfectly supplied by the inland waters, canals being very little extended, and the navigation of the great rivers subject to many obstructions; occurring in one part from rapidity, in another from shallowness; at one season from drought, at another from overflow. The application of steam to navigation has corrected in part this most inconvenient tardiness; but the accommodation which is afforded by the Loire in the interior, the Rhône in the south, the Seine in the north, and the Garonne, with its Canal du Languedoc in the south-west, is but a small portion of what is furnished by our numerous intersections in England, or of what is wanted for so extensive a territory as that of France.

The Canal of Languedoc, or the *Canal du Midi*, as it is now generally called, begun in the reign of Louis XIV. and completed in the year 1668, was the first example in Europe of inland navigation on a great scale. It is the most stupendous undertaking of the sort that has been executed in France. Its general breadth is sixty feet, its depth six and a half feet. It has 114 locks and sluices, and in its highest part it is 600 feet above the level of the sea. As a scientific work, it did honour to an age as yet little advanced in engineering; but in a pecuniary point of view it was unproductive, the tolls never having paid the interest of the very large sum (upwards of L.1,200,000 sterling) expended upon it.[1] The canal begins at Toulouse on the Garonne, remounts the valley of the Lhers, traverses the chain of the Monts Corbières, which joins the Cevennes to the Pyrenees, descends the valley of the Aude at Carcasonne, which it leaves at Gincstas to pass by Béziers, where it traverses the river d'Orb. Passing through Hérault above and near Agde, it ends at l'Étang de Thau, at the place called le Port des Onglous. The navigation is however continued to the port of Cette by the canal of Cette, and thus the Atlantic and Mediterranean are united.

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[1] The cost of the canal was 17,000,000 francs, representing, according to M. Ernest Grangez (see *Precis Historique et Statistique des voies navigables*, p. 404), according to the present value of money, a sum of 30,000,000 francs.

The canal of Briare is of earlier date, and of much less extent. The object here was to open a navigation from the Loire on the south to the Seine on the north, by a canal running almost due north, a distance of forty miles. It then receives from the west the canal of Orléans, commenced in 1675, and proceeding also from the Loire; after which the canal is continued to the north, under the name of Canal de l'Oing, till it reaches the Seine. This canal was begun in 1605, in the reign of Henri IV., and was completed in 1642, under Louis XIII. There are, besides this great work, several other important and extensive canals in France. The Canal du Centre unites the Saône and the Loire in the upper part of the course of the latter. It is seventy-two English miles in length, and was completed in 1791, at an expense of L.456,000. Its summit level is about 240 feet above the level of the Loire at Digoin. It has eighty-one locks, five and a half feet of water, forty-eight of breadth at the water's edge, and thirty feet at the bottom. The canal of St Quentin, twenty-eight English miles in length, was completed in 1810, but the navigation was far from perfect. In 1826 the necessary expenses to render the canal perfect were estimated at 4,000,000 francs. A concession of the canal was made to a Sieur Honorez in 1827, for a period of twenty years. On the 11th July 1847, the state entered into full and entire possession of the line which it had conceded. It joins the Scheldt and the Somme. The canal of Besançon is extensive. It joins the Saône, and consequently the Rhône, to the Rhine. From the Saône it stretches a little above St Jean de Losne, by Dôle, Besançon, and Mulhausen, to Strasbourg, a distance of 200 miles, where it joins the Rhine. The canal of Burgundy joins the Rhône to the Seine. This canal was opened along its whole line in December 1832, by way of trial, and in the past year, 1854, it was completely opened. The canal of the Ourcq was dug, not for a commercial purpose, but to convey the water of that little river to Paris, for the consumption of the inhabitants. At a village called La Villette, on the north side of Paris, there was some years ago excavated, at the cost of a million sterling, a basin, approaching in size to our London docks, and adapted, when the necessary canals shall be completed, for the deposit of merchandise brought from Hávre and Rouen on the one side, and from Flanders and Champagne on the other. In the south of France there is a short canal proceeding from the Rhône, near Tarascon, in a S.W. direction, to the Mediterranean, called, from its vicinity to a well-known annual fair, *Canal de Beaucaire*. This canal traverses a great extent of marsh, which it has had the effect of draining. This water-way was opened to supply the imperfect navigation of the lesser Rhône, and of the two canals by which the communication from the Garonne to the Rhône was formerly carried on. These are among the chief canals of France. In the year 1836 there were seventy-four canals, having a total length of 3,699,913 mètres, nearly equal to 2280 English miles. But since then large sums have been allocated by the state for canalization. In the fifteen years between the 12th July 1837, and the 28th March 1852, M. Ernest Grangez, chef-de-bureau at the ministry of commerce and public works, tells us that, for this purpose, extraordinary credits have been taken for 241,936,361 francs. Of this sum 227,695,500 francs had been expended on 31st December 1853. In 1854, a credit of 8,000,000 francs had been granted.

The canalization of the Mayenne from Laval to Mayenne, of the Vire from the Pont de Gourfaleur to Vire, of Reims to the Marne, of Bouc to Martigues, from Caen to the sea, from the Charente to Marennes, from La Rochelle to Marans, and from Saint Thébault to the lateral canal of the Loire, is in course of execution. But it is probable that this improved mode of communication may be superseded by the still greater improvement of the railroad, which had to a considerable degree, engrossed the public attention in France. There are, however, obstacles to the progress of these improvements, arising partly from the mode of management adopted, and partly also from the high price of the materials required. All great works for the benefit of the community at large, such as canals, railroads, docks, and the like, are carried on at the expense, for the benefit, and under the control of the government. Plans and estimates must be made out and laid before the minister of the interior, who refers them to other public functionaries, namely, the prefect of the department, and afterwards to the *bureau des ponts et des chaussées;* and when all these persons are satisfied, a public officer is then appointed to superintend the work. This tedious official routine, through which all public undertakings have to pass, tends to discourage individual enterprise, and accounts perhaps for the comparatively few works of this description which have been undertaken in France. The high price of iron, in consequence of the tax on foreign iron, has likewise operated as a great discouragement to the construction of railroads in France; and thus we have an additional illustration of the ruinous effects of this tax in obstructing the domestic improvement of the country.

Roads.

The great roads in France are managed, not, as with us, by county commissioners, but by government *bureaux* or boards, the chief of which are at Paris. These boards are all under the direction of the minister of public works. The extent of road under their direction is about 30,000 miles; and the annual expenditure from L.1,300,000 to L.1,500,000, the whole of which is defrayed without one toll or turnpike. An attempt was made under Bonaparte to levy tolls; but this excited so much clamour in a country where commercial intercourse is carried on almost wholly by land-carriage, that it was found indispensable to seek the necessary funds from another source—a tax on salt. The great roads in France are in general in tolerable condition; but no epithet can convey an idea of the wretched state of the cross roads in almost every department; full of hollows, encumbered with stones, or inundated with water, they receive hardly any repair, but are abandoned, year after year, to the effects of the weather. Notwithstanding the little done by government to favour locomotion, the traffic on roads increased tenfold in the thirty years between 1811 and 1841.

The great roads in France are much wider than in England, exhibiting frequently a long straight avenue lined on each side with chestnut or other large trees. Roads in France are classed under three categories,—imperial roads 14 mètres in breadth, departmental roads about 11 mètres broad, and the *chemins vicinaux.* They are often paved like a street for many miles in succession; the art of road-making being as yet too little understood to prevent material injury from the heavy waggons and ill-constructed wheels, without resorting to this unpleasant alternative. Travelling is thus much less agreeable than in England, particularly as the villages want neatness and cheerfulness, whilst most of the towns along the road are disfigured by narrow crooked streets, in which new stone buildings are often mixed with antiquated wooden structures, such as have disappeared from our provincial towns for nearly a century past. The mails are now conveyed as with us by the railroad, but where there is no rail, in a kind of chariot called a *malle-poste.* The diligences, though somewhat improved in structure, are still clumsy and lumbering.

Railroads.

During the twenty years between 1828 and the 24th February 1848, the railroad conceded to private companies in France only amounted to 2237 miles. The revolution of

February put a sudden stop to all enterprises of this kind. There was not a single concession made in 1848, 1849, or 1850. Indeed, some companies, unable to carry on the work confided to them, were either sequestrated or taken possession of by the state. The concession of the line from Paris to Reims was made on the 16th July 1851, of the line round Paris on the 11th December 1851, of the line from Paris to Lyon 5th January 1852, of the line from Lyon to Avignon 3d January 1852. These and other concessions in 1852 added 2050 miles to the extent of rail. In 1853 the progress continued, and concessions to the extent of 1326 miles were granted. The year 1854 has been consecrated to the execution of the works, and more than 372 miles have been opened between the 1st January and the 31st December 1854.

At the breaking out of the February revolution, the concessions for railways amounted to 2237 miles; in 1854 they amounted to more than 6214 miles. At the end of 1855, 3728 miles additional were opened to the public. The length of lines conceded and executed have thus increased threefold in the space of a few years. About L.80,000,000 have been expended on these enterprises.

The credit required in the budget of 1856 for railways is equal to that of 1855—namely, 55,435,999 francs. At present (1855) the branch rail from Strasbourg to Reims, from Bec d'Allier to Clermont, with a branch to Nevers, from St Germain des Fossés to Roanne, from Mons to Laval, from Marseilles to Toulon, from Caen to Cherbourg, from Bordeaux to Bayonne, and from Narbonne to Perpignan, are in course of construction. Some of these lines are to be opened this year, some in 1857, and some in 1858.

Railway Returns.

				Eng. Miles.
1853...	Value received......	32,634,856 fr.	Length......	2478
1854...	Do.	40,145,632	Do.	2554

Bridges. The French have as yet but few cast-iron bridges, all their great structures of this description being of stone. Of these, the chief are the bridges over the Loire at Orléans, Tours, and Nantes; those on a smaller scale over the Seine at Paris; and those over the Saône and Rhône at Lyon. The Pont du St Esprit above Orange, over the Rhône, is a long structure of sixteen arches. At no great distance from it is the Pont du Gard, one of the most entire, stupendous, and beautiful monuments of Roman architecture, composed of a triple tier of arches, erected for the purpose of conducting an aqueduct over the river Gardon. This magnificent structure is 157 feet in height, 530 feet in length at the bottom, and 872 at the top. Of the lately erected bridges in France, the most remarkable are those over the Seine at Neuilly near Paris, and over the Oise at St Maixent, with two of larger dimensions, viz. one over the Garonne at Bordeaux, the other over the Seine at Rouen. Bridges as well as roads and all other means of intercommunication are under the direction of the minister of public works; a special school for the formation of engineers of bridges and roads is established at Paris. The territory of France is divided into 16 inspectorships of *ponts et chaussées*.

Telegraphic communications are principally made by means of the electric telegraph, of which the government reserves to itself a monopoly, but private persons are allowed to avail themselves of it.

IV. AGRICULTURE.

The agriculture of France is in a very different state from that of England or Scotland, being marked by a degree of backwardness not a little surprising in a country so far advanced in many departments of art and science. The causes of this, however, are not of difficult explanation. France enjoyed for scarcely more than 38 years, *i. e.* from 1814 to 1848, the advantage of a representative body; and the condition of the peasantry was long far inferior to that of the same class in England. No ecclesiastical reformation had taken place to remove a valuable part of the national territory out of the hands of indolent life occupants; and the *grands seigneurs*, the other great body of landholders, devoted their attention to Paris and Versailles, without bestowing a thought on their lands or their tenantry, except to extract from them the means of defraying their expenses in the capital. To this was added a system of taxation, less heavy indeed than that to which we are subjected in England, but extremely crude and impolitic, as evinced in the *gabelle*, or tax on salt used in private families, and in the *corvée*, or obligation on the peasantry to labour on the high roads. To these were joined the humiliating enactments of the game-laws, and the more substantial injury of tithes; for the clerical body in France levied this pernicious assessment as in England, though possessing in property lands of the computed rent of five millions sterling.

Another great drawback on French agriculture was the insignificant size of the occupancies, whether held as farms or as property. A French agriculturist on a small scale has little idea of selling his paternal acres, and converting the amount into a capital for a farm. He is much more likely to go on as the proprietor of eight or ten acres of land, and the cultivator of as many more. The mode of paying rent was equally singular; money rents were general only in the north or most fertile parts of France; they did not, on the whole, exist in more than a fifth or sixth of the kingdom before the Revolution. A more frequent species of tenure was by a grant made under the reservation of a fine, of a quitrent, or of certain servitudes, of which the least burdensome were sending corn to the mill, or grapes to the press, of the proprietor. But of all indications of poverty and backwardness, the most striking was the system of *métairie* (rent in kind); a practice by which a tenant, having little capital of his own, receives from the proprietor the live stock and implements necessary for cultivating his petty tenure, and divides with him its produce. This wretched method was and still is common, not indeed in the north or north-east of France, but in many of the poorer districts of the centre and south. There are, it is to be remarked, several distinctions in this system; the landholder, in some parts, providing only half the cattle and seed, and in others the whole. There is of course a corresponding difference in the apportionment of the produce.

Effects of the Revolution. *La Révolution a été faite pour le cultivateur* is a common saying in France. Indeed, that great convulsion improved so much the situation of the agriculturists, by cancelling, at one decisive blow, the tithes, the game-laws, the *corvée*, and other relics of feudal servitude, that, after all the horrors of Jacobinism, and all the tyranny of Bonaparte, a strong attachment to the Revolution survives among this pacific class. Further, the sale of the church lands transferred a valuable mass of property from indolent into active hands. But with this must terminate the eulogy on the Revolution, the further progress made by agriculture having been caused less by any political change, than by the gradual effect of experience, and the diffusion of information. The degree of agricultural improvement in France since the first Revolution has certainly been less than in England and Scotland, and in one very material point that memorable convulsion has tended to retard it; we mean by the law, suggested by a jealousy of the ascendancy of the *noblesse*, which obliges the owner of property, whether in land or money, to make an almost equal division of it amongst his children. The parent of two children has the free disposal of only one-third of his property, and the parent of three children of only one-fourth, the residue being shared equally among all. The claim of primogeniture is thus in a manner annulled; and a law which is apparently wise and equitable, proves the source of great injury to agriculture, by multiplying the petty plots of land throughout a country where they were previously far too numerous.

The following table, taken from official documents published by M. Duchâtel, exhibits in hectares the physical and agricultural division of the French territory, which has not materially changed within the last 20 years.

Cultivable land	25,559,152	Ground occupied by buildings	241,842
Meadows	4,834,621	Roads, paths, places, &c.	1,215,115
Vineyards	2,134,822	Rivers, lakes, and brooks	454,365
Woods	7,422,314	Forests, and unproductive domains	1,209,432
Orchards and gardens	643,699	Cemeteries, churches, and public establishments	17,774
Willow and elm plantations, &c.	64,489		
Pools and watering-places	209,431		
Downs, pastures, and heaths	7,799,672		
Navigable canals	1,631	Hectares,	52,762,693
Diverse cultures	951,934	(Acres, 130,772,475.)	

Estimate of the Principal Articles cultivated in 1840.

	Fr.		Fr.
Wheat	1,324,189,591	Maize	86,135,000
Straw of all kinds	761,767,460	Cider	84,422,000
Natural meadows	462,598,000	Nurseries	76,657,000
Vines, wine	441,398,000	Buckwheat	60,389,000
Oats	362,413,000	Brandy	59,059,000
Rye	355,551,000	Beer	58,036,000
Artificial meadows,—hay	203,765,000	Flax	57,507,000
Woods and forests	206,600,000	Dry pulse	52,008,000
Potatoes	202,106,000	Rape seed	51,127,000
Meteil	173,004,000	Mulberry-trees	42,779,000
Barley	165,146,000	Beet	28,979,000
Gardens	137,094,000	Olives	22,776,000
Fallows, herbs	92,285,000	Chestnuts	13,528,000
Pastures	91,910,000	Madder	9,343,000
Hemp	86,287,000	Tobacco	5,484,000

Statement of the area of France, distinguishing approximately the various kinds of soil of which the surface is composed.

Mountainous country,	4,268,750	Sandy soil	5,951,377
Heathy ditto, or landes	5,676,188	Soil of clay	2,232,885
Soil of rich moulds	7,276,368	Marshy and swampy soil	284,445
Soil of chalk, or limestone	9,788,197	Soil of various kinds	7,284,242
Soil of gravel	3,417,893	Hectares,	52,762,693
Stony soil	6,612,348	(Acres, 130,772,475.)	

The surprising proportion of land in France under tillage is owing to the smallness of the occupancies, the cheapness of labour, and the general use of bread instead of animal food by the humbler orders. The last is connected with another remarkable circumstance; the very slender proportion of land under pasture, of which the main cause is the dry climate of the southern and central part of the kingdom. In the proportion of poor and unproductive land France and England are nearly on a par, but the French incur a very heavy disadvantage by using wood instead of coal for fuel, and covering with forests many tracts which might be made available for either pasture or tillage.

All France in 1840 gave 13·14 hectolitres per hectare. The total value of cereals in 1813 was 1,780,478,000 fr., or 9387 fr. per hectare, or 59 fr. per head. In 1840 (which was the last account) it was calculated at 2,565,238,000, at 18,900 fr. per hectare, or 77 per head.

In 1840 there were 5,586,787 hectares in wheat. In England 2,130,000 hectares. The wheat product in 1840 was 6·07 for 1. In England it is 9 for 1. The total value in the United Kingdom 978,500,000 fr. at 25 fr.; in France 1,400,000,000 fr. at 20 fr. the hectolitre. The arable land of France in 1840 was 22,240,090 hectares. The value of the cereals, fallows, and artificial meadows in France reaches 2,351,518,907 fr., and their mean value 106 fr. per hectare. The vines in 1840 covered 1,972,340 hectares. The total return of French cultivation in agriculture reaches—

Cultivated ground, to the value of	5,092,116,220 fr.
Pasturage, &c.	646,794,905
Woods and forests	283,258,325
Total,	6,022,169,450 fr.

Primary Crops in 1853.

	Acres cultivated.	Crop, Qrs. per Acre.	Value.	Total Production.
Potatoes	2,278,320	35·90	L.3·462	L.7,995,833·3
Wheat	13,805,748	4·28	3·125	43,858,333·3
Spelt	11,696	9·89	2·709	31,948,750·0
Meslin	2,251,044	4·46	2·505	5,783,333·3
Buckwheat	1,609,311	4·78	1·492	2,414,583·3
Rye	6,368,862	3·71	1·823	11,716,666·6
Barley	2,936,186	4·67	1·833	5,462,500·0
Oats	7,414,996	5·43	1·593	11,954,166·6
Maize	1,561,089	4·02	1·799	2,850,000·0
	38,237,252	...	...	L.123,984,166·4

Secondary Improved Crops in 1853.

Productions.	Acres.	Qrs. per Acre.	Value per Acre.	Total Production.
Vine land	4,873,934	2·56	L.3·363	L.18,960,416
Gardens	891,332	...	6·975	6,214,583
Pulse	733,745	1·60	2·773	2,058,333
Mangold Wurzel	142,493	36·18	7·957	1,147,916
Hops	2,043	·144	18·861	39,583
Rape	468,751	1·80	4·706	2,018,750
Hemp	435,288	1·35	7·755	1,425,000
Hemp Seed	...			
Flax	242,768	1·05	9·768	2,256,250
Flax Seed	...			
Madder	36,262	87·60	10·080	356,250
Tobacco	19,658	94·84	10·913	197,916
Olives	312,599	24·76	2·850	870,833
Chestnuts	1,125,326	4·08	·470	554,166
PastureMeadows	14,277,564	18·95	1·624	25,729,166
	23,561,771	...	...	L.61,829,162

Nett Return of Land in France, reckoned by the English Acre, and calculated from Official Surveys.

	s.	*d.*
Tillage (average of poor and fertile soils)	11	0
Vines[1]	37	0
Meadow land	37	0
Natural pasturage, chiefly mountainous	3	6
Woods	7	6
Chestnut plantations	7	6
Orchards	15	0
Kitchen gardens	45	0
Various kinds of culture, viz., nurseries, hop-grounds, olive grounds, &c.	18	6
General average of all France, per English acre	9	1

We proceed to add a few remarks on French agriculture, with reference to articles less known or less generally raised in England. Buckwheat is cultivated extensively in Brittany, Normandy, and the north of France, partly as green food for cattle, partly for the diet of the peasantry; it is generally sown in June and reaped in the end of September. Wheat and meslin are principally cultivated in the north, but the produce of the south, though less abundant, is generally preferred. Barley and oats are also more common in the north. Rye is raised pretty equally in all parts of France. Rape-seed is very general in French Flanders and Normandy; it supplies oil for the market and food for cattle, either when green or in cakes. Colza (cole-seed) is raised for the same purposes. Tobacco would be generally cultivated in France, were it not monopolized for the benefit of the state; hence its cultivation is confined to certain licensed districts, which are chiefly in Alsace and Picardy. The quality of the article produced under the royal monopoly is greatly inferior to that produced by private cultivators abroad, whilst the price being 400 per cent. higher, the latter is smuggled into France in great quantities, notwithstanding all attempts to prevent it. Flax is raised very generally, not merely in French Flanders, Alsace, and Normandy, but in the provinces of the west and south, where the family of almost every peasant rears a little stock annually to be spun by his wife and daughters. Hops are almost exclusively grown in those parts of France bordering on Belgium. Hemp also is raised in many parts of France, particularly in the north. Maize is a plant of great importance, whether for the food of man or of cattle; when intended to stand for harvest, it is planted in rows with very little seed, and yields more than twice the quantity of wheat that would be produced on the same space. During its growth the leaves are stripped regularly for the food of cattle; and in some districts it is sown thick and mown merely for that purpose. Maize and millet are chiefly grown in the east and south-east. Such valuable substitutes have as yet prevented turnips from being generally introduced into France. Even potatoes were long very little known, and it is only during the last half century that the dislike to this tuber has disappeared. Potatoes are more cultivated in the east than in any other district. Chestnuts are most common in the central part of France, where they supply no inconsiderable portion of the food of the peasantry. In the south the fruits are chiefly olives, almonds, mulberries, figs, and prunes; oranges are partially cultivated in the south-eastern extremity of the kingdom, on the verge of Italy, but with great uncertainty, for a severe winter is fatal to these trees, and in some measure also to the olives.

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[1] It is impossible to say what effect the *Oïdium Tuckeri* will have on the nett return of land under vine culture in France. Some conceive that the culture of the vine will remain stationary, others that the finer qualities of vine are perishing, and that the land now occupied by vines will hereafter grow corn. These are after all but the speculative opinions of agriculturists and statistical writers.

Irrigation is little understood in the north of France, but in the south the want of frequent rain renders it a primary object of attention; it in fact determines the *ratio* of productiveness, since the warmth of the sun seldom fails to ripen whatever has received an adequate supply of moisture. According to M. Becquerel, there has been a progressive annual increase in the number of hectolitres produced since 1813. There has been a very decided progress in agricultural improvement in every part of France, but notably in the west and south-west. The increase in productiveness in all manner of grains is estimated at 2,141,217 hectolitres.

Vines. The culture of the vine extends more or less over fully the half of France, beginning as far north as Champagne, and spreading over the country to the south and the west. This culture is, however, very limited in Champagne, and even in Burgundy; in Provence and the lower part of Languedoc the climate is warmer, and the culture general, though not managed with such skill as along the banks of the Garonne, where the spirit of improvement is excited by a demand for foreign markets. As vines succeed in light and unproductive soils, their culture gives a value to much ground which would otherwise be useless; and the petty subdivisions of land are here less injurious than in the case of corn. From the great variety of soil and climate, the quality of French wines is very various. The amount produced has been considerably increased since 1790, as well from the division of many large estates, as from the quantity of waste land which has been brought into culture. It is, however, remarked by M. Moreau de Jounès (*Statistique de l'Agriculture de France*, 1848), that the consumption of wine in France has remained stationary since 1791, and that the quantity consumed by each individual is not more than it was half a century ago. Considering the increase of wealth and population, M. Jounès calculates that the consumption should have increased 50 per cent. It is computed that nearly 5,000,000 acres of land are planted with vines, and that the value of the annual produce is from L.28,000,000 to L.30,000,000 sterling, of which about a tenth or twelfth part only is exported.

Quantity of Wine produced in France during the following seven years, in imperial gallons.

	Imp. Galls.		Imp. Galls.
1848	1,135,687,344	1852	626,793,222
1849	782,214,686	1853	498,557,774
1850	983,786,166	1854	237,377,118
1851	867,343,038		

Average annual produce before the oïdium appeared, 924,000,000 gallons, worth L.22,516,220 sterling.

Number of imperial gallons of Wine distilled during the following seven years into Spirit of Wine and Brandy, the proportions being about two-thirds Spirit of Wine and one-third Brandy.

	Wine. Imp. Galls.	Spirit. Imp. Galls.		Wine. Imp. Galls.	Spirit. Imp. Galls.
1848	151,800,000	19,800,000	1852	211,200,000	27,500,000
1849	206,800,000	24,200,000	1853	110,000,000	13,420,000
1850	178,200,000	23,100,000	1854	92,400,000	11,990,000
1851	215,600,000	28,600,000			

The Exports of Wine and Brandy from France for the following four years are as follows:—

	Wine. Imp. Galls.		Brandy. Imp. Galls.
1851	50,149,078	1851	
1852	53,991,190	1852	7,433,448
1853	44,130,438	1853	5,898,794
1854	28,808,912	1854	3,412,442

It is a curious fact that the effect of the *oïdium* or vine disease has for the last few years caused an importation of foreign wine into France for home consumption. The following is an account of the imports of foreign wine and spirits for the years 1852–4:—

	Wine. Imp. Galls.		Spirits. Imp. Galls.
1852	76,494	1852	285,978
1853	98,494	1853	280,302
1854	2,670,580	1854	1,338,458

It will be observed, that the import immensely increased during the last year, owing to the large quantities used for the supply of the French army in the Crimea.

Of the spirits in the above table, 802,019 gallons were rum imported from England.

A quantity equal to about a sixth of the wine is made into brandy, for brandy is distilled wherever vines are grown: and of it also the best in quality is in the vicinity of the Garonne. This important and staple branch of French industry has been very seriously injured by the prohibitory system of customhouse laws, which were extended and increased in rigour during the reigns of Louis XVIII. and Charles X., and were not much mitigated during the eighteen years' reign of Louis Philippe. Many of the leading statesmen of France still evince a most mistaken partiality to the prohibitive system. France, by excluding the produce of

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[1] It is very difficult to say to what extent the vine disease and the excision of vine branches in consequence thereof has affected the production of wine either in quantity or quality. It has unquestionably had the effect of raising the price of the finer wines from 25 to 35 per cent., and of raising the price of brandy during the last two years nearly 300 per cent.

other nations, virtually deprives, or greatly limits, by the same laws, the reception of her own produce into foreign countries. It is clear that they must pay for the wines of France with their own produce, which, if France refuse to receive, they have no other equivalent to give her in return; they must procure an equivalent from foreign countries, and the effect of this is to restrict the trade, by raising the price of French wines. Accordingly, it appears that whilst France exported to England from 16,000 to 20,000 tuns of wine when the population was only five millions, this supply had fallen off, partly owing to the heavy duties imposed in Great Britain, and partly to the prohibitory duties imposed in France on British produce, to 1800 tuns, whilst the population of the country had in the mean time greatly increased; a melancholy illustration of the effects of that illiberal policy which pretends to improve commerce by prohibiting the free intercourse of commercial countries.

Beet sugar.

France is the largest producer of beet sugar in the world. The origin of the manufacture must be traced from the year 1807, but forty years elapsed before the manufacturer of this article was enabled to cope successfully with colonial sugars. From France the culture spread through the different countries of Europe, even into the interior of Russia; and it is calculated that there is now produced of this kind of sugar on the continent of Europe not less than three hundred and sixty millions of pounds, nearly one-half of which is manufactured in France. In the vicinity of Lille the average yield of the sugar is sixteen tons per acre, and at Valenciennes nineteen tons; in some localities twenty-five tons are produced. The annual manufacture of sugar is about forty thousand tons, and the non-crystallized matter extracted from lees and dregs furnishes enormous quantities of sweetening matter to breweries, and also to the wine-doctors and wine-falsifiers of Cette and the Gironde. Nor is this the only use to which beet is turned, as a large quantity of spirit is distilled from it.

The minuteness of the *Cadastral* survey has led to official calculations in France, of products which have not yet engaged the attention of other governments. Madder is cultivated on a small scale, partly in the north, partly in the south of France; its chief use is in dyeing woollens and cottons. Woad is used for yellow and green colours; saffron, cultivated formerly to a great extent, is now confined to one district (the Gatinois) in the south of France; hops are raised only in Picardy and French Flanders.

Subjoined are the values of the following articles produced annually in France:—

Wine	L.23,000,000
Raw silk	600,000
Hemp	1,200,000
Flax	800,000
Madder	200,000
Wood for fuel, and timber of all kinds	5,600,000
Olive-oil, rape-seed, and cole-seed	2,800,000
Tobacco	300,000
Chestnuts	300,000
	L.34,800,000

Pasturage.

Of the pasturage ground of France, occupying one-eighth of its territory, the chief part is in Normandy, Brittany, and other humid quarters of the north and west. In the south, the natural pasture is confined to particular districts, chiefly mountainous; in the low grounds, the grass, whether natural or sown, is brought forward only by means of irrigation. Clover and sainfoin are cultivated in France, but chiefly in the north and north-east; lucerne is much more general, being raised not merely in the north, but in the central and southern provinces, wherever irrigation is practicable and the soil and climate are favourable. The art of improving cattle by breeding is little understood in France, nor is there much judgment shown in gradually fattening them by a removal to richer pastures. Still the beef and mutton of the north and west are very good, more especially what is called the près sallé mutton, *i. e.* sheep fed on the salt marshes. Their price varies from province to province, but very seldom from year to year; the general rate was 30 per cent. less than in England, but within the last four or five years the price of meat has risen much in France, and closely approximates to the price in England. Butter is made and used throughout the chief part of France, as in England, but cheese comparatively little. In the south, however, even butter is little known, and its place in cooking is supplied by olive oil, which is largely used throughout southern Europe. One of the latest novelties in French pasturage is the introduction, in 1819, of a large flock of Cashmere goats, which were sent to browse in the Eastern Pyrenees, and are said to experience but little inconvenience from the change of climate.

Horses.

In the number of horses, as well as in their size and beauty, France is greatly inferior to this country. In the performance of labour, however, the inferiority is much less conspicuous; large, old-fashioned carriages, drawn by four or six horses, are seen proceeding along a paved road much more easily than we should anticipate from the weight of the vehicle, the knotted harness, and the diminutive size of the animals. The same observation is applicable to the ploughs, the carts, and the waggons of France, which are awkwardly built, but all dragged on with expedition, the strength of the horses surpassing the promise of their appearance. A French diligence, in the provinces in which such carriages still run, performs only five miles an hour; but this is owing less to inferiority in the horses than to the state of the roads, and to the general want of despatch at post-houses.

Of the aggregate of horses in France more than half belong to the northern provinces—Normandy, Brittany, Picardy, Alsace, and the Isle of France. In the central and southern departments a great proportion of the work is done by oxen, which are more suitable to petty farms and mountainous districts.

Sheep.

Sheep are reared in almost every province of France, the gentle elevations of the north and the mountains of the south being alike favourable to them. The mutton is good; but in the art of improving the fleece, the French have as yet much to learn. Merinos were first brought from Spain in 1787, and formed into a royal flock at Rambouillet. The consumption of meat in the country then was small, and consequently the first desire was to improve the wool. The quality, originally good, has been progressively improved, and distributions of Merinos have been successively made to proprietors of sheep pastures in all parts of the kingdom. The consequence has been, that in many districts the weight of the fleece has been nearly doubled. The sheep farming of France appears just now to be in a transition state; its *past* history offers many points of instructive deduction, while from its future we may expect very beneficial results. These imported sheep were used for crossing with the native breeds, to which but little attention had been paid either as regarded the carcass or the fleece. As time advanced these crossed breeds increased with varied success; in some districts the wool produce was permanently improved by continuing to introduce pure blood, in others it was found more advantageous to develop the physical organization of the animal. The result has been that, notwithstanding the laudable endeavours of the flockmasters to obtain a breed associating both weight and quality of wool with the production of meat, that end has not been satisfactorily obtained; the flocks still remain in an intermediate condition, neither producing the fine quality of wool of the Saxon, nor the weighty fleece or carcass of the English sheep. To encourage the rearing of sheep, a duty of twenty per cent. was in 1822 laid on foreign wool.

Statistics.

Mules are almost as little known in the north of France as in England; but in the central and southern parts they are very generally reared. Poultry, in France, are both larger in size and more abundant than in England, more especially in Normandy and the department of La Sarthe.

Value of Productions of the Soil at different Epochs.

Years.	Inhabitants.	Fr.		Fr.
1700	19,600,000	1,500,000,000	Per head	77
1760	21,000,000	1,526,000,000	...	73
1788	24,000,000	2,031,233,000	...	85
1813	30,000,000	3,336,971,000	...	118
1840	35,540,000	6,022,169,000	...	180

with the domestic animals, 7,502,905,000 and 224.

Even in the north and north-east of France, the farms are of small extent. To occupy 200 acres, or to pay a rent of L.200 a-year, places one in the foremost rank of farmers. Larger possessions are common in pasture districts, that department of agriculture admitting, in France as in England, of a greater concentration of capital and extension of business than in the case of tillage. But such districts are rare: and in by far the greater part of France the farms under tillage are of fifty, forty, thirty, and often as small as twenty or even ten acres, there being, it is computed, no fewer than three millions of such petty occupancies in the kingdom. In the south of France the system of *métairie* (paying rent in kind) is still prevalent, and nearly on the same footing as in Lombardy and Tuscany. That such insignificant occupancies are adverse to all enlarged ideas of farming, is sufficiently obvious; and to their many disadvantages there can only be opposed this single benefit, that no spot of tolerable soil is neglected, even the space given by us to hedges being reserved for culture.

The beneficial effect of long leases is as little understood in France as it still unfortunately is in a great part of England. The common method is to let land for periods of three, six, or nine years. The peasantry, though illiterate, are not slow or phlegmatic. They exhibit, as Frenchmen in general do, no small share of intelligence, of sprightliness, and of activity in the individual, with very little concert or combination in the mass. They are content to hand down the family occupancy from father to son, without any idea of altering their mode of life. The dwellings of the farmers, and still more of the cottagers, are like those of our forefathers half a century ago; the outside having frequently a pool of water in its vicinity, whilst the inside is miserably bare of furniture.

In the comparative trials that were made at the French Exhibition of 1855 the superior character of the English agricultural implements over those of France was made very evident—in none, perhaps, more than in the ploughing trials, when the dynamometer showed that while it required only a force equal to 17·01 to turn over a certain quantity of earth in a certain time with the best English plough, it required a force of more than 27· to do the same work with the best French one.

The diet of the French peasantry is exceedingly simple. Bread and cider, with soup, pease, cabbage, or other vegetables, form its chief ingredients in the northern provinces; whilst in the central and southern ones the same aliments are in use, with the substitution of thin wine (*vin du pays*) for cider, and of chestnuts for the pears and apples of the north. Butcher-meat is reserved for the tables of the middle and upper classes.

The landholders in France give little or no attention to beautifying the country; its aspect is consequently monotonous, without plantations, seats, or cheerful cottages. The peasantry live in villages, frequently ill built and inconveniently situated. The purchase of land, however, is the favourite mode of investing money in France. It sells, in general, for twenty-five years' purchase; whilst the public funds seldom fetch above sixteen or eighteen. There is at Paris a society similar to the Board of Agriculture in England, and forming, like it, a central point for corresponding with the different agricultural societies in the kingdom. It holds its sittings twice a-month, and a public meeting annually for the distribution of prizes. The French have also (since 1819) a corn law, permitting imports and exports only when the home market shall be above or below a specific rate.

Statistics.

The chief difficulty the French government have to contend with in regard to the corn trade, is the popular prejudice that freedom of export raises the home price.

Timber.

Of the 18,350,093 acres which are covered with wood, in 1836 there belonged to government 2,547,800 acres, which were divided into 1473 forests. A very small part of this is allowed to grow into large timber. The rest is subject to an annual cutting and sale, for fuel; coal being very little used in France, except for forges, glass-houses, and other large works. In the government-forests gross mismanagement took place during the disorders of the first Revolution. Extensive tracts were sold for an insignificant consideration, whilst in those that remained timber was felled with a lavish hand, and without any regard to the ultimate effect on these valuable properties. In 1801, however, a special board, appointed for the care of the forests, introduced the most beneficial regulations. In the years of financial pressure (1815, 1816, and 1817), it was proposed to effect sales of these great domains; but a fair price being unattainable, government continues to keep them. During the monarchy the revenue derived from the wood annually cut and sold amounted to L.700,000 or L.800,000 sterling.

The administration of the forests is (1855) placed under the direction of the minister of finance. The French territory, comprising Algeria, is divided into 30 *arrondissements forestiers*, at the head of which is placed a *conservateur* who corresponds with the administration, and who has under his orders a number of inspectors and sub-inspectors. Under these are the *gardes généraux*. Every one employed in the forests must be twenty-five years of age, but this provision may be dispensed with if the employé be a pupil of the *Ecole Forestière*. There are (1855) 32 *conservateurs*, 200 *inspecteurs*, 100 *sous inspecteurs*, and 500 *gardes généraux* of forests in France.

Fuel being comparatively little wanted in the south of France, the forests are confined to remote and rugged situations. These, like most of the forests of the kingdom, harbour a multitude of wolves, which are frequently destructive to the sheep and lambs. Regular officers, called *lieutenants de louveterie*, are appointed for wooded districts; and on occasions of heavy loss, recourse is had to a general *battue*, which seldom results in any sensible reduction of the number of wolves. Bears also are found in the forests; but they are much more rare, being confined to the elevated districts in the Alps and Pyrenees.

V. MINES AND QUARRIES.

France yields in this essential article of produce, not only to Britain, but to Germany, to Russia, to Sweden, and to Hungary. According to the most approved works recently published, the mines of France may be classed into five groups, namely, the mines of the Vosges and the Black Forest; those of the central provinces of France; those of Brittany; those of the Pyrenees; and those of the Alps. It is not many years since the mines of the Vosges yielded above 30,000 cwt. of lead, and a small quantity of silver, besides copper mixed with silver. The produce did not, it is probable, repay the expense, as they have since been abandoned. There are now a very few copper mines in the Vosges. In the central part of France there are numerous mines of lead, but they are not productive.

They are chiefly situated in the department of La Lozère; and they yield annually, along with the lead, 1600 marcs of silver. The only metallic mines of any consequence in Brittany now are the three great mines of *galère argentifère* of Poullaouen and Huelgöet; and there is one mine of what is called in the divisional nomenclature of the minister of commerce and public works, *plomb argentifère*. In the chain of the Pyrenees there is only one mine of copper, which has long since been abandoned. There are, however, numerous iron mines, which furnish materials for more than 100 forges. The chain of the Alps contains many mines of iron, but is not rich in other metals; it possesses some unproductive mines of lead, and one of silver, which has long been abandoned. There are some appearances of gold in the department of the Isère, but not such as to encourage any trial of their value. If there are few other mines, those of iron are in great abundance, being thirty-eight in number, scattered throughout the country, and of these the produce is every day improving. The whole value of the metallic produce of France was estimated in 1828 to be equal to L.3,199,595. The number of mines was estimated in October 1854 at 824, viz., 448 of coal, 177 of iron, 199 of other substances; and the number of workmen they employed in 1851 at 33,634.[1] The working of mines is impeded in France by the want of good roads and canals by which to convey the ore and the coal for smelting it. The production of iron has been encouraged by heavy duties on foreign iron. In 1814 a duty was imposed of fifteen francs per fifty kilogrammes, or 12s. 6d. per 110 lb. imperial, on all foreign iron imported, which was, in 1822, including the decime or the tenth added to all duties, raised to L.1, 2s. 11d. on all coal-worked foreign iron. But this prohibition did not bring prosperity to the trade, though by these duties the price of iron in France was L.23, 9s. 2d. per ton, whilst English iron was sold at L.9, 6s. 8d. It is estimated that these heavy duties on foreign iron cost the agriculturists of France, in the additional expense of ploughs and other implements of agriculture, a sum varying from L.1,500,000 to L.2,000,000 a year.[2] Estimating the annual consumption of iron in France to be 160,000 tons, and the difference of price between French and English iron to be L.10 per ton, the law of 1814, which imposed a duty on foreign iron, and the law of 1822 which increased that duty, cannot have cost the French people less than L.30,000,000 sterling of direct loss; whilst it is scarcely possible to calculate the indirect evil of this monopoly or protecting duty in favour of the iron masters. One reason of the high price of French iron is the want of coal, an evil which is aggravated by the heavy duty on foreign coal, in consequence of which the French are compelled to employ wood in their forges; and it is calculated that one-fourth part of the wood cut down in the forests is consumed in the manufacture of iron. Coal has been discovered in more than half the departments of the kingdom (in forty-five departments), and would doubtless be traced in others; but the want of water communication limits the consumption of this article almost to the place where it is produced. In a report to the present Emperor of the French in 1854, by the minister of commerce and public works, that functionary attributes the high price of native coal in France not to the method of working the mines or to the insufficiency of the machinery, but to the want of better intercommunication both by land and water.[3] It is a fact that more than half the departments that consume the coal of the Loire pay for it a price four, five, and six times higher than it costs at the mouth of the pit.[4] One-fifth part of the coal consumed in France is used in the department Du Nord. At St Etienne, near Lyon, are excellent coal mines; but there being no iron mines in the vicinity, nor of course iron works, there is no consumption of fuel on a large scale. The coal is only used for domestic fuel, and for the manufacture of hardware. M. Costaz, in an estimate contained in his work on the agriculture and commerce of France, makes the coal produced in France to amount to 15,310,687 metrical quintals;[5] the value of which he estimated at between L.700,000 and L.800,000. The quantity of coal imported from Great Britain amounted in 1831 to 40,000 tons, though subject to a heavy duty of one franc sixty-five cen. per hundred kilogrammes, or 1s. 4½d. per 220 lb. imperial; and there were imported from Belgium, the duty being thirty-three cen. per hundred kilogrammes, 440,000 tons.[6] The importation of coal in 1853 rose to 2,824,555 tons of iron (*fonte brute*), to 73,689 tons. In December 1853 the importation of iron went on increasing. The heavy duty on coal operates most injuriously on the industry of France. It is a most serious impediment to the working of the iron mines, for the encouragement of which such heavy duties are imposed on foreign iron. But such is always the effect of the prohibitory system. It pulls down with one hand what it builds up with another. The iron masters and the coal owners have each a monopoly of the home market. But is it not clear that these two monopolies run counter to each other, and that the iron trade is encouraged by the one, whilst it is most seriously discouraged by the other, and the whole inhabitants of France are taxed in a much higher price for fuel by the heavy duty laid on the importation of this useful article? Steam-boat navigation is also discouraged, so that no steam-boats regularly ply between any of the Atlantic ports of France. A steam-boat which in England could be navigable at an expense of L.2280 for coal, would cost in France L.5700, about eighteen per cent. on the capital employed. It is the owners of forest property who are the most zealous supporters of this duty, an impost which benefits them at the expense of the whole of France, and indirectly depresses the national commerce and industry in its most important branches. For many years only a small portion of Paris was lighted with gas, which is ascribed to the high price of iron pipes; and the supply of water is also impeded by the same cause.[7] The mines, like other large undertakings in France, are under the direction of government, being superintended by a board at Paris (*Conseil Général*), and having an *Ecole Imperiale* with public teachers, the whole under the control of the minister of the home department. This, however, does not prevent their machinery being in general very clumsy and antiquated.

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[1] *Travaux Statistiques des Mines de* 1847 *à* 1852. Imprimérie Imperiale, Octobre 1854.

[2] See *First Report on the Commercial Relations between France and Great Britain*, p. 28.

[3] *Resumé des Travaux Statistiques des Mines de* 1847 *jusqu'a* 1852.

[4] *Rapport addressé à l'Empereur par le Ministre ou department de l'Agriculture et du Commerce*, 1854.

[5] *Histoire de l'Administration en France de l'Agriculture, et des Arts utiles*, &c. Par Cl. Anthelm Costaz, tome ii., p. 14.

[6] *First Report on the Commercial Relations between France and Great Britain*, p. 23.

[7] An imperial decree of the 22d November 1853 materially reduces the customs duties on the importation of coal and iron. Coal paid with the *décime* 55 centimes per 100 kilogrammes upon the greater part of the French frontier from the Sables d'Olonne to Dunkirk; upon the remaining portion of the frontier it paid 33 centimes, by the land frontier, except in certain places by the Meuse, and in the department of the Moselle. Henceforth the great zone from the Sables d'Olonne, and from that by land to Helluin, is to have but one duty—amounting to 33 francs for French, and to 88 francs for foreign vessels. The rest of the maritime frontier is assimilated to the principal part of the land frontier. A double duty to that levied on coal was charged on coke. Henceforth coke is only to pay a half beyond what is levied on coal.—As to iron, from the 1st January 1855 there is no distinction between iron smelted by coal or wood. The *fonte brute* is to pay 4 francs 40 centimes the larger bars, 11 francs the smaller bars, and steel 33 francs. Rails for railroads are to pay 132 francs. The greatest reduction is on steel.

Statistics.

Turf fit for fuel, or peat, is found in various parts of France, and will be more used as wood becomes progressively scarcer. This article is produced in the departments of Gard, Isère, the Lower Rhine, the Somme, Pas de Calais, Loire-Infcrieure, l'Isere, Seine-et-Oise, Oise, Aisne, Doubs, Marne. The cutting and preparation of turf is computed to occupy the labour of from 50,000 to 55,000 workmen on an average of forty days. The greatest turf-producing department in France is La Somme.[1]

Salt is made in various parts of the kingdom. The works corresponding to the salt mines, or rather to the brine springs, of Cheshire, are called, from their position, *Salines de l'Est*, and are situated at the small town of Salins in Franche Comté; they are wrought by undertakers on lease, yield about 20,000 tons a year, and afford a considerable revenue to government. The heat of the climate on the south and south-west coast of France is favourable to the evaporation of salt water, and consequently to the formation of bay-salt, the name given to salt made, not by the action of fire, but by the heat of the sun, operating on sea water inclosed in a shallow bay. The duty raised from salt in France is nearly L.2,000,000, a sum of great importance to the treasury, but attended with fully as much injury to the productive powers of France as was formerly our salt tax to those of England. Since 1848 the *droits* on salt have been reduced two-thirds. The first Revolution began by abolishing entirely the odious *gabelle;* and salt being soon afterwards made in great quantities, and sold very cheap, became the object of a most extensive consumption, being given to cattle as food, mixed with manure on the fields, or scattered as a stimulant to vegetation at the foot of olive trees. But this extended use of salt was of short duration. No sooner was the power of Bonaparte consolidated, than he ventured to impose a tax on salt, less impolitic and oppressive indeed than the *gabelle*, but which had the effect of limiting the use of this article to such a degree that the value of bay salt consumed, instead of amounting to L.1,000,000 sterling, did not in 1836 exceed L.100,000. It was thought that a considerable increase in the consumption of salt would take place from the year 1849. There has no doubt been a certain increase, but it has in no degree corresponded with the diminution of the duty.

In 1847 the quantity of salt produced was 350,210,300 kilogrammes; in 1848, 465,435,700; in 1849, 479,438,400; in 1850, 495,183,900; in 1851, 599,175,200; but in 1852 the quantity produced fell to 428,037,600 kilogrammes. The price of the metrical quintal of salt in 1847 was 3 francs 47 cen. In 1851 it fell to 1 franc 66 cen., in 1852 it was 1 franc 83 cen. The amount of salt produced from all the salt mines and saline sources in France in 1852 was 724,002 metrical quintals, valued at 2,865,556 francs.[2] The consumption is confined to domestic purposes, and to a trifling export; yet the few cattle which still receive salt as a part of their food are visibly in better condition than those that are deprived of it.

France is in general much better supplied with quarries than England. The vicinity of Paris abounds in quarries of freestone. The case is similar in the mountainous districts, and even in several, such as Lower Normandy, that are comparatively level. The houses are consequently built of stone in those cities which, like Paris or Caen, are in the vicinity of quarries. In other situations they exhibit a mixture of stone and brick. Slates being comparatively rare, the roofs of the houses are generally of tile; and the annual value of this rude species of productive labour, the manufacture of bricks and tiles, may be computed at nearly L.1,000,000 sterling. There are marble quarries in several of the mountainous districts, but not situated so as to admit of export. Fine variegated marbles are quarried at Campan, in the Upper Pyrenees. It appears from official documents published by the government that in the year 1846 there were 22,000 quarries in course of working, which employed 75,396 workmen. The value of the material sent into the market was 41,047,519 francs. In 1849, 86,379 persons were employed in quarrying; and in 1850, 87,486.

Statistics.

VI. MANUFACTURES.

Our historical notices of French manufactures are very imperfect until towards the year 1600, when the wars of religion were brought to a close, and peaceful industry received encouragement from Henri IV. and his minister Sully; a minister, however, who had a horror of luxury of all kinds, and who was much more favourably disposed to agriculture than to manufactures. It was under the "roi vaillant," however, that the patronage of government was extended to the manufacture of silk, glass, jewellery, gold and silver tissues; also of the finer woollens and linens, the coarser kinds having been established many centuries before. But the great extension of the finer manufactures of France took place after 1668, during the reign of Louis XIV. and the ministry of Colbert. It was then that workmen were invited from Genoa, Venice, and Holland, and induced to settle at Sedan and Abbeville, places still celebrated for their woollens. In the south of France also establishments were formed for making the light cloth suited to the Turkey market; so that towards the year 1700 the manufactures of France, as well of woollens as of other articles, had made considerable progress. Cloth serges were improved under Colbert, and *point de Gènes* and *point de Venise* introduced. In 1656 stocking weaving, which had been introduced into France from England by two manufacturers of Nîmes, was extended and improved. The manual labour of the French workmen was ingenious; the machinery extremely imperfect; the linen, the paper, and in some measure the woollens and hardware, found their way abroad, because in the rest of Europe these manufactures were very backward, and, in particular, because the exports of England were then very limited. The repeal of the Edict of Nantes was a very impolitic measure, but its consequences have been overrated, for England has profited very little by the extension of her silk fabrics; and Brandenburg, the chief resort of the French emigrants, has never become an exporting manufacturing country.

Another and a more important error is the current notion that French manufactures were formerly (from 1650 to 1750) more extensive and flourishing than at present, also that they underwent an almost total extinction during the Revolution. These, like many other impressions in regard to France, rest on mere loose allegations. Official *data*, far from sanctioning such fluctuations, are decidedly in favour of a progressive though slow increase.

Woollens.

To begin with the oldest and most widely diffused branch, woollens,[3] we find that the relative numbers of workmen at three distinct intervals, and in very different parts of the country, were as follows, viz.:

	1789.	1800.	1812.	1840.
Carcassonne	...	8,000	9,000	7,000
Limoux, Chalabre, &c.	4,400	4,500	6,200	5,000
Clermont, Hérault	...	...	...	4,500
Lodève, Hérault	...	...	...	8,000
St Afrique, Aveyron, &c.	6,700	8,500	10,000	7,500
Chateuroux	...	...	...	2,000
Roubaix, Nord	alternately in wool and cotton,			30,000
Elbœuf	...	...	...	25,000
Louviers	...	...	...	6,500
Sedan, Ardennes	...	...	...	11,500

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[1] *Statistique de l'Industrie Minérale, Paris, Octobre* 1854. Imprimérie Imperiale.

[2] *Ibid.*

[3] Costaz, *Sur l'Agriculture et les Manufactures de la France*, p. 108.

Lisieux also in the north had nearly the same number of workmen (5000) throughout.

The finest qualities of black woollens are made at Sedan in Ardennes, and at Louviers in Normandy. In these the only material is Merino wool. At Elbœuf and Darnetal, and in Normandy, the qualities are very various, the prices being from 6s. to 28s. the English yard. Carcassonne and Limoux owed the origin of their extensive manufactures to the abundant supply of wool from the pastures in the Pyrenees. Since the reduction of their exports to the Levant, an alteration in the quality of their cloths has opened to them a market in the interior of France. The mountainous districts in Languedoc contain great numbers of sheep, and are the seat of the manufacture of serges, tricots, and other coarse woollens, most of which are made, not by workmen collected in a factory, but in the hamlets or villages of the departments of the Tarn and Aveyron. Almost every house has its loom; and during the evenings in winter, or in the daytime when the weather is adverse to country labour, the women employ themselves in spinning, and the men in weaving.

A highly finished species of the woollen manufacture, viz., shawls, veils, ladies' cloth, &c., has been introduced in the present age into France. Reims is the seat of this important branch, and employs, in the town and neighbourhood, no less than 20,000 workmen. Similar articles are made at Paris. The bounties granted on *fils et tissus de laine* in 1852 amounted to 7,500,000 francs.

Shawls.

Shawls became fashionable in France as an indispensable article of female apparel after the expedition of Bonaparte to Egypt. The first lady in France who wore one (in 1801) was Madame Gaudin, the beautiful Duchess of Gaeta, a Greek by birth, whose husband was then a high functionary. Many of the officers who were attached to the army brought back presents of shawls, and they were imported in great quantities from Constantinople, Moscow, Vienna, and London. These shawls, however, brought an enormous price when imported into France, which necessarily limited their consumption to the richer classes. The great demand turned the attention of manufacturers to this important article—attempts were made to imitate the Cashmeres, and specimens were exhibited at the *Exposition* of 1801. Ordinary shawls are now made of Merino and other wools. But this was only a step in the progress of the manufacture; and a finer species of wool having been imported from the countries to the north of the Caspian Sea, the ingenious manufacturers with these materials at last produced shawls which rivalled in beauty those of the East, and in which it required the most practised and skilful eye to discern any difference. In 1819 M. Jaubert proceeded on the part of the celebrated shawl manufacturer Ternaux to the countries between the Black Sea and the Caspian to buy a numerous flock of Astracan goats for the purpose of using the wool for shawl-making. The speculation was a complete failure; and the French government, which was interested in it, lost 300,000 francs.

Two towns very remote from each other, Lodève in the south and Vire in the north-west of France, manufactured, under Bonaparte, very largely for the army. French woollens are, in general, much thicker than ours. In the fine qualities the raw material forms (Chaptal, vol. ii., p. 131) somewhat more than half the cost. In ordinary qualities it is somewhat less; but it is only in the slight qualities that the price of labour goes considerably beyond that of the materials. The computation for the whole country is, that a value of L.4,000,000 sterling in wool becomes converted into a manufactured value of L.9,000,000, of which a tenth only is exported. The cloth in France which corresponds to our superfine, and which is worn in general by the upper ranks, is very fine and durable, but heavy, with the exception of the superfine black. The price of the cloths produced at Sedan varies according to a graduated scale from 15 to 50 francs the yard, and of kerseymeres from 7 to 24 francs. The duty on foreign wool has been very injurious to the French woollen manufacturers; because, by compelling the French to pay a high price for the raw material, it prevented them manufacturing woollen cloth as cheaply as their English competitors, to whom the foreign market, where the raw material had now fallen to a low price, was open.

Wool and Woollens imported into France.

1820......	4,912,000 kilo.	Consumption in value	8,351,000 fr.
1830......	7,214,000 ...	....	12,872,000 ...
1835......	14,845,000 ...	....	34,219,000 ...
1840......	13,456,000 ...	....	29,987,000 ...

Belgium, Spain, Germany, Turkey, Barbary, Algiers, and England, send wool to France. The exportation of woollen goods in 1839 reached 60,600,000 fr. In 1838 the exportation was 2,578,487 kilo., valued at 65,823,346 fr. The wool produced in France amounts to 20,350,000 kilo. of fine wool,
20,000,000 do. common.

Total ... 44,350,000; about half that of England.

The wool imported from England in 1853 was 21,537 quintals, in value 9,481,836 fr., and the cloth 231,419 kilo., valued at 5,795,332 fr. The worsted or thread was 19,630 kilo., valued at 385,844 fr. The importation of the Thibet fur or hair was in value in 1839 3,576,480 fr., but has since declined to 2,058,920 fr. This material is spun in Paris, employing 500 or 600 persons. The wool of France is of an inferior quality. Its annual value averages about 120,000,000 fr., being 60,000,000 kilo. There are 5,500,000 sheep of a superior breed, Saxons, Merinos, and those imported from England; and 24,000,000 of indigenous race. Since 1829 the French sheep have increased 9 per cent.

The manufacture of merinos and bombazines employs 17,000 hands: 6000 are employed at Amiens in the manufacture of alèpines, and about 36,000 pieces are made there, about a third of which are exported. The bonneterie in wool employs 15,000 workmen, 800,000 kilo. of coloured wool worth 8,000,000 fr., and returns 17,500,000 fr. in manufactured goods. Coverlets are made at Reims, Rouen, Beauvais, Lille, Lyon, Orléans, and at Sommières (Gard). This fabric is valued at 20,000,000 fr., and employs 10,000 hands, besides auxiliary assistance to the extent of 25,000 more.

Carpets are made to the annual value of 3,500,000 fr., the larger part at Aubusson and Felletin, two towns in the department of the Creuse, employing 1800 hands, and producing goods to the value of 1,500,000 fr. Carpets are also made at Abbeville, at Amiens, Turcoing, and Besançon. The finest and richest velveted carpets, called "de Savonnerie," are made at Beauvais, and at the Gobelins in Paris. These are only made to order, and are not articles of traffic. The exports of woollen goods reach on an average the sum of 65,600,000 or 66,000,000 fr., consuming 2,578,487 kilo. of wool. They consist of coverlets, carpets, cloth, casimirs, and merinos, varied stuffs, shawls woven or made by hand, bonneterie, ribbon of worsted, and similar light goods, and stuffs of mingled materials. Machinery has been used for spinning wool in place of the hand only since 1809. Reims is the great centre of French wool-spinning, it being situated in that part of the country where sheep are most numerous. There are at Reims 275 establishments for spinning carded wool, and nearly 55,000 spindles, or 60 establishments, for combed wool. The number of workmen is 50,000. France annually exports woollen yarn to the value of 2,000,000 fr. and upwards. Neapolitan flannels, English flannels or "bolivars," circassiens, lastings, cloths, casimirs, merinos, mousseline-de-laine, cuir-de-laine, made at Cartres first in 1819, and poplins, are noted manufactures.

Cotton.

The cotton manufacture was introduced into Amiens in 1773, the raw material being supplied, not from America, but from the Levant, with machines procured from England. In 1784 a privilege was conferred on an inhabitant of Seine and Oise for a manufactory; and soon afterwards the manufacture passed to Rouen, St Quentin, Paris, Lille, and other parts in the north, extending with a rapidity surpassed only by that of England. At present, as for many years past, the great import of cotton is from the United States. In this great department of manufacture the French have only followed in the footsteps of Great Britain, whose machinery, after the lapse of a certain time, the French manufacturers have imitated; and though they have equalled the British manufacture in durability, they have generally been inferior in cheapness. This is, in a great measure, owing to the centre of the manufacture being at Rouen and Paris, places where the support of workmen, including the extra price of fuel, is not less expensive than in Lancashire. The districts most remarkable for the cotton manufacture are Alsace and Normandy. The manufacture of *cotton velvet* was begun at Amiens so early as 1765; and in 1784 M. Martin of Amiens obtained, under the title of "the first importer from England of machines invented there for spinning cotton," the authority to establish a cotton factory with special privileges. Nîmes is celebrated for its fine but not very durable cotton stockings. There are also manufactories of *bonneterie de cotton* at Besançon, Vitry, Bar le Duc, &c.

Cotton yarn is often made in a different place from cotton cloth. Paris and the northern departments are the chief quarters for the supply of the former article, which is sent in quantities to Rouen, St Quentin, and other places. In former years, cotton yarn used to be smuggled in great quantities from England; but this is now limited to the finer qualities. The cotton manufactures of the more substantial kind, called *bonneterie*, such as stockings and caps, are carried on in the Ardennes, in Normandy, and in the department of the Gard in Languedoc.

The average annual value of the importation of cotton for the five years antecedent to 1833 is calculated by M. Costaz[1] at about L.3,700,000. The cotton manufacture is prosecuted in many parts of France, and presents a great variety of fabrics and an extensive division of labour. In one place the weaving alone is followed; in other places the manufacture of threads, which are sold to those who weave them into cloth. Such is the case in the department Du Nord, which exports a great quantity of thread to the cloth manufacturers. In other places they bleach the linens, which are afterwards dressed and stamped. The workmen employed in the cotton manufacture were estimated 20 years ago at 260,000,[2] and they now amount to 355,000. Still, however, France is decidedly inferior to Great Britain in almost every branch of the cotton manufacture; and the consequence is, that as the importation of English cotton goods is prohibited, they are smuggled into the country in great quantities. Among these, the introduction of cotton twist is most extensive; and as the French mills cannot manufacture the higher numbers, from 170 to 200, which are required in the fabrication of bobbinet, it has been found impossible to repress the contraband importation of this article. "It makes its way," say the writers of the Report on the Commercial Relations between Great Britain and France, "both by land and sea, in spite of all interdictions, and to a continually increasing amount."[3] The English can be sold also at half the price of the French article, which presents an additional inducement to the smuggler. The annual value of the manufactures thus illicitly introduced was estimated in 1833 at L.500,000 sterling; but smuggling has been reduced more than a fourth since that time. It is difficult to estimate the amount introduced, but very experienced persons in the trade doubt if it much exceeds L.250,000. English bobbinet was also smuggled 20 years ago into France to the estimated annual value of L.625,000 sterling; but it is questionable whether the amount of illicit traffic now amounts to L.300,000, though English bobbinet sells at from seven to eight per cent. above the price of French goods of the same nominal quality. Quiltings, cambrics, and muslins are also largely introduced by the illicit traders; and the delivery of these goods is insured at a premium of from 18 to 50 per cent., according as the risk is greater or less in the case of heavy or of light goods. In 1852, 1,760,000 fr. were paid in bounties on *fils et tissus de coton*. The average wages of men employed in the cotton trade is 2 fr. 50 cen. per day; of women 1 fr. 20 cen.; children are paid 50 cen. The value of the cotton fabrics of Normandy is 105,000,000 fr., that of Alsace 80,000,000 fr. In the last district 70,000 hands are employed in weaving; from 12,000 to 15,000 in printing; and 1000 in the bleaching grounds. In Normandy and vicinity, including a part of the Somme, Pas de Calais, Aisne, Eure, and Manche, 129,000 hands are employed, namely, 60,000 weavers for the Rouennerie, 20,000 for the calicoes, and 49,000 in other divisions of the labour. Alsace produces principally cotton cloths for printing, and exports a part into Switzerland. The number of pieces of printed cotton and muslins made is calculated at 1,100,000, valued at 40,000,000 fr. They are of three kinds and prices, but are unable to cope in cheapness with the English. Tulles, at first made only in Normandy, are now manufactured wherever cotton fabrics are made; to the extent of 32,725,000 fr., of which 20,000,000 fr. is the cost of the embroidery. The most important of this branch of the manufacture is carried on at and near Calais, where from 600 to 700 looms, and 4800 men, women, and children, are in constant employment. The manufactures of muslins are most in arrears of all, owing to the fineness of the thread required, which is not yet made in France, but imported for the purpose. Tarare is the seat of this manufacture, valued at 20,000,000 fr. These muslins are generally embroidered. Blonds and lace are made at Caen, Bayeux, and above all, at Chantilly (Oise), where 70,000 persons are employed. Cotton *bonneterie* is made at Troyes to the value of 7,000,000 fr., employing 10,000 looms, and from 10,000 to 12,000 hands. Rouen is also noted for this manufacture. The exportation of cotton goods from France in 1840 reached 5,000,000 kilo., valued at 105,753,743 fr. The importation of cotton thread from England in 1853 was 90,002 kilo., in value 1,559,311 fr. That of raw cotton in 1839 was 40,534,278 kilo., in value 71,204,784 fr.; in 1840, 52,941,581 kilo., in value 94,005,975 fr.

The cotton manufactures of France consume between fifty and sixty million kilo. annually imported, valued at 94,005,975 fr.

Cotton wool in transit	57,191,970
Cotton thread used at home	1,218,034
Cotton thread in transit	383,356
Cotton cloth consumed in France	305,256
Cotton cloth in transit	34,413,978
	187,518,569 fr.

In 1803 the import of cotton wool had reached 10,711,665 kilo., and in 1820 had doubled that amount. The cost of the raw material in France, and its manufacture, are enhanced by the expense of fuel and carriage. The profits, deducting all outlay and wear and tear of machinery, and making allowance for every expense, are considered to be about 30,000,000 fr. It appears, that prior to the legal permission to import cotton thread free, when above No. 143, not less than 5,000,000 kilo. were smuggled, when the duty was from 70 to 80 francs the kilogramme. This traffic has not yet ceased. The spinners number from 80,000 to 90,000, and the mean wages of adults and children are 1 fr. 50 cen. per head, who attend to 3,500,000 spindles. No. 132 of the French thread corresponds to No. 120 of the English, because of the difference between the English pound weight and the French demi-kilogramme. In the year 1806 the utmost degree of fineness attained in cotton thread was No. 110. In the year 1809 it had reached No. 150. In general the French thread remains much below the English, but it continually improves. No. 180, which in France sells at 39 fr. or 40 fr., costs in England only 18 fr. In the Seine Inférieure at Rouen, and vicinity, there are about a million of spindles at work. In the arrondissement of Lisle 600,000 are worked by 82 steam-engines, of 850 horse-power in all. St Quentin works 210,000 spindles, with 200 horse-power of steam, besides water-power. The spinning in Alsace employs 18,000 persons of all ages. The dyeing of cotton occupies 87 establishments at Rouen and its vicinity alone. The principal part of the weaving takes place in Normandy, Alsace, Amiens, St Quentin, and Troyes. The looms are above 270,000, and employ 385,000 hands, the mean of whose wages is 75 cen. per day. Many of the looms there are worked by hand. The principal products are calicoes for printing.

In the departments of the Seine Inférieure, Somme, Pas de Calais, Aisne, Eure, and La Manche, the spinners, weavers, dyers, muslin fabricators, machinists, cardmakers, amount to 107,000. The individuals connected with the manufacture in other ways, the whole comprising 150,000 families, carry the total number concerned up to 400,000. Of the workmen immediately designated the number is 107,000, employed thus:—

Spinners	21,000
Machinists	5,000
Loom weavers	65,000
Dyers	5,000
Muslin fabricants	9,000
Cardmakers and others	2,000
Total	107,000

In Alsace, including the Haut and Bas Rhin, the Vosges, the Meurthe, Haute Saone, and Doubs, above 100,000 persons are employed:—

Spinners	17,000 to 18,000
Loom weavers	70,000
Printers	12,000 to 15,000
Bleachers	1,000
	104,000

The principal places for the manufacture of yarn in Alsace are Mulhausen, Wesseiling, St Mary aux Mines, and Guebwiller. In the other parts of France the principal are St Quentin, Rouen, Caen, Amiens, Bar le Duc, Lille, Roubaix, Turcoing, Lyon, Paris, Darnetal, Bolbec, Troyes, Gisors, &c. The yarn made in the Seine Inférieure exceeds the whole made in Alsace. In the departments of the Somme, Pas de Calais, Aisne, Eure, and Manche there are 60,000 weavers of *Rouennerie*, 20,000 of calico, and 49,000 in the other branches of the manufacture.

In the extent of her linen manufacture, France is greatly superior to England; not that her soil is better adapted to the growth of hemp and flax, but because England depends on importations of linen from Ireland and Germany, and the spinning of flax does not form the occupation of our female peasantry. In France, particularly in the north, every farmer, and almost every cottager, covers a little spot with hemp or flax to employ his wife and daughters in spinning throughout the year; a stock of linen being the usual dowry of these humble occupants of the soil.

The manufacture of this article is not exclusively concentrated in the towns, like that of the other fabrics: many of the weavers reside in villages and hamlets; and the hemp and the flax are spun by the hand. This is a most valuable branch of domestic industry,

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[1] Costaz, *L'Agriculture, et les Arts utiles*, tome ii., p. 394, 395.

[2] *L'Agriculture, et les Arts utiles*, &c., tome ii., p. 504.

[3] See First Report of George Villiers and John Bowring on the Commercial Relations between Great Britain and France. Presented to Parliament 1834.

Linen.

which gives employment to females under the roof of their parents; but it is destined, in the progress of capital and industry, to be superseded by machinery and great establishments. In Normandy, Lisieux, Dieppe, the neighbourhood of Havre, Yvetot, Bolbec, and the more inland towns of Vimoirtiers and Domfront, are all remarkable for one or more branches of the linen manufacture. The more backward province of Brittany manufactures, at Rennes, St Malo, and Vitré, quantities of coarse linen, canvas, and sacking; but Anjou affords a much superior article; the *toiles de Laval* have long been in repute, and give employment, in Laval and the contiguous towns, to nearly 25,000 workmen. Lille and its populous district have very extensive manufactures of hemp and flax; for the number of workmen so employed, directly or indirectly, in this part of French Flanders, is not short of 50,000. Since 1790, fine linen has, in France as in England, been in a great measure replaced by fine cotton; and the two together employ, at St Quentin (in Picardy) and the neighbourhood, more than 30,000 workmen. In another part of the kingdom, the province of Dauphiné, there are carried on linen manufactures of various qualities, the prices being from 1 fr. 10 cen. to 5 fr. the yard.

The value of the linen manufacture of France of every kind is no less than 525,000,000 fr. The raw material grown in France is valued at 30,941,840 fr. for the hemp, and 19,000,000 fr. for the flax. The hemp imported, and the thread together, give 35,699,003 fr. value. About 1,000,000 fr. is the worth of the flax imported. Total, 20,000,000 fr. The manufacture gives—

For the hemp	107,097,009 fr.
The flax........................	75,000,000
	182,097,009 fr.

The manufactures of hemp and linen employ 600,000 workmen. The exports of linen, principally to England, were, in 1840, nearly 6,167,731 kilo. The manufacture has doubled since the first Revolution. Lille, Dunkirk, Essonne, Pont Remy, Bellais, Vernon, and Alençon, are noted places for their linen manufacture. Normandy sends to Paris annually 20,000 pieces of linen. The linens of Brittany are mostly consumed at home. The fine linen cloths called *toiles de mulquinerie* are principally made in the departments of the Aisne and Nord. St Quentin was once noted for them; now that town, Cambray, Valenciennes, and Solesmes, produce cloths so fine, called *batiste* and *linon*, that 70,000 pieces are exported to England. The beautiful batist embroidery employs 13,000 persons at Nancy. *Coutils*, a cotton cloth crossed with thread of linen, are woven in the department of Mayenne, where 4500 looms are employed upon this article.

French linen differs in quality according to the place of manufacture; but in general it is thicker and stiffer than Irish linen, whilst in whiteness it is inferior to the linen of Flanders and Holland. It is, however, a substantial and durable article.

Cambrics, thread, gauze, and lawn, rank among the leading manufactures of the north-east part of France. They are made at St Quentin, Valenciennes, Cambray, and to a smaller extent at Douai, Chauney, and Guise. Lace is still more general, being made in quantities at Valenciennes, Dieppe, Alençon, Caen, Bayeux, and Argentan. Machinery had, up to 1820, been very little applied to this manufacture in France, and the number of women employed in it was very great. There are considerable manufactures of printed linens; and the dyeing of linen thread gives rise to an extensive commerce. At Rouen, and in the surrounding districts, this branch of industry is carried on; and many stuffs of great variety, and for which there is a brisk demand, are produced. In 1822 the duties on foreign thread and linen were raised by the French government till they were nearly prohibitory; and the annual importation from Germany and Belgium, which formerly amounted to a million and a half, almost entirely ceased. The price of home-made linen rose 25 and 30 per cent.; the consumers had recourse to cotton as a substitute; the French dyeing trade fell off, and also the entrepôt trade in foreign linens, both of them sources of great business.

The value of the hemp annually grown in France may be computed at L.1,200,000, the quantity imported at L.200,000; together L.1,400,000; a value which is doubled in the coarse manufactures, and tripled in the finer. Of this quantity of hemp, the half is made into canvas and thread, a third into cordage, and the remainder into cloth for domestic use. Of the flax annually employed, the value is about L.800,000; a sum which is tripled when it is made up into thread, linen, and mixed stuffs, and much more than tripled in the finer qualities.

Iron.

France had in 1855 about 569 furnaces, of which more than 300 are said to be blast-furnaces. It is, however, almost impossible to ascertain the exact number of blast-furnaces, the position of which is regulated by that of the iron mines. They are chiefly in the mountainous departments of the Dordogne in the south-west, and of the Haute Marne, the Haute Saône, and the Côte d'Or, in the east of the kingdom. Of forges for malleable iron, called *forges à la Catalane*, there are eighty-six scattered throughout different departments, but chiefly in the hilly part of Languedoc. There are also a number of wire-works in France, in which, as in the blast-furnaces, there has been since 1790 a progressive but very slow increase, altogether different from the rapid advance of the iron-works of England previously to 1815.

The stationary character of these works has evidently been owing to the deficiency of fuel and of water communication; disadvantages which prevent the hardware manufactures from being concentrated in cities or populous districts, and cause them to be spread over the country in petty towns or villages, with a very limited division of labour, and a consequent inferiority of execution. The result is, that France does not export hardware, and that in nothing is the inferiority of domestic accommodation in that country more conspicuous than in articles which belong to the province of the locksmith and cutler. The amount of pig-iron annually made in France appears to be about 100,000 tons.[1] The value of the hardware of the kingdom, including cutlery, arms, and other articles of nice workmanship, is computed at L.8,000,000 or L.9,000,000 sterling. Fine cutlery in former times was largely smuggled into France, but now to a much smaller extent. The annual import of iron and steel[2] is only from L.2,000,000 to L.3,000,000. The high price of iron is a great obstruction to the progress of the hardware manufactures; and this circumstance places in a strong light the impolicy of the heavy duties on foreign iron, by which, notwithstanding the change in the scale of duty in 1838, all those important branches of industry in which iron is used are stunted in their growth. In copper, the importations greatly exceed the home produce. From Great Britain the quantity imported for the last ten years has increased from 200 to 20,000 hundredweight. Of lead, also, the chief part is imported. The manufacture of steel has only been lately introduced into France. Prior to 1786 there was no manufactory of this useful article; and it was only after accounts had been published by scientific persons of the composition of that article, and after repeated experiments, that in 1809 manufactories of steel were established, which have been since extended to several departments, especially to those of the Loire.

Silk.

As regards silk, France possesses, both from physical causes and from the long-established manufacture, a decided superiority. Mulberry trees were introduced in the fifteenth century, and were first planted, not in the south, but in the central part of the kingdom, near Tours. That town was the seat of the earliest silk manufactures, and it was not till 1600 that the culture of the mulberry was carried southward.

The mulberry thrives in a variety of soils, and may be planted with success in neglected borders or in waste lands. The labours of the silk-worm last only six weeks, after which the cocoons are in a state to be purchased for winding or carding. These processes reduce the quantity so much that the produce of an average year does not exceed 560,000 lb. *soie grege*, worth 20s. or 21s. the lb.; and 322,000 lb. organzine silk at 25s. France has not, however, sufficient silk for her own manufactures. She imports silk from the Levant (chiefly Persian silk), from Italy, Sicily, and Spain.

The cost of manufacture nearly doubles the value of the

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[1] In 1846, 30,000,000 of metrical quintals were extracted from the iron mines, which were worth 7,800,000 francs, or 260 francs per metrical quintal. In 1836 the total weight of iron extracted amounted only to 20,000,000 of metrical quintals, which was worth 4,386,000 francs, or 217 francs per metrical quintal. In 1846 there was manufactured 5,224,000 metrical quintals of cast-iron, worth 80,500,000 of francs, or 15·30 centimes the metrical quintal. The manufacture of cast-iron and "gros fer" in 1846 amounted to more than 41,000,000 francs, and in 1836 of 20,000,000 only.

[2] The manufacture of steel in France in 1846 rose to 129,549 metrical quintals, worth 78 francs 12 centimes the metrical quintal; in 1836 it was 59,454 metrical quintals, worth 70 francs the metrical quintal.

Statistics.

raw material in the plainer qualities; and in the highly finished, such as fine ribbons, it may be said to triple it.

The manufacture of silk is considered as an important branch of French industry, not only on account of the variety and beauty of the fabrics, but because the raw material is an indigenous product of the country. It was estimated,[1] twenty years ago that the amount of the annual sales to foreigners was thirty millions of francs; that the home consumption of the kingdom amounts to L.3,333,334; and that the whole annual value of the silk manufacture was equal to L.4,598,889. The manufacture of silk is not confined to any particular spot. It is carried on in different parts of the country, in all of which it diffuses prosperity. It has enriched the poor of Nîmes, of Avignon, and of Tours; St Chamond and St Etienne owe a great part of their prosperity to the manufacture of ribbons, and the town of Ganges to bonneterie; Paris derives immense profits from her manufactures of silk stockings, and other fabrics, either of silk or with a mixture of silk, or of wool and cotton. Silk is also the great staple manufacture of Lyon, in which it is carried on in all its branches with astonishing success; and since the Revolution, in addition to fabrics of silk, all sorts of stuffs mixed with silk, and with cotton and wool, have been manufactured; and to these manufactures Lyon is indebted for its riches, having risen not only to be the second town of France, but one of the most opulent and flourishing cities in the world. It was twenty years ago estimated that about 60,000 or 70,000 individuals, young and old, were supported by the silk manufacture in Lyon and the adjacent district; but the number has increased 25 per cent. since 1835. The dyeing of silk being an important branch of the manufacture, many experiments were made to bring it to perfection; and, in particular, a dye of perfect black that would retain its colour was a desideratum. This dye was invented by a common dyer at Lyon, who received a pension, besides being made a member of the Legion of Honour. Prior to this the black dye which was used changed in a few days to a brown, and came off the stuff when it was hard pressed by the hand. Another improvement which was made consisted in procuring a silk of a permanent white colour. The eggs of the worm which produced this silk were brought from China, not, however, with the desired success. The worm was afterwards purchased from a merchant of Alais, and distributed in the northern departments of the country; and the produce of white silk is now very considerable, and of great importance in the manufacture of gauzes, crapes, and tulles. Other inventions were devised for saving labour in the various stages of the silk manufacture, by which, in this branch of industry, France was long enabled to outstrip all her neighbours, though of late years the silk manufacture has made immense advances in Great Britain.

There were in 1820 no less than 9,631,624 mulberry trees in France for the nourishment of the silk-worm. These supplied food for cocoons producing in 1819, according to Chaptal, 5,147,609 kilogrammes of cocoons. In 1835 the product had increased to 9,000,000, yielding 278,000 kilo. of silk grège, and 161,000 kilo. organzine. At present (1855) the quantity of silk furnished amounts to 1,600,000 kilo.; which, at 55 fr. per kilo., the average price, gives a sum of 88,000,000 fr. as the value of the amount produced. In 1810 the amount was only 4,073,198 kilo. of cocoons, at 3 fr. 45 cen. per kilo. In 1830 it had risen to 9,007,967, at 3 fr. 82 cen.; while the wound silk (grèges filées), which in 1810 only reached 350,629 kilo. at 45 fr. 12 cen., in 1835 had increased to 876,016 kilo., at 58 fr. 64 cen. per kilo. But the home growth not being enough to meet the demand, importations took place to the extent of 1,154,956 kilo., valued at 53,731,538 fr., and they still increase. Italy, Switzerland, Turkey, and Greece, supply the larger part; a small quantity is obtained from Austria and Sardinia. The exportation of silks, plain and flowered, from 1787 to 1789, on a mean of ten years, was 37½ millions of francs in value. In 1829 it was 111 millions, and in 1836, 206½ millions of francs, consisting of 2,720,914 kilo., under twenty-two different denominations of goods. The United States, England, Germany, then Belgium, and lastly Spain, are the principal outlets for the silks of France; but South America, Russia, and Switzerland, are also considerable purchasers. France exports silks to a large amount in the way of transit. Lyon, Avignon, Tours, and Nîmes, are the principal seats of the manufacture of silk stuffs; and St Etienne, St Chamond, and Paris, for that of ribbons. In the arrondissement of Lyon, and Ville Franche, there are 31,083 looms. The manufacture of ribbons at St Etienne employs 20,000 workmen and 30,000 looms, producing 27,473,000 fr. value annually. The fabrication is divided into the manufactures *unis* and *façonnés*. Under the first head are those with the prefix *gros*, as *gros de Naples;* those called *pou de soie, fontard, crêpes,* which last are subdivided; then satins and the like. The ribbons are in like manner distinguished by different appellations, after the nature of the fabric. St Etienne employs in all 279,000 spindles (*broches*); of which 165,000 work organzines and trames, and 114,000 work the silk intended for crapes and gauze ribbons. The number of looms has been estimated in all at 65,000 for wearing silks, and 80,000 for ribbons.

The raw silk or silk-wool consumed in France in 1840 was valued at 53,731,536 fr.; while the value of the silks in transit reached 40,134,301 fr. Plain and flowered silk consumed at home, = 5,299,490 fr.; that which passed in transit = 37,204,483 fr.: being a total of 136,369,810 fr. A decree of the 18th August 1852 permits the free exportation of silk.

The silk-wool of French production exported in 1840 was valued at 3,738,103 fr.; the foreign grown silk-wool exported at 47,491,154 fr. The value of the export and import together was thus 380,256,696 fr. The following are the most important districts of the mulberry, with the growths respectively, and the cocoons produced in 1840:—

	Hectares.	Kilogrammes. Cocoons.
Gard	14,941	2,696,000
Drôme	6,212	2,585,352
Ardèche	5,602	1,765,121
Vaucluse	3,986	660,600
Hérault	2,592	1,248,972
Isère	2,073	539,507
Bouches du Rhône	1,546	549,780
Rhône	1,295	471,560
Ain	836	74,716
Var	787	491,750
	39,770	11,053,358

About 500,000 kilo. of cocoons are produced in the other departments. The importation of English woven silk into France in 1853 was 52,703 kilo., in value 5,464,699 fr.

Articles of leather are in France much cheaper than in England.

Jewellery, porcelain, &c.

Jewellery is made in Paris to the value of 50,000,000 francs. Lyon, Marseilles, Bordeaux, Clermont, and Strasbourg, are also famous for jewellery. Watch and clock making are carried on to a great extent in France, particularly at Paris. A timepiece is there a much more frequent article of ornamental furniture than in England, and the number of clocks and watches made annually in the kingdom is not less in value than 30,000,000 francs, employing 10,000 hands. The works in bronze are chiefly manufactured in the capital, and reach in their different branches and stages, of which gilding is the chief, a further annual value of 37,000,000 francs.

Paris is remarkable for other fabrics of taste and luxury; in particular, the porcelain of Sevres, near St Cloud, and the beautiful but very expensive tapestry of the Gobelines. The materials of the latter are silk and the finest woollen thread; the subjects woven into the work are taken from paintings executed on purpose. Both the establishments have been long conducted by government at a sacrifice, and both are now on a reduced scale, the articles being far too costly for ordinary fortunes. The articles more frequently purchased are *passementerie*, by which is understood artificial flowers, fringes, gold and silver lace, with a variety of trifling but tasteful articles, all sufficiently adapted to a city where so much more is thought of display than of utility.

Soap.

The value of all the soap made in France is computed at 30,000,000 francs. The main ingredient is olive oil; and Marseilles was formerly the seat of this manufacture for almost all France—an advantage owing both to the extent of the olive-grounds in the south-east of the kingdom, and the vicinity of Marseilles to Italy, the Levant, and Spain, whence soda and olive oil were imported in vast quantities. A million of francs were paid for bounties on the export of soap in 1852. The export of soap from France in 1838 was 2,911,631 kilo., valued at 2,941,631 fr. The disorders of the first Revolution, and the establishment of similar manufactures in other parts of France, have caused to Marseilles the loss of a third of its soap works; they are still, however, very extensive. Of the oil used in France, whale oil forms a very small proportion; the great supply is of vegetable oil,

Oil.

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[1] See Costaz, *Sur l'Agriculture et les Manufactures de France.*

viz. that extracted from the rape and cole seed of the north, and the olive oil of the south.

Liquors.

Beer, formerly little drunk in France, has become of extended consumption since 1790; but even at present the quantity used does not exceed L.2,000,000 sterling, its place being supplied by cider in the north, and by wine in the south. Within the last few years there is a considerable consumption of English bottled stout and porter, and a lesser though increasing consumption of English ale. The breweries have increased and are increasing in Paris as well as in the northern departments. The consumption which corresponds to that of our home-made spirits, and our rum, is in brandy, of which the value annually made is between L.2,000,000 and L.3,000,000 sterling. The distillation varies in amount with the season. The brandies of Cognac, Jarnac, and Angoulême, are most in esteem. The best brandy is made in a district called Champagne, comprehending a part of the Saintes, Jonzac, and Cognac territory. In Franche-Comté and Alsace a brandy called Kirsch is made, but little of which is exported. The Hérault, Aude, and Gard, supply the largest quantity of spirit of wine. The best is called that of *trois-six*. The amount varies from 40,000 to 80,000 pipes of 80 veltes, 5 of which form a quintal. A velte is 7·61 litres = 1·675 gallon. Beer is brewed in the northern and eastern departments, viz.:—

	Quantity.		Value.	
Nord Oriental	3,115,615	hectolitres.	41,419,432	fr.
Nord Occidental	527,378	do.	9,429,261	„
Midi Oriental	160,942	do.	5,447,719	„

Cider is made everywhere, in largest quantity in the Nord Occidental, and the best in La Mancha and Calvados. Some is distilled for brandy. The quantity is estimated at 11,000,000 hectolitres, at 7 fr. 75 cen. Normandy furnishes half. The whole is worth 34,000,000 fr. There is also a considerable distillation of spirit from potatoes; which, says Chaptal (vol. ii., p. 197), has been generally approved, and has been brought into competition with brandy.

Lesser manufactures.

Of hats, the manufactures, formerly concentrated at Lyon and Marseilles, are now diffused throughout several towns; and the value annually made is about twenty-four millions of francs. The hat manufacture of Paris is estimated at an annual production of 1,200,000, of the average value of 5 fr. each, and employing 2000 men and 2500 women. Superior qualities of silk hats are sold to the retail tradesman at from 9 fr. to 11 fr., for which the latter obtain from 15 fr. to 18 fr. The hat manufacture in France employs 17,000 hands, and yields a value of 19,500,000 fr., in 1159 workshops. The second order of hatters, who finish the hats according to the different tastes required, elevate the value of the trade to 24,375,000 fr. The manufacture of gloves—principally made at Grenoble, though called "Paris gloves"—employs 25,000 persons. In 1839 the value of the gloves made in France was 9,436,000 fr.; in 1840, 5,556,000 fr. The tanneries prepare 33,286,004 kilo. of leather, valued at 82,864,706 fr., for boots, shoes, saddlery, &c. Perfumery is made extensively in Paris, and in the south, chiefly at Montpellier, where, from the mildness of the climate, aromatic plants are abundant. The value of the manufacture is about 13,000,000 fr. Paper being exempt from the heavy duties of England, is sold in France upon very reasonable terms, whilst in quality it is equal to our own. The value annually used in printing and in writing is computed at 25,000,000 of francs, and the paper employed in the hanging of rooms is estimated at an equal value. Of glass, the manufacture has been much improved and extended during the present age. Whether for mirrors, for windows, or for bottles, this article in France is good and of a moderate price. The number of glass-houses in 1818 was 185, and is now over 220. Small mirrors are manufactured much cheaper in France than in England. Bohemia is the country with which the French manufacturers state they cannot compete. As to earthenware, it is only since 1790 that English pottery has been successfully imitated in France. It is now made to the value of 29,000,000 fr.; whilst the coarse earthenware, fabricated in almost every province of the kingdom, is computed at 15,900,621 fr., employing 10,433 hands. French earthenware is very inferior to English.

Saltpetre, till lately a monopolized manufacture, is now unrestricted. Sulphuric acid has, since the beginning of the present century, been greatly lowered in price and increased in quantity.

Sugar.

The manufacture of sugar from beet-root was introduced into France during the reign of Napoleon Bonaparte, when, the coasts of France being blockaded by the fleets of Britain, the importation of foreign articles, and among others that of sugar, was rendered dangerous and difficult; and its price was so high as entirely to preclude its consumption by the middle classes of society. Various articles were resorted to as substitutes, such as honey, the juice of raisins, &c., but they were not relished by the taste of the people; and in this case experiments were tried by eminent chemists to extract from beet-root the sugar which it contained. These experiments were successful. There were in 1831 more than 200 establishments, from which were produced annually 7,480,000 lb. of raw sugar; and there were in 1854 303, producing 62,205,600 lb. The largest sum paid by the administration of the customs has been for refined sugar. It amounted in 1852 to sixteen millions of francs.

Machinery.

The manufactory of machinery has greatly increased. Steam-engines have been introduced into France from Great Britain, where they are now employed in every department of industry. It was in the year 1779, at the village of Chaillot, near Paris, that the first steam-engine was established in France; but, owing to prejudices, and attachment to old customs, it was long before these engines came into very general use. Prejudice, however, gradually faded away before the productive powers and manifest utility of this extraordinary application of science to the business of life, and there are now many establishments for the manufacture of these machines. The scarcity of coal is a great obstruction to the extensive use of steam-engines; and the tax on foreign coal is in this view peculiarly impolitic, and injurious to the general interests of the community. The tax, though lately reduced by the imperial government, requires still further reduction.

In 1836, of 1749 steam-engines in France, 1393 were home made. In 1839 the import surpassed the export. Since that year the reverse has been the case. The metallic castings in France are still very inferior to those of England. Paris is the principal seat of the manufacture of French machinery, then Arras, Creuzot, Rouen, Mulhausen, and Nantes. Locomotive engines are made at Bitschwiller in the department of the Haut-Rhin; machinery for steam-vessels at Indret.

The value of French industry has been estimated in the mean product as follows:—

	Francs.
Iron from the ore to the perfect state, minerals, &c.	124,000,000
Copper, zinc, and lead	26,500,000
Glass, crystal, and looking-glasses	47,500,000
Tiles, bricks, lime, plaster	66,500,000
Porcelain, pottery, &c	27,500,000
Chemical manufactures, the products	22,000,000
Hemp and Flax (supposed to be no less than 525 millions of francs)	360,000,000
Cotton	500,000,000
Wool	400,000,000
Silk	230,000,000
Leather and skins	300,000,000
Sugar	45,000,000
Paper, coloured and figured	25,000,000
Printed paper, books, &c	25,000,000
Machinery	10,000,000

	Francs.
Clocks and watches	30,000,000
Bronzes	25,000,000
... plated ware	6,000,000
... jewellery and goldsmith's work	50,000,000
Distilleries, breweries	206,000,000
Different branches of industry	135,000,000
Mechanics and domestic arts	250,000,000
L.116,440,000 =	2,911,000,000

General observations.

Labour in Paris is as much dearer relatively to the provincial towns of France, as labour in London is relatively to those of England. It still remains for us to remove from our capital some manufactures which have been most injudiciously established there; but the French have carried this false calculation much further, Paris being the centre not only of ornamental fabrics, such as jewellery, bronze, sculpture, cabinet-making, and the vast variety of elegant trifles comprised under the term "articles de Paris," but of a number of coarser employments, which a very slight change of plan might transfer to a cheaper quarter. Periodical exhibitions of French manufactures are held at Paris every three or four years, at which are present the sovereign, the princes, the nobility, and all eminent men of science. In 1855 was opened in Paris an Exhibition of the Industry of all Nations, similar to that which took place in London in 1851, and in Dublin in 1853. The Parisian exhibition, like the Dublin one, contained a branch dedicated to the fine arts. This exposition continued open from May till the middle of November. It was twice visited by her Majesty Queen Victoria between the 20th and 25th August in her nine days' visit to France. There is also in that capital a *Conservatoire des Arts et des Métiers;* a collection, on a large scale, of models of all instruments or machines that relate to arts and manufactures. It is more the practice also in France than in Britain to encourage ingenious inventions in the mechanical arts, by premiums, orders of merit, and other honorary marks of distinction. Yet, with all these advantages, industry has not made the same progress as in this country.

To prescribe the mode of manufacture was formerly a favourite course with government in England as in France. From the time of Colbert (1660) the French *ordonnances* prescribed peremptorily the length and breadth of serges, of druggets, in short, of every kind of cloth calculated for export, under the plausible idea that all these precautions were necessary to establish a reputation for quality. It is a curious fact, that these rules were desired by the manufacturers themselves, and were long considered as the safeguard of French industry. A change was introduced in 1779, and permission given to every manufacturer to follow his own method, provided he distinguished the goods thus made from those which were in conformity with the regulations. But this was of very short duration. The power of habit and prejudice prevailed. New *ordonnances*, issued the succeeding year, revived the former limitations; and the manufactures of France were not put on an unrestricted footing till the Revolution. Much inconvenience had also been sustained from the absurd law which prevented a workman from settling in business in any town excepting that in which he had served an apprenticeship. This law was abrogated in 1767.

The manufacturing industry of France is confined, far more than ours, to the home market, whether we look to the supply of the raw material, or to the export of the finished articles. Her imports are large only in cotton and silk; in wool and iron they are not considerable; whilst in flax, hemp, and leather they may be termed insignificant. In exports the limitation is still more striking, her hardware, her linen, her woollens, her cotton, her leather, and, in a great measure, her silk, being confined to the home market; a restriction owing partly to our manufacturing superiority, but more to the capital of our merchants their ability, to give long credit, and to deal with foreign traders and merchants in a liberal and not in a petty retail spirit. The productive industry of France is consequently much less subject than ours to sudden fluctuation. It follows nearly the same routine year after year. On the occurrence of a war, or other political change, the commerce and manufactures of our neighbours, to borrow a phrase of Talleyrand (Letter to Mr Fox, 1st April 1806) *se replient sur eux-mêmes.*

VII. COMMERCE, COLONIES, FISHERIES, SHIPPING.

Commerce.

In no country in Europe has trade been laid under such galling restrictions as in France; and it is remarkable that this system of restriction has in a great measure been the creation of modern times. The ancient legislation of the kingdom was rather friendly to foreign trade. It encouraged importation in preference to exportation. This latter privilege of export was in 1577 claimed by Henri III. as his royal and seignorial right; and he regulated by his ordonnances the export duty on a variety of articles, whilst the produce of foreign countries was admitted on payment of an *ad valorem* duty of two per cent. Louis XIV. introduced a sort of navigation act, by which he levied a tax of fifty sous on all foreign ships. In 1667 further restrictions were introduced; and in 1687 the exclusive system was established in its full rigour. The statesmen of France seem to have imagined that a flourishing commerce could be created by legal authority, and that domestic industry could only be encouraged by the exclusion of all foreign competition; and hence all the vices and obsolete maxims of the mercantile system will still be found in the commercial policy of our neighbours. The extension of the restrictive system was promoted by the authority of Colbert, a minister who, though he introduced order into the finances, and improved in many particulars the system of taxation, and was indeed a great master of detail, adopted the most erroneous maxims of commercial legislation. It is justly observed, in the Report of Villiers and Bowring on the commercial relations between Great Britain and France, that the "whole of the bounties by which he induced adventurers to enter into remote speculations, as well as the excessive duties which he imposed on cheaper foreign articles, were almost uncompensated sacrifices; while, on the other hand, of the manufactures which he transplanted into France, and which he protected by the exclusion of rival productions, scarcely one took permanent root;" and even those which he intended to support by special encouragement would all of them have been more prosperous, but for the regulations with which his mistaken zeal retarded the progress of manufacturing industry. His whole system was an attempt to regulate by law what would have been better left to the sagacity of individuals, and to give a forced and artificial direction to the national capital. Thus he encouraged a trade to the West Indies by granting a bounty of 25s. on every ton of goods exported, and of 41s. 8d. on every ton imported. He boasted of setting up 40,000 looms by virtue of legal enactments, without considering that the capital employed in these establishments would have taken a more natural direction, and been more profitably employed, but for his interference. The restraints also which were thus laid on domestic industry were often enforced by the despotic authority of the government. Many of the absurd and pernicious regulations of Colbert were broken down by the first French Revolution; but others remained, and the tariff of 1791 was from beginning to end a system of prohibition, the object of which was to encourage the home manufacturer by freeing him from all foreign competitors. It must be confessed that England set the example of illiberality; and it was no wonder that the French of that day should be jealous of a country which excluded her silks and cambrics, and laid a discriminating duty of 33½ per cent. on French wines; and whose parliament, under the reign of William III., declared the trade with France to be a nuisance. The commercial treaty concluded with France in 1786 by Mr Pitt, was the earnest of a better system. Since this period the legislators of this country have been impressed with the injurious tendency of all commercial restrictions. But in France the progress of improvement has been slower, and it has besides been retarded by political events. The long and sanguinary war waged between Great Britain and France subjected the latter to the maritime hostility of her powerful opponent, the consequence of which was, that her trade with foreign countries was interrupted, and the supply of many of their staple articles of produce greatly diminished, and raised enormously in price. It became a great object, in this case, to produce these articles at home. In addition to the existing restraints upon the importation of foreign manufactures, special encouragements were given to the production of articles for which neither the soil nor the climate of France was peculiarly fitted. Thus when the maritime blockade of France was raised by the peace of 1814, her industry, partly from ancient and mistaken maxims, partly from the pressure of war, received a very artificial direction, and was oppressed by ruinous and complicated restrictions. At the restoration of the Bourbons in 1814, the tariff of 1791 was the law of the land. It had undergone a few modifications, but these were mostly in the restrictive and prohibitory spirit, and were accommodated to the hostile position which France occupied in regard to surrounding nations. When the barrier to a free intercourse with foreign nations was at length thrown down by the peace of 1814, the exclusive provisions of the tariff of 1791 were brought into full operation; and when the obstacles to the commercial intercourse of France with foreign nations raised up by the war were withdrawn, a no less effectual line of circumvallation was drawn around her commerce by the restrictions and prohibitions of her own erroneous policy. It is remarkable, indeed, that a committee of the Chamber of Deputies, in reporting on the budget in 1832, enters into an exposition and defence of the restrictive system, the principle of which is to encourage domestic industry by the exclusion of the cheaper and better manufactures of foreign nations.

The tariff of 1791 either excluded from France, or laid under heavy duties, almost all the great staple manufactures of other countries. Manufactured iron in every shape, manufactured steel, copper, tin, cutlery, and all articles manufactured from any of the metals; all fabrics of wool, cotton, silk, or tissues of hair, saddlery, spirituous liquors, grain, refined sugar, tobacco, toys, and various other inconsiderable articles, are included in this charta of domestic commerce. The inconsistency, and the fallacies on which this system is founded, are well exposed in the Report of Villiers and Bowring. The passage, though somewhat long, is replete with instruction.

"It requires merely to state some of the objections to importations, in order to show their narrow and anti-commercial spirit. The introduction of manufactured tin, for example, is opposed because it might benefit England, which is rich in tin mines, as if the importation into France could take place without equally benefiting her. The reasons, too, which are grounded on the superiority of other countries; as, for example, 'dangerous rivalry' in the case of manufactured steel; 'cheapness' of foreign article in the case of shipping; threatened 'annihilation of the French manufacture' in that of cutlery; 'extra advantages of the English' in plated ware; 'apprehension of the English' in articles of pottery; 'imprudence of admitting English saddlery,' as so many persons, regardless of price, prefer it; 'advantages of machinery' in works of iron; all are modes of announcing the superiority of the foreign articles, and the power which foreigners possess of supplying them on cheaper terms than they can be produced at home.

"There are other grounds of prohibition by which particular French manufactures are avowedly sacrificed to the interest of other branches of French industry. The importation of extracts of dyewoods is disallowed for the purpose of encouraging the importation of the dye-woods themselves; the interest of the dyer, the manufacturer, and consumer, being wholly forgotten. The importation of iron of certain sizes is prohibited, lest small manufacturers should establish fabrics, and supply the markets at a less cost than the larger establishments. Woollen yarn is not allowed to be imported, because it can be produced in France, though the high price must be a great detriment to the woollen manufacture; and cast iron of a great variety of sorts is prohibited, on the ground that a sufficiency may be obtained at home, though the cost is notoriously more than double that of many articles of foreign cast iron. Molasses are not allowed to be introduced, because the price in France is so low, and the exportation so large, on the ground that importation will lower the prices still more, though the lowness of price would obviously make importation unprofitable; and the fact of considerable exportation is the best evidence that the average prices are low in France. Rock salt was prohibited in 1791, and the prohibition is now justified on the ground that mines have lately been discovered. The prohibition of refined sugar was supported on the ground that its admission would not benefit the treasury; but it is clear, if the interest of the treasury were kept in view, that all prohibitions would be suppressed, or superseded by a system of duties. While some articles are prohibited because the production is small in France, and requires protection, others are prohibited (dressed skins, for example) because the production is great, and engages a large number of hands."

There is another branch of the French legislation regarding commerce, which is equally exceptionable with the prohibition to import foreign manufactures; namely, the system of drawbacks and bounties on the exportation of domestic produce. Having by special encouragements created a surplus of certain articles at home, and which the high price prevented from being sold to foreigners, the public were called upon to pay the difference between this high price and the price abroad; and thus they were taxed, by the exclusion of the foreign article, in a higher price for what was consumed at home, and also taxed for all that was consumed abroad, in the bounty which was paid on the exportation of the article. This is a double iniquity, which has gone on increasing in France. In 1817, the whole amount of what was conceded on this account amounted to L.3500 per annum, whilst in 1830 it amounted to L.600,000, nearly one-fifth of the nett amount of the whole customhouse revenues of France; and as it was going on progressively, it might soon have absorbed the whole customhouse income, without in the least benefiting, but rather injuring, the general interests of commerce. During the first nine months of the year 1832 premiums or bounties were paid to the amount of 24,448,375 francs, or L.1,018,682.

The commerce of France, obstructed by these restrictive duties, has not made the same advances as her agriculture and manufactures. The internal produce of every country necessarily increases with its population; and the inhabitants of France having increased, since 1780 to 1855, to full 36,000,000 (for the census of 1851 makes the population 35,781,628) from 24,800,000, must produce as well as consume more. But in the mean time her commerce has not kept pace with this increase in her population. The value of the imports into France amounted in 1787 to 631,790,700 francs, or about twenty-five millions sterling, and engaged 888,868 tons of shipping; and her whole imports only amounted in 1830 to twenty-five and a half millions sterling, and employed 1,009,454 tons of shipping, which is far from being an increase corresponding to her augmented population. According to the last accounts, the value of imports was in 1853, L.65,240,000, of which to the value of L.44,120,000 remained for home consumption, and engaged 4,605,000 tons of shipping. The whole trade of France with its own colonies and foreign powers amounted for the year 1853 to an official value of 3443 millions of francs, which was an increase of 12 per cent. on the year 1852, and an increase of 32 per cent. on the average of the years between 1844 and 1848. The foreign commerce of England was, in the year 1787, about seven millions less than that of France, or about eighteen millions sterling, and employed 1,349,419 tons of shipping. Her population was nine millions. In 1830 her foreign trade had increased to L.69,700,748, including L.17,127,764 to the colonies, which employed 2,860,515 tons of shipping. Thus, whilst the official value of the commerce of England had nearly quadrupled, and her shipping nearly doubled in forty-three years, not above one-fiftieth part was added to the foreign commerce of France; a fact which strongly illustrates the pernicious influence of monopolies in damping the energies of individual enterprise, and thus obstructing the national prosperity.

Official value of Imports and Exports.

Years.	Imports. Fr.	Exports. Fr.
1849	1,142,000,000	1,423,000,000
1850	1,174,000,000	1,531,000,000
1851	1,158,000,000	1,629,000,000
1852	1,438,000,000	1,682,000,000
1853	1,632,000,000	1,861,000,000
Total	6,544,000,000	8,126,000,000

The intercourse of France with its colonies and foreign states in 1853, exports and imports united, formed a sum in official value equal to 3,493,000,000 francs, being an augmentation of 373,000,000 francs over 1852. The actual value of the imports in 1853 was 1,217,000,000 fr. against 1,006,000,000 fr. in 1852, and of the exports the actual value was 1,572,000,000 fr. against 1,278,000,000 fr. in 1852. The ocean imports were in actual value 1,070,000,000 fr., and those by land 626,000,000 fr. The exports by sea were 1,633,000,000 fr. actual value, and those by land 420,000,000 fr.

The following tables will be found to contain, from official documents, a comprehensive view of the value and extent of the commerce of France at different periods.

Trade and Navigation of France with Foreign Nations—Actual Values.

Nations.	Years.	Value. Imports.	Value. Exports.	Ships.		Tonnage.		Crews.	
				In.	Out.	Entering.	Outward.	Inward.	Outward.
		Fr.	Fr.						
Russia	1850	27,255,165	20,146,540	136	71	19,274	9,225	1,266	758
	1854	58,853,979	3,862,520	43	3	8,930	795	458	62
Sweden	1850	5,840,697	1,265,163	29	5	2,985	857	198	42
	1854	7,707,154	2,578,604	29	12	2,796	1,181	190	81
Norway	1850	13,326,660	2,134,130	15	3	1,520	262	102	19
	1854	19,214,908	1,935,281	42	1	4,147	101	284	7
Denmark	1850	77,709	1,288,077	6	8	412	651	36	50
	1854	7,329,923	4,055,140	4	9	325	997	26	64
England	1850	111,181,981	312,119,023	2878	3211	223,213	210,040	21,990	23,880
	1854	201,490,531	536,643,810	3082	1546	301,590	115,525	27,938	15,306
German Association	1850	47,324,482	50,983,390	16	19	1,516	1,914	104	128
	1854	103,661,586	62,556,573	6	3	591	235	41	20
Hanse Towns	1850	6,654,524	15,646,264	96	137	9,333	14,048	990	1,207
	1854	7,022,584	18,321,208	64	76	5,119	6,451	390	474
Netherlands	1850	22,801,018	14,911,230	80	98	10,227	12,355	1,330	1,552
	1854	33,984,969	29,272,053	25	32	1,364	2,882	168	242
Belgium	1850	156,620,134	113,690,547	73	143	5,272	10,554	458	819
	1854	267,630,168	153,690,829	55	90	4,033	6,971	345	515
Switzerland[1]	1850	123,777,710	93,047,246	...	...	...	...	...	...
	1854	221,620,584	124,438,776	...	...	...	...	...	...
Portugal	1850	2,414,166	3,898,688	54	18	6,216	1,875	410	170
	1854	4,308,287	9,469,053	135	43	17,326	7,813	1,359	675
Austria	1850	6,932,209	10,357,565	17	20	2,038	2,113	138	141
	1854	6,745,678	10,296,286	6	11	642	1,341	43	95
Spain	1850	43,861,339	86,629,133	361	125	30,198	8,465	2,369	768
	1854	88,211,169	79,595,735	832	269	68,225	21,283	5,553	1,829
Sardinia	1850	91,245,671	71,731,977	606	589	36,018	35,825	4,236	3,711
	1854	117,643,939	87,141,008	623	645	63,160	63,723	6,928	6,666
Tuscany	1850	12,281,131	24,533,550	238	213	13,282	12,133	2,141	2,023
	1854	15,981,113	23,689,080	330	226	33,207	25,634	4,091	3,226
Roman States	1850	3,350,214	5,264,172	53	27	4,141	1,978	321	169
	1854	2,601,095	6,612,661	51	22	4,236	2,275	345	240
Two Sicilies	1850	22,581,432	17,097,039	170	68	24,541	11,235	2,020	1,221
	1854	24,262,548	20,691,260	138	36	23,634	7,122	2,475	1,038
Greece	1850	1,081,081	3,836,596	4	15	502	1,784	31	115
	1854	3,325,131	4,000,061	...	7	...	966	...	89
Turkey	1850	54,266,664	31,677,194	342	200	71,393	47,845	5,836	4,072
	1854	60,189,958	40,608,396	310	250	75,230	70,385	5,609	5,629
Egypt	1850	9,586,161	10,532,807	93	54	21,399	13,400	1,526	937
	1854	17,435,283	7,685,450	103	63	21,206	13,955	1,565	1,112
Barbary	1850	21,808,551	4,937,036	209	121	22,272	14,021	1,911	1,359
	1854	8,579,124	4,492,767	95	62	14,227	9,289	1,698	1,111
Africa, West Coast	1850	4,502,514	2,128,676	89	49	14,931	9,553	891	551
	1854	9,232,228	3,964,868	112	43	23,155	9,418	1,166	486
Mauritius	1850	72,247	5,057,132	...	...	...	...	...	...
	1854	632,962	6,662,509	3	17	1,149	5,793	46	261
Africa, East Coast	1850	287,008	593,612	...	2	...	627	...	24
	1854	2,154,367	3,819,818	6	6	2,245	2,368	93	101
English East Indies, including Java, Sumatra, and New South Wales	1850	33,274,310	4,287,420	72	18	23,215	5,736	391	284
	1854	52,469,742	5,767,690	98 21	46 8	34,609 6,999	17,593 3,682	319	740 121
Dutch East Indies	1850	5,342,007	1,338,228	...	...	...	...	...	...
	1854	10,664,620	1,706,440	...	...	...	...	...	...
Philippines	1850	1,706,567	120,881	3	3	879	792	42	42
	1854	1,168,517	339,786	...	...	...	...	...	...
China and Cochin-China	1850	1,585,970	336,887	2	...	819	...	39	...
	1854	2,723,534	3,858,397	5	17	2,205	5,600	85	269

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[1] The trade between France and Switzerland is carried on by land by Colmar, Strasbourg, St Louis, Belfort, Nantua, Seyssel, Morteau, Pontarlier, Les Rousses, Montbeliard, &c.

Trade and Navigation of France with Foreign Nations—Actual Values—continued.

Nations.	Years.	Value. Imports.	Value. Exports.	Ships.		Tonnage.		Crews.	
				In.	Out.	Entering.	Outward.	Inward.	Outward.
		Fr.	Fr.						
Mexico	1850	3,616,758	21,129,723	43	53	8,986	9,989	489	571
	1854	4,015,878	24,310,946	43	41	9,780	8,645	523	483
United States of America, East	1850	132,130,326	278,354,956	50	39	13,179	7,210	593	383
	1854	190,771,342	332,090,943	34	23	9,562	8,161	464	356
United States, West	1850	44,903	7,586,238	...	38	...	12,906	...	571
	1854	714,288	9,568,935	2	16	699	6,557	34	304
Guatemala	1850	308	403,154	...	...	...	...	...	...
	1854	1,166,733	982,871	4	2	1,148	635	56	25
New Granada	1850	931,133	5,049,735	8	12	1,634	2,252	96	154
	1854	1,147,741	3,494,501	6	6	1,252	1,108	78	67
Venezuela	1850	2,937,081	3,497,615	16	14	2,848	2,488	194	161
	1854	6,492,216	5,792,518	26	21	4,382	3,418	272	222
Brazil	1850	17,087,782	27,234,483	87	90	18,378	19,402	1,084	1,122
	1854	27,970,169	44,048,500	95	87	22,544	21,757	1,261	1,147
Uruguay	1850	987,881	2,220,347	8	16	1,662	3,524	95	203
	1854	5,991,240	10,662,537	16	45	3,656	12,775	215	638
Rio de la Plata	1850	10,753,839	13,580,718	53	63	11,380	13,358	628	729
	1854	10,390,020	23,610,663	26	46	6,238	11,364	336	583
Ecuador	1850	390,990	316,691	1	2	393	599	17	32
	1854	297,428	192,972	...	1	...	244	...	12
Peru	1850	6,381,244	12,603,342	20	14	6,320	4,613	323	215
	1854	7,863,258	18,759,998	34	16	15,118	7,227	629	296
Bolivia	1850	...	49,850	...	..	...	...	...	...
	1854	...	372,251	...	...	...	...	...	...
Chili	1850	4,273,120	14,023,123	5	20	1,662	5,797	73	306
	1854	4,257,504	21,421,197	8	22	2,911	9,984	141	435
Haiti	1850	8,250,901	3,480,770	59	23	11,305	4,114	640	244
	1854	10,150,125	5,331,759	75	32	14,455	5,670	807	327
Spanish American Possessions, Islands, &c.	1850	26,394,272	10,330,924	123	32	29,274	8,427	1,502	440
	1854	29,210,434	17,939,202	113	40	28,641	10,812	1,428	557
English Possessions in America, Islands, &c.	1850	199,830	622,626	...	2	...	622	...	22
	1854	253,687	3,059,869	9	4	2,512	1,406	133	63
Dutch Possessions in America	1850	153,646	165,095	1	...	303	...	15	...
	1854	3,122	68,663	...	...	...	...	...	...
Danish Possessions in America	1850	105,014	5,003,481	2	17	158	3,662	14	212
	1854	191,754	6,400,481	4	13	890	2,864	48	156
Isle of Bourbon	1850	18,309,419	11,591,628	50	83	15,422	24,242	767	1,251
	1854	29,908,188	18,319,000	81	105	26,913	36,537	1,337	1,677
French Guyana	1850	1,311,401	2,029,849	13	21	2,302	3,775	161	251
	1854	1,156,196	4,571,300	10	28	2,017	5,732	120	317
Martinique	1850	11,045,108	14,805,110	81	104	18,432	24,230	994	1,289
	1854	18,987,405	20,144,217	115	119	28,314	28,482	1,431	1,483
Guadaloupe	1850	9,322,364	11,251,741	51	83	11,246	18,594	589	974
	1854	17,114,518	16,276,198	116	110	22,139	24,352	1,226	1,373
Algiers	1850	6,263,239	67,371,988	704	1072	74,769	115,125	6,940	9,680
	1854	49,422,025	90,918,877	1036	946	133,155	121,155	12,262	11,368
Senegal	1850	3,920,745	6,321,551	48	62	6,270	8,569	437	569
	1854	6,932,825	8,744,316	75	84	11,769	154,095	734	879
French India	1850	3,333,342	474,896	6	8	1,637	2,097	84	101
	1854	10,369,437	445,725	19	4	5,320	1,257	272	59
St Pierre and Miquelon, &c.	1850	19,931,116	5,424,677	...	...	...	...	...	...
	1854	18,902,278	6,148,157	...	...	...	...	...	...
Mayotte, &c. and Madagascar	1850	...	90,036	...	...	...	...	...	...
	1854	404,741	222,756	1	4	208	1,140	13	66

Total for 1850	Outward bound,	7,540 ships;	787,560	tonnage;	76,246	men.
	Inward do.,	7,494 do.;	837,526	do.	74,277	do.
		15,034	1,625,086		150,523	
Total for 1854	Outward bound,	5,726 ships;	796,713	tonnage;	73,156	men.
	Inward do.,	9,307 do.;	1,131,702	do.;	96,413	do.
		15,033	1,928,415		169,569	

Observations on the trade tables of France.

During the four years from 1850 to 1854 inclusive, the value of French commerce has augmented 303,329 francs, and the number of seamen employed has increased 19,046. The exports to Russia, owing to the war, were reduced in 1854 to three outward-bound vessels. The commerce with England has increased with great rapidity, having nearly doubled the amount in 1850. With Sweden and Norway the increase has also been considerable. With Austria, on the other hand, there has been a diminution, and also with the Roman states. With China there is an increasing trade, as well as with the United States of America, but with Rio de la Plata and Ecuador there has been a falling off. Most of the other states with which France carries on a commercial intercourse exhibited an increase which, if small, augmented the general commerce so much as to show that the country was entering upon a more active career of traffic

Statistics.

than she has exhibited since the revolution. The intercourse of France and twelve of the great European states increased considerably between 1852 and 1853.

Mercantile intercourse of France in 1852 *and* 1853 *with twelve of the most important states* :—

	1852. Tons.	1853. Tons.
England	1,478,320	1,627,891
United States	446,086	414,243
Russia	141,733	277,949
Sardinia	241,927	237,167
Norway	160,892	180,164
Two Sicilics	185,050	177,955
Spain	124,617	167,234
Turkey	110,982	147,021
Tuscany	80,160	82,129
Sweden	73,853	66,812
Low Countries	68,296	64,110
Egypt	37,708	59,951
Total	3,149,624	3,502,626

Exportations from France to England, 1853.

Silk tissue	L.6,793,108	Wool	L.82,628
Woollens	1,766,939	Table ornaments, &c.	76,322
Silk (bourre)	926,365	Hides, raw	68,630
Cotton cloth	850,057	Indigo	60,554
Grain	601,807	Copper	56,596
Brandy and spirits of wine	538,496	Oilcake	48,398
		Perfumery	47,577
Skins	491,337	Straw hats	46,470
Clockwork	329,348	Seeds for oil	43,461
Flour	328,572	Dry pulse and their flour	41,005
Wine	313,573	Hemp and flax	40,485
Jewellery, &c	292,303	White wax	39,369
Seed grain	278,614	Tartrate of potash	38,158
Skins, prepared	266,451	Volatile oils	37,745
Eggs	265,052	Fashions	35,598
Mercery and buttons	234,983	Coral not set	34,917
Madder	229,209	Horses	32,139
Linen cloth	226,332	Skins	31,998
Pottery, glass, crystal	173,156	Building materials	28,186
Straw in bundles	172,757	Ultramarine	26,864
Household effects	171,929	Oil of olives	25,537
Tools, articles in metal	164,585	Cotton wool	25,083
Paper, books, and engravings	163,548	Musical instruments	24,052
		All kinds of grain	22,807
Extracts of dyewood	130,075	Plumes of feather	22,289
Beasts	129,856	Corkwood	22,083
Meat	120,442	Pure bitumen	17,538
Woollen thread, white	112,141	Furniture	15,056
Table fruit	107,127	Basket work	13,705
Salt butter	100,251	Stearic acid	12,354
Fish, marinaded, or in oil	93,682	Other articles	565,553
Potatoes	91,053	Total official value	L.18,136,327

Importations into France from England, 1853.

Silk (bourre de soie)	L.1,098,148	Tools and works in metal	L.38,933
Cotton tissue	453,343		
Coal	418,091	Household effects	28,646
Wool, raw	371,836	Linen and hemp twist	27,916
Grain	299,768	Works in India rubber	27,630
Copper	280,927		
Woollen stuffs	227,268	Paper, plates, books, &c.	25,240
Iron	219,435		
Silk tissue	214,301	Mercury	25,140
Linen or hempen cloth	151,645	Lead	25,060
		Horses	24,522
Machinery	131,860	Iron anchors and cables	23,401
Cashmere shawls	121,048		
Zinc	116,123	Skins not prepared	23,050
Hair for spinning	91,344	Building materials	22,275
Rice	88,764	Bundles of straw	21,536
Raw hides	74,514	Tin	20,387
Skins	73,225	Sewing needles	18,736
Cotton wool	66,338	Porcelain earth	18,388
Wheat flour	61,880	Acids	15,937
Cotton thread	61,157	Woollen thread	15,131
Flax, cleaned	52,070	Indigo	14,802
Fine pearls	41,882	Wine	14,228
Linseed	L.12,138	Beer	L.5,502
Metallic pens	11,397	Jewellery	5,422
Mercery and buttons	11,349	Pottery, glass, crystal	5,383
Combed wool	9,017	Fruit for the table	4,257
Marbles	8,276	Other articles	190,968
Engraved coins, plates, &c.	8,230	Official value	L.5,425,100
Lead, mineral	7,236	Real value	5,751,409

Imports of France.

	1851.	1852.	1853.
Breadstuffs	L.80,000	L.200,000	L.3,840,000
Coal	1,480,000	1,520,000	1,680,000
Cotton	4,160,000	5,120,000	5,320,000
Raw silk	3,680,000	5,360,000	5,200,000
Wool	1,360,000	2,600,000	1,720,000
Iron	200,000	240,000	440,000
	L.10,960,000	L.15,040,000	L.18,200,000

Exports of France.

	1851.	1852.	1853.
Breadstuffs	L.3,800,000	L.2,360,000	L.1,160,000
Cotton manufactures	6,600,000	6,000,000	6,560,000
Silk manufactures	8,120,000	9,040,000	11,520,000
Woollen manufactures	5,280,000	5,120,000	5,840,000
Linen manufactures	1,080,000	1,200,000	1,360,000
Gloves and hosiery	3,200,000	3,400,000	3,030,000
Wines	1,480,000	1,480,000	1,800,000
	L.29,560,000	L.28,600,000	L.31,270,000

Imports of Coal and Iron in 1852.

	FROM ENGLAND. Tons.	FROM BELGIUM. Tons.
Coals	664,632	1,792,155
Coke	2,732	169,398
Iron, pig	15,002	26,416
Iron, bar	1,841	...
Steel	270	...

Returns of the customs duties levied on the principal merchandise imported into France during the nine months of 1855, ending on the 1st of October, give an amount of L.5,927,030. Compared with those of 1854 they show an augmentation of L,1,723,976. The receipts during the month of September were L.465,688, or L.40,383 less than in the corresponding month of last year. The salt-tax produced during the nine months of 1855, L.930,891.

The value of exports in 1853 reached L.74,640,000, of which L.54,520,000 represented French produce, and L.20,520,000 was foreign produce re-exported. The imports for home consumption showed an increase of L.4,680,000, and the exports of French produce an increase of L.5,200,000 above 1852.

The following is a brief sketch of the trade of France with other countries.

The corn, the hemp, the flax, the tallow, which form such important articles of export from the north of Europe to England, are comparatively unnecessary to France. Their timber and pitch are imported there, but the quantities required by a people where shipbuilding is so limited are necessarily of little consequence. It would appear, however, that in the progress of the present war against Russia many articles imported from the north of Europe have become more necessary to France, and by a decree published in the *Moniteur* on the 20th October 1855 building timber, wood for cabinet-making of a certain thickness, rough castings, bar and sheet iron, hemp, &c., may be imported for three years free from import duty. Pitch, tar, and tallow, when employed in ship building, may be imported at a duty of 10 per cent. if it can be proved they have been used *bona fide* for the purpose within a year. The further articles of import are iron, copper, lead, salt fish, all likewise on a small scale. The returns from France are no longer in the sugar and coffee, which, before the loss of St Domingo, furnished an annual export to the north of fully two millions sterling. They are limited to wine and brandy, luxuries of which the consumption is confined to a few large towns, such as Petersburg, Hamburg, Lubeck, Stockholm, and Dantzic.

With Germany the exchanges of France are now carried on by steam canal and land carriage, and for lighter articles and *articles de Paris* by railroad and river navigation.

From Holland are imported spirituous liquors, spices, butter, cheese. The returns from France consist chiefly of wine, silks, brandy, and dried fruit. When the Netherlands were subject to France, this intercourse was very active.

Statistics.

From Italy France imports raw silk, corn, rice, olive oil, and fruit, chiefly lemons, oranges, figs, and raisins. The returns, various in kind, but small in quantity, consist of wine, brandy, cattle, woollens, linen, leather, hats, stockings, jewellery, glass, hardware. From the Levant, the imports, though less than formerly, still consist of raw silk, cotton, wool, corn, dried fruits; the exports, manufactured silks, woollens, stockings, and, in a small degree, hardware, paper, liqueurs, linens, lace. With Spain the intercourse is more extensive: the exports from France consist of corn, flour, salt fish, wine, brandy, also woollens, cottons, silks, leather, linen, lace, hats; all articles which have passed through some process of manufacture, and bear testimony to the industry of the French. The Spaniards, on the other hand, true to their character, make no returns except in produce and raw materials, viz. wool, silk, fruit, sweet wines, along with some iron and copper. During the years 1854 and 1855 there have been considerable exportations of Spanish wine into France for the use of the French troops serving in the Crimea. With Portugal the trade of France is not considerable, the staple products, wine and brandy, being the same in both countries.

The intercourse between the French and Americans should be great, but the Americans require long credit, and to give credit exceeds the means of the French. The cotton, tobacco, and rice of the United States are paid partly by wine and brandy, but in a slight degree by manufactures. This branch of trade will increase with the population and wealth of the United States. At present the intercourse with England is more considerable than with almost any other country; but a reduction of the custom-house duties would extend greatly the mutual trade of the two countries. Great Britain would supply France in greater quantities with imports, consisting of cottons, hardware, earthenware, copper, tin, iron, coals, &c.; whilst a corresponding increase would take place in the French exports, of which the staple articles are wine and brandy, the smaller silks, olive oil, fruit, butter, poultry, corn, and butcher meat.

The chief commercial business of Paris is necessarily inland; but it is the centre of exchange transactions for France, foreign as well as inland; as London is for England, and Amsterdam for Holland. Havre de Grace is the channel of the maritime intercourse of the capital, the outlet for its exports, and the medium through which it receives colonial produce, raw materials, and foreign manufactures. Bordeaux is a seaport of great activity, as well for the exportation of wine and brandy, as for the importation of sugar, coffee, and cotton. Marseilles, a larger but a less bustling city, continues the emporium for the trade with Italy and the Levant. Nantes has suffered greatly by the loss of St Domingo, as well as by the abolition of the slave trade, of which it was the centre. It still exports to Martinique and Guadaloupe linen, hardware, printed cottons; and, like Bordeaux, receives in return sugar, coffee, and raw cotton. Rouen, though accessible to vessels of burden, is, like Lyon and Lille, chiefly remarkable for manufactures.

The mercantile marine of France recently presented the following results, which are remarkable while England and America are building vessels of such superior tonnage.

Mercantile Marine—1853.

Tonnage.	Vessels.	Total Tonnage.	Tonnage.	Vessels.	Total Tonnage.
700 to 800	1	717	100 to 200	1,365	197,947
600 to 700	3	1,881	60 to 100	1,561	123,149
500 to 600	4	2,091	30 to 60	1,301	58,740
400 to 500	35	14,599	30 and below	10,647	81,681
300 to 400	150	50,866			
200 to 300	533	130,829	Total........	15,600	662,500

Manned, including the men of the fisheries, by 83,000 men and boys.

The steam and sailing vessels of France and the nations trading with her from 1848 to 1853 were as follow.

Navigation for 1848 *to* 1853 *inclusive—French and Foreign.*

Steam and Sailing Vessels.				Sailing Vessels only.			
Years.	French.	Foreign.	Total.	Years.	French.	Foreign.	Total.
1848	13,194	13,320	26,514	1848	11,303	9,663	20,966
1849	14,364	14,768	29,132	1849	12,618	10,978	23,596
1850	15,034	16,892	31,926	1850	12,284	12,054	25,338
1851	15,389	19,247	34,636	1851	13,421	13,668	27,089
1852	15,295	19,803	35,098	1852	13,176	14,995	28,171
1853	15,835	20,425	36,260	1853	13,434	14,754	28,188
Mean of first 5 Years.	14,655	16,806	31,461	Mean of first 5 Years.	12,761	12,271	25,032

Tonnage (Commercial) of Steam and Sailing Vessels, inwards and outwards.

Steam and Sailing Vessels.				Sailing Vessels only.		
Yrs.	French.	Foreign.	Total.	French.	Foreign.	Total.
1848	1,520,000	1,626,000	3,146,000	1,208,000	1,131,000	2,339,000
1849	1,596,000	1,721,000	3,317,000	1,300,000	1,235,000	2,535,000
1850	1,625,000	2,110,000	3,735,000	1,324,000	1,429,000	2,753,000
1851	1,699,000	2,389,000	4,088,000	1,378,000	1,552,000	2,930,000
1852	1,756,000	2,546,000	4,302,000	1,377,000	1,799,000	3,176,000
1853	1,862,000	2,743,000	4,605,000	1,464,000	1,851,000	3,315,000
Mean of first 5 Years.	1,639,000	2,079,000	3,718,000	1,318,000	1,429,000	2,747,000

The coasting trade of France employs a number of vessels which in the returns vary from 80,000 to 90,000 entries and departures, with a tonnage of 2,250,000 and 254,150 men; to 2,500,000 tons and 330,000 men.

The circulation of the Bank of France has increased since 1848, first, in consequence of smaller notes being put into circulation (for notes of 100 francs are now current), and, secondly, because of the establishment of branch banks facilitating intercommunication with all the principal cities of the kingdom. The circulation in 1853 and 1854 exceeded 500 millions. But in those years the amount of specie in the bank cellars exceeded the amount of the whole circulation; so that the substitution of paper for gold was not of so much service, or so economical to the country, as it might have been under other circumstances.

Currency.

The currency of France consists chiefly of gold and silver, in which larger payments are effected, and of copper coins for the smaller sums.

It appears that from 1803 to 1814 there were coined, with the effigy of Napoleon, at the different mints, of which there are thirteen in France, in gold to the value of L.22,001,018, and in silver to the value of L.36,992,502. From 1814 to 1828, the amount of the coinage was L.17,081,635 in gold, of twenty and forty franc pieces; and in silver the amount in pieces of five francs down to five sous was L.36,996,560, bearing the effigy of Louis XVIII. and Charles X. On the above data, the amount of circulating specie in the kingdom was estimated, on the 1st of January 1828, at 2,713,731,183 francs, equal in value to L.113,072,132 sterling. The gold and silver currency, prior to the Revolution in 1789, was estimated at L.87,500,000 sterling. We can scarcely, however, draw any positive inference from the quantity of gold and silver coined in France, respecting the amount of the specie actually circulating, as within the last twenty-seven years the exportation of coin has been freely permitted. The coinage of France has accordingly become an article of trade; and bullion and coin have been freely exported or imported, according to the necessities of commerce. For the ten years preceding 1830, the quantity of bullion imported exceeded the quantity exported by L.39,089,667.

The amount of the gold and silver coinage in France for 1853, with the value in francs and in sterling money, was :—

Gold.	Coinage.	Value.	Value Sterling.
20-franc pieces........	15,641,500	312,830,000 fr.	L.12,513,200
10 do. do.	1,763,346	17,633,463	705,336
Total gold......	17,404,846	330,463,463	L.13,218,536
Silver	5,090,236	20,089,778	803,588
Copper	30,869,285	1,974,939	78,976
	53,366,367	352,528,180	L.14,101,120

Bank of France.

This bank, which is the city privileged bank in France, received its charter in 1803 for fifteen years, which was afterwards extended in 1818 to the year 1845. It was again extended in 1840. The law of the 30th June 1840 limited the existence of the bank to the 31st December 1867, reserving to the government the right to cause its privileges to cease on the 31st December 1855. An agreement was entered into between the government and the bank on the 3d March 1852, by which the former agreed to waive its right, in consequence of certain advantages conceded by the bank to the executive government. It is under the direction of a governor, named by the head of the state, whether emperor, king, or president, with a salary of 100,000 francs a-year. It has, besides, two deputy-governors, paid by the bank but appointed by the government, and a general council of fifteen *regents* and three *censeurs*, subdivided into six committees, and assisted by a council of discounts composed of twelve members chosen from among such of the shareholders as are merchants. This bank issues notes of the amount of 10,000, 5000, 1000, 500, 300, 200, and 100 francs. The 200-franc notes were first circulated in 1846, the 100-franc notes in 1848, and the 10,000 and 5000 franc-notes have been issued since 1843, which are payable in specie on demand by the holder. Its capital, which consists of 67,900 shares at 1000 francs, making a total of 67,900,000 francs, is employed in discounting bills of exchange, in making advances of money in government securities, and in deposits of bullion or foreign coin, diamonds, shares in public companies, at the rate of one per cent. per annum.

Not less than the value of 10,000 francs is received as a deposit, and discount for forty-five days is deducted from the amount of the sum advanced; nor, if the deposit be redeemed the next day, is any part of the discount refunded. The paper of the Bank of France chiefly circulates in Paris and the neighbourhood; at a distance from Paris its notes pass at a discount of one-and-a-half per cent., as they are not received in payment of taxes or custom-house duties in seaports; so that remittances to Paris must be made in cash, for which a charge of five per cent. is made at the post-office: the dividend of the bank on each share has been thirty francs half-yearly, or at the rate of six per cent. per annum. A surplus fund, which had accumulated, was, in consequence of the reiterated demands of the shareholders, put in a course of distribution; and in the year 1831 two entire dividends were made of fifteen francs and six francs per share, besides two other payments, under the name of a bonus of reserve, the one amounting to seven francs fifty centimes, and the other to three francs, per share. The balance of the reserved fund amounted in 1830 to 6,974,398 francs, which would give a further bonus of 146 francs 95 centimes on each share; and for the purpose of authorizing the distribution of this sum, a law was passed in December 1831. By this law the bank was bound to hold a third part of its profits in reserve, after paying the regular dividend of six per cent. per annum. The Bank of France has now *comptoirs* or branch banks in from twenty to twenty-five of the principal cities of France. The issue of these branch banks was limited to 350 millions of francs by a decree of 1848. The shares of the bank, which, antecedent to this decree under the government of Louis Philippe, had risen to 3550 francs, became depreciated, and fell to 1250 francs. In January 1852 these *actions* or shares were quoted at 3100 francs. In August 1850 the Bank of France was authorized to resume its payments in specie. A decree of the 13th August 1850 suppressed the *cours forcé* of the notes, and extended the circulation. These two decrees restored confidence, augmented by the weekly publication of the accounts of the establishment.

Crédit Foncier.

The society of the Crédit Foncier de France was authorized by the decrees of the 28th March and the 10th December 1852. Its operations extend over the whole of France, with the exception of six departments. The capital consists of 60,000,000 of francs, and the society cannot lend to any one individual more than a million, nor less than 300 francs.

Crédit Mobilier.

The Societé Générale de Crédit Mobilier, established by a decree of 18th November 1852, is a species of bank, the partners in which have not given their names. Its principal operations consist in purchasing or acquiring shares in public companies, provided they be *en sociétés anonymes*. Secondly, in circulating its own securities for a sum equivalent to the shares or stock purchased. Thirdly, in selling and exchanging all *actions* and *obligations* so acquired. Fourthly, in lending on public securities on the deposit of *actions* and *obligations*, &c., &c.

The capital of the society is fixed at 60,000,000 francs, and it is represented by 120,000 shares of 500 francs each. The society can circulate *its own "obligations" for a sum six times as large as its capital.*

Fairs.

Land carriage in France, or *roulage*, costs only from 2s. to 2s. 6d. per cwt. for a hundred miles; a cheapness which facilitates the transport of merchandise to the various annual fairs which are still held in every great town in the kingdom, exactly as was done by our forefathers a century ago. This periodical routine begins by the *foire de Longchamps*, which is held annually at Paris in spring, and is followed by a long list of provincial fairs, of which the chief are those of Beaucaire in Languedoc, and Guibray in Normandy. The *roulage* of France is now only had recourse to for heavy goods, and in lines of country where there are neither rivers, canals, nor railroads. The law of France has many provisions as to roulage and as to *rouliers*, the drivers or waggoners who conduct merchandise, and generally travel at the rate of from eight to ten leagues a-day.

Colonies.

The colonial possessions of France are quite unsuited to her greatness in other respects. The insurrection engendered by the first Revolution deprived her of the western half of St Domingo, a rich and beautiful territory, containing formerly more negroes, and exporting more produce, than all the British West Indies together. The French government seems to have relinquished the hope of regaining this country, at least by military means, and to limit its ambition to the remaining colonies, Martinique, Guadaloupe, Cayenne, in the West Indies. The first two are, like most of our West India islands, cultivated to a considerable extent, but capable of much improvement. The petty island of Marie Galante is in a similar state; but Cayenne forms a part of a most extensive tract, of which one corner only is as yet rendered productive, and which may eventually become a great settlement; though on the score of health it is as unpromising as the adjacent colonies of Demerara and Surinam. Before the loss of St Domingo the annual import into France amounted to 70,000 hhds. of muscovado or brown sugar, 60,000 hhds. clayed, and nearly 20,000 of fine clayed. Of this very large supply there were exported nearly 40,000 hhds. of brown, and above 60,000 hhds. of clayed, forming, exclusively of any duty, an annual value of between L.2,000,000 and L.3,000,000 sterling, and affording a most acceptable exchange for a number of imported commodities. The sugar thus imported from St Domingo has long been lost to France, no sugar being now exported from that country.

Algiers

Among the colonies of France is Algeria, which the government has retained since its conquest in 1830. Of this dependency Algiers is the capital, the seat of government, of a prefecture, and of a bishop's see since 1838. Algiers also possesses a government printing office, an academy of public instruction, a court of appeal, a tribunal of first instance, a tribunal, and a chamber of commerce. A bank has been recently established. Several newspapers are published at Algiers. The *Moniteur* of Algiers is the official paper. There is also the *Akhbar*, the *Mobacher*, the official journal in Arabic, the *Atlas*, &c.

The population of Algiers, according to the last returns, amounted to 55,682 Europeans, of whom 23,147 were French, and 24,996 natives, of whom 17,858 were Mussulmen, 1380 negroes, and 5758 Jews. A Protestant church was commenced in Algiers in 1843 and finished in 1845. There are at Algiers four large mosques and about thirty lesser ones, two great and twelve lesser synagogues. There are few manufactories in the capital unless of silks, carpetings, woollen tissues, fire-arms, saddlery, jewellery, leather, &c. From the last published official returns there entered Algiers within the year 2279 ships, measuring 209,642 tons; of these 255 were government vessels, 1134 French commercial bottoms, and 120 native; the remaining vessels were under foreign flags. There sailed outward from Algiers, in the last year of which we have any official records, 2297 ships measuring 208,319 tons. Of these 249 were government ships, 1148 French ships, and 117 native. By a decree of the present Emperor of the French, a bourse was created at Algiers on the 16th April 1852. For a more detailed account, see ALGIERS.

Statistics.

In Africa the French possess Goree and some factories near the mouth of the Senegal. In the East they have the Isle of Bourbon, and Pondicherry, Chandernagore, and some smaller factories on the mainland of India; and their vessels are, like the Americans, admitted to trade with Calcutta, Madras, and other British settlements, on payment of moderate dues. The retention of the Mauritius by England, at the peace of 1814, deprived them of the great receptacle for their privateers in the East; and in the continent of North America, they retain nothing since the cession of Louisiana to the United States in 1803. Since 1841, when the sovereign of the island of Mayotte placed himself under the protection of France, this island, situated at the extremity of the Mozambique Channel, is to all intents and purposes a French settlement. Mayotte is capable of feeding a population of 20,000 souls, and of regularly furnishing provisions to a squadron of ships. France also possesses an establishment in Australia, for since the 22d March 1854, Captain Dubouzet has been commandant of the Marchesas and imperial commissary at the Society Islands and New Caledonia. There is also an unimportant French settlement at Madagascar, and an attempt at a penal colony has been made at Guyana, where, to the disgrace of the French government, political prisoners have been mixed with the refuse of the galleys. In the seas of Europe, Corsica is almost the only insular possession of the French. They have no great maritime fortresses, like Gibraltar or Malta, and no dependencies of the nature of the Ionian Islands.

Commerce, &c.

The commerce of France with her colonies is regulated by the same narrow maxims as the other branches of her foreign trade. The colonies and the mother country are mutually bound to trade exclusively with each other. The staple produce of the French West India colonies, as well as the Isle of Bourbon in the East, is sugar; and it appears that the price of this article in the European markets will not repay the expense of its cultivation in those countries. The colonists, therefore, insist that all other sugars shall be excluded by heavy duties from the markets of France; that they shall have the exclusive privilege of supplying these markets; and on a complaint that the duties imposed on foreign sugars were not high enough to give them the monopoly of the home market, an additional duty was, in 1822, on the suggestion of the director-general of the customs, imposed on all foreign sugars. In return, France possesses the exclusive privilege of supplying the colonies with all the manufactures and other European goods which they require. On this principle of mutual monopoly the trade is now conducted. The effect of this system is to levy a tax on the inhabitants of France, in order to indemnify the colonists for the losses which they incur in carrying on an unprofitable trade. They cannot furnish a supply of sugar to France at the ordinary rate of the European market; and the price must therefore be artificially raised in that country, in order to enable them to carry on the cultivation of their estates; whilst, on the other hand, they are not at liberty to buy the goods which they require in the cheapest market, but must take them at whatever price they can be afforded by the mother country.

Another evil of this colonial monopoly is, that the colonies supply more sugar than France can consume. But it cannot be sold in other countries at the price which is paid to the colonies by the mother country; and hence it becomes necessary to find out the means of forcing a sale of the surplus which cannot be consumed at home. A bounty is accordingly granted on all sugar exported from France; and in 1831, whilst the duty on the importation of sugar produced L,1,636,030, there was paid back for bounties L.483,951, which was more than one-fourth of the gross receipts. The loss which France has incurred since the peace of 1814 by this erroneous system is estimated in Bowring and Villiers' Report, at L.40,000,000 sterling; and in return for these great sacrifices, the colonies afford but a limited demand for the manufactures of the mother country; in 1852, it amounted to 23,482,000 kilogrammes; in 1853, to 26,481,000 kilo.; in 1854, to 33,297,000 kilo.

Statistics.

The republican government of 1848 proceeded to greater lengths in granting bounties than either of the governments of the Restoration or the government of Louis Philippe for the *primes* or drawbacks of 1818, 1820, 1823, 1826, 1833, 1836, 1841, and 1845 were increased to 50 per cent. from the 15th June 1848. Restored to their former rate, these drawbacks in the three years antecedent to 1854 rose to a sum varying between 25 and 27 millions of francs.

General Trade of France with its Colonies.

Colonies.	Year.	Importations.	Exportations.
Martinique..................	1853	L.652,441	L.765,577
Guadaloupe	1853	423,655	570,434
Bourbon	1853	851,647	684,946
Senegal	1853	287,206	392,369
Cayenne	1853	56,833	184,044
India	1853	669,723	21,384
Algiers	1853	1,132,304	3,395,966
St Pierre & Miquelon, &c.	1853	617,631	278,637
Isles Mayotte, and Madagascar	1853	8,627	36,584

The trade to Bourbon island, Guyana, Martinique, and Guadaloupe, out and home, employed in 1848, 492 ships; in 1849, 541; 1850, 486; 1851, 602; 1852, 677; 1853, 583. The mean of the first five years 560 vessels.

The trade to Algiers, Senegal, India, Madagascar, out and home, in 1848, 1843 vessels; 1849, 1938; 1850, 1902; 1851, 2194; 1852, 2443; 1853, 2177; mean of the first five years 2064.

Fisheries.

All along the north coast of France, the fisheries consist, as on our side of the Channel, of cod, mackerel, herrings, and pilchards. On the shore of the Atlantic, and still more on that of the Mediterranean, are caught great quantities of sardines, a fish of passage, which appears periodically in shoals, like the herring. The fishery of *sardines* is said to give employment to 3000 seamen, and the sales resulting from the produce amount to between 3,000,000 and 4,000,000 of francs. The tunny, a fish not known in northern latitudes, is found in the Mediterranean in the early part of summer. It varies in weight from ten to twenty-five pounds, and is in like manner caught in shoals.

These home fisheries, little calculated for forming seamen, have been left to their natural progress, whilst repeated attempts have been made by government to extend the fishery in America; a design favoured by the early possession by France of Newfoundland and Canada, as well as by the long peace that followed the treaty of Utrecht. Towards the middle of last century the French fisheries in America employed annually about 5000 seamen; but the unsuccessful contest with England in 1756 reduced them greatly, and deprived them of their principal station, Cape Breton. The peace of 1783 was concluded under better auspices. The islands of St Pierre and Miquelon were ceded to France by the treaty of Versailles, and the rights of fishing and of drying fish from the Cape St John to Cape Ray. In the Gulf of St Lawrence her rights were subsequently recognised, by the treaties of 1802 and 1814, at three leagues distance from the coasts belonging to Great Britain; but within the gulf, at a distance of fifteen leagues from Isle Royale, and thirty leagues from New Brunswick.

For the encouragement of the French fisheries, enormous pecuniary sacrifices have been made. By the law of the 22d July 1851, bounties are granted to the fisheries till 1861, at the rate of 120 francs the ton. A ship of 600 tons thus receives 72,000 francs bounty, which would be 2000 to 3000 francs per man. The only time they were ever in a prosperous state was, not when they were protected by the artificial encouragement of the mother country, but when the French colonists, being in possession of a large tract of the American sea-coast, were in consequence compelled to trust to prudence and economy alone for the success of their adventures. During the session 1833 of the Chamber of Deputies, a committee, appointed to inquire into this subject, made their report, in which they state—

> "That the French fishermen have now to compete with those who are always on the spot; who carry on their fishing concerns in small boats, and at a trifling cost; who pay no charge of outfit; who lose no time in voyages; who employ the cheaper labour of

children, women, and old persons; who have their drying and salting establishments in the neighbourhood; and who can accommodate all their proceedings to the urgency of circumstances." It is to counterbalance these advantages that France has resorted to the system of bounties, which has been carried to a great length in order to force the establishment of a trade in the face of natural obstacles.[1] The result of the investigations of the committee was the recommendation to government to grant such a premium to those who adventured in the fishery as should place them on a level with their more fortunate rivals. In 1816 a bounty was granted of fifty francs per man for the cod-fishery, fifteen francs per man for the herring fishery, and twenty-four francs per cwt. on the introduction of the fish into the colonies. In 1818 these premiums were raised by royal ordonnances to forty francs per cwt., which is more than 100 per cent. on the value; and the market price of the fish became in consequence a nett profit to the adventurer. This premium was reduced in 1822 to thirty francs per cwt. But a new law was passed in 1832, which was valid till 1837, and which allowed a premium of fifty francs for every seaman engaged in the cod-fishery of St Pierre and Miquelon; thirty francs for each engaged in the fisheries of the Great Bank of Newfoundland, or Iceland; fifteen francs if on the Dogger Bank; and fifty francs in every case if the fish are dried at St Pierre or Miquelon. An additional premium was allowed of twenty-four francs per metrical quintal or 2 cwts. on cod-fish shipped from France to the French colonies, thirty francs if shipped direct from the fisheries, twelve francs per quintal if shipped to other ports from France, and ten if direct from the fisheries; also twenty francs per quintal as a premium on cod-roes. The effect of these bounties was and is to place the adventurer in the French fisheries beyond all risk of loss. In many cases they were equal to the whole expense of the outfit, the voyage, and the return; and, though no cargo is brought home, no loss can be incurred. The whole expense and hazard of the trade is thus borne by the public. Two-thirds of the products of the French fisheries are consumed in France, the other third is exported to the French colonies or to foreign countries. It is to this last third that the varying scale of bounties is applicable, and the sums paid in this way it is calculated yearly take from France a sum varying from 3,000,000 to 3,500,000 francs.

The bounties paid for the cod-fisheries in 1852 absorbed between 6,000,000 and 7,000,000 of francs, which was more than double the sum paid on the average of the five years between 1820 and 1830.

The vessels equipped for the fisheries of Newfoundland, St Pierre, Miquelon, &c., proceed from the ports of St Malo, St Brieuc, and Granville. The vessels proceeding to Iceland sail from Dunkirk.

The French fish are of very inferior quality to those caught by the Americans, the latter selling at forty-seven francs thirty-five centimes per quintal, whilst the French cod-fish only brought twenty-six francs ninety-five centimes.[2] With all this expense, however, the French fisheries are not adequate to the supply of the colonies, which receive considerable quantities of fish from foreigners, as will be seen from the following table.

Fishery and Export of Cod from 1848 *to* 1853.

Years.	Ships.	Men.	Expenses of Shipping.	Exportation from allports. cwts.	Total expenses.
1848	354	11,142	L.13,931	311,733	L.112,340
1849	324	10,606	20,000	338,733	123,204
1850	363	11,710	22,202	306,030	117,482
1851	396	12,649	24,140	408,351	154,982
1852	419	13,648	25,994	400,154	145,174
1853	421	13,588	25,347	372,715	133,190

Statement of the whale-fishery from the French ports—Havre, 5 vessels, of 2045 tons and 127 men; return of product, 22,142 cwt. of oil of the whale; 30 cwt. of the cachalot; 1608 cwt. of whalebone.

French Cod-Fishery Importations and Exportations—fresh, dried, oil, &c.; and Importations of Whale-Fishery.

Years.	Cod-Fishery.		Whale-Fishery. Imported.
	Imported.	Exported.	
	Cwts.	Cwts.	Cwts.
1848	412,431	82,964	10,711
1849	388,374	88,251	19,047
1850	376,132	62,070	20,157
1851	403,377	85,410	17,477
1852	378,862	54,400	3,889
1853	345,541	55,307	12,081

The mean of the first five years is above 391,915 quintals.

Vessels of France employed in the fisheries generally—1848, 849; 1849, 685; 1850, 838; 1851, 925; 1852, 959; 1853, 943. The mean of five years is 851 vessels.

The total amount of cod-fish exported in 1853 from all the ports of France amounted to 1,537,971 kilogrammes, or 55,307 quintals.

Whale-fishery. The whale-fishery was established in France in 1784, by means of encouragements held out by Louis XVI., who ordered that no duty should be collected on the articles exported, and that the produce of the fisheries should pay no import duty.

He guaranteed the adventurers against loss, and ultimately paid, in addition to L.12,500, which he advanced without interest, an additional sum of L.6695, being the balance of loss on seventeen voyages. Notwithstanding these encouragements, the whole project was abandoned in 1787. In 1816 the offer of bounties attracted new adventurers into this branch of trade. The premium offered by the government was fifty francs (L.2) per man, and two-thirds of the crews were allowed to be foreigners. In 1819 forty francs were allowed to foreign vessels having a crew half French, fifty francs when the captain and one-third of the crew were French; the premium to be doubled if the vessel passed Cape Horn. In 1829 a new ordonnance granted ninety francs per ton on vessels wholly equipped by Frenchmen, forty francs when only two-thirds were Frenchmen, and thirty francs if the captain was a foreigner. The premium was doubled if the vessel passed Cape Horn. A supplementary premium was allowed to vessels fishing to the south-east of the Cape of Good Hope, and the double premium was given to all vessels fishing at a higher northern latitude than sixty degrees; and as the fishing is seldom or never prosecuted at a lower latitude, this premium of 180 francs per ton (L.7, 4s.) was invariably paid. The law of 1832, which regulates the whale-fishery of France, established a bounty of seventy francs per ton from March 1832 to March 1833, if the whole crew were French; the bounty to be diminished four francs yearly till it reached fifty-four francs. If one-third of the crew be foreigners, the bounty to be forty-eight francs per ton, to diminish two francs yearly till it reached forty francs per ton. A supplementary bounty to be given of fifty francs per ton if the crew be French, decreasing three francs per annum per ton; and twenty-four francs if one-third be foreigners, decreasing one franc per annum, to be paid to vessels doubling Cape Horn, or reaching sixty-two degrees of south latitude, if returning with less than half a cargo, or after an absence of sixteen months; five hundred tons to be the minimum for a single whaler.

With these extraordinary encouragements, capital was attracted to this new line of industry; and in 1831 three vessels cleared out for the Greenland whale-fishery, and thirteen for the South Sea fishery, which employed 6412 tons of shipping, and were manned by 551 men. Notwithstanding all the bounties given to the whale-fishery, France has very few vessels engaged in it. There were only seventeen ships in the trade in 1849, and seven only re-entered French ports. There were but five vessels left Havre in 1853, of a tonnage of 2045 tons, and with a crew of 127 men. The return of the product was 112,485

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[1] There are two different bounties applicable to the cod-fishery, one calculated on the scale of the number of the crew, the other on the product of the fishery. The second is given on the dried cod-fish sent to the foreign markets, and this bounty on exportation varies according to the places of destination.

[2] Anterior to 1832, so bad was the French cod-fish exported to the West Indies (with a view merely to receive the bounty on exportation), that it could only be used as manure; of three cargoes of French cod-fish exported to Oporto in 1849, two were so bad that they were thrown overboard.

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kilogrammes of the whale, 1589 of the cachalot, and 81,710 kilogrammes of whalebone.

It was estimated by the minister of commerce, in his report on this subject to the Chamber of Deputies more than twenty years ago, that the 550 seamen employed in the whale-fishery do not cost the state less than 1,000,000 francs, at the rate of L.72, 12s. per man, or L.6 a month. The wages granted by the budget to seamen employed in ships of war amounted to L.1 per month; so that the allowance to the seamen employed in the Greenland fishery is six times the ordinary allowance of seamen in the public service. It is remarkable that France was granting these extravagant allowances for the encouragement of the whale-fishery exactly at the time that Great Britain was withdrawing the bounties by which she had formerly endeavoured to promote this branch of trade as a nursery for seamen. Yet in 1830 the number of vessels that cleared out for the fishery in England was 123, consisting of 40,166 tons, navigated by 5044 seamen; being thus about eight times the quantity of tonnage employed by France. The government of Louis Philippe, alarmed at the large outlay in bounty, endeavoured to lessen it, and to render it transitory and temporary only. M. d'Argont, the minister of commerce, insisted that these bounties exhausted the resources of the state, and decreasing bounties were after a period adopted, but M. Cunin Gridaine, who was minister of commerce, relapsed into the old error by introducing supplemental bounties. The provisional government of 1848, by one decree augmented the bounties, and by a second extended the term of the law to 31st December 1851. On the 22d July 1851, the National Assembly voted for the continuance of the bounties to 1861.

Shipping.

France seems destined, by the natural advantages which she possesses, to become a maritime power of the first rank. Her sea-coast exceeds in extent that of any other continental state. On the Atlantic she has 130 leagues of coast, 150 on the Channel, and ninety on the Mediterranean; whilst her position between northern and southern Europe, and her numerous ports and navigable rivers, are eminently favourable to the extension of her navigation. But in this, as in all other branches of the French trade, the prejudicial effects of the restrictive system have been abundantly manifest. France, in forcing a trade with her colonies, containing less than half a million of inhabitants, has sacrificed her trade with other tropical countries and their numerous population, to the great injury of her shipping interest.

A great increase has taken place in the tonnage employed in the coasting trade of France, a fact which affords clear and convincing evidence of the extending resources of the country, which would have equally occasioned an increase in the shipping employed in the foreign as well as the domestic trade, if this important branch of industry had not been stunted in its natural growth by the monopolizing system. The navigation of France no doubt suffered grievously during the last war, under the maritime hostility of Great Britain. But in the course of nearly twenty years it would have recovered from this state of depression, if the natural energies of the country had been allowed free scope in this line of industry.

Butcher's meat in Paris.

The Revolution of 1830 did not alter the system prevailing antecedently with respect to the trade in butcher's meat, but modified it. The same may be said of the Revolution of 1848. It did not change the system but modified under certain heads the practice of the trade. The *droits d'octroi et de caisse de Poissy* were at first suppressed, then re-established, but with a radical change in this respect, that the duty was levied by the *weight* of the cattle and not at so much per head as before. This alteration had long been ineffectually demanded by the agricultural breeders. Butchers from the interior of France were also to provide stock and meat for the Paris market as well as their brethren of the capital. These regulations and modifications satisfied neither agriculturists nor butchers. In the month of January 1851, the National Assembly directed an inquiry into the production and consumption of butcher's meat. The commission charged with this inquiry seriously engaged in it, but the events of the 2d December 1851 prevented it from finishing its task. From the portion of the report, however, that has been printed, we know that it was the opinion of the committee that there should be liberty of commerce in meat, and that the local authorities should, under no pretext whatsoever, be allowed to interfere with this cardinal principle. The committee considered meat, like spice, silk, or cloth, a mercantile commodity, and were of opinion that the police should only interfere as to frauds in reference to the quantity or quality, or as to the wholesomeness of the victual as an article of food. This was only returning to the principle professed in the laws of the 14th and 17th June 1791, and the 1st Brumaire An. VII. On the question of the *octroi* they were of opinion that it interfered with the price and consumption of food, and that it should be abolished from the 1st January 1860. Since this report was published the price of butcher's meat has increased, and the supply has diminished at Poissy, the great market which supplies Paris. In consequence of this, recourse was had to an expedient which sound political science has proved to be utterly ineffectual. An ordonnance appeared in the *Moniteur* of the 11th and 12th October 1855, of which the following is the substance:—

> On and after the 16th of the present month, butcher's meat shall be sold at prices taxed by the authorities.
>
> The price shall be fixed every fortnight for every kind of meat, according to the returns made at the Caisse de Poissy, and to the weight of meat ascertained to have been sent from the public slaughter-houses of Paris during the preceding fortnight.
>
> (Then follow instructions regulating the manner in which the different kinds of meat are to be divided and arranged as to prices.)
>
> In the shops established in the markets, meat shall be sold at 10 c. at least per kilogramme (about a halfpenny per lb.) below the fixed price.

This decree, which violates every sound principle of political economy, appears to have been well received by the poorer classes of the population, who had long complained of the dearness of meat, and of the exorbitant profits of the butchers. But the way to reduce the profits of the butcher is to destroy the monopoly, and to render trade in meat free.

VIII. RELIGIOUS AND CHARITABLE ESTABLISHMENTS.

The condition of the church and clergy forms a most important feature in the history and present situation of France. In former times, the Gallican church, without desiring a separation from the holy see, had often advanced a claim to independence, and maintained long and animated discussions, or rather controversies, familiar to those readers of the French annals who have attended to the history of the Jansenists and Molinists. The result of these, and of the general progress of knowledge in France, was an exemption from a part at least of the interference in ecclesiastical affairs, exercised so despotically by the court of Rome in Spain, in Portugal, in Italy, and now in Austria. As to pecuniary means, though the income of the lower ranks of the clergy was extremely small, the church of France was on the whole richly endowed; antecedently to the first French Revolution the rent of land and houses appropriated to abbeys, priories, bishoprics, archbishoprics, and benefices of every description, being computed at five millions sterling, exclusive of the tithes levied, with more or less strictness, throughout the whole kingdom. As a political body, the French clergy were differently situated from the English, having no voice in legislating, but aiming at, and frequently attaining, the highest offices in the executive government.

In 1789 a number of the clergy, both in the upper and lower ranks, participated in the general wish for a political reform, and evinced that disposition by their readiness in coalescing with the *tiers état*, at a time when the majority of the noblesse refused to do so, until compelled by the call of the people, and the positive order of the court. In the highly interesting discussions that ensued during the years

1789 and 1790, some of the leading orators were Roman Catholic clergymen, nor did they in general take the alarm, until the menacing aspect given to public affairs by the too rapid progress of the Revolution. The National Assembly stripped the church of her lands, and declared them the property of the public, providing, indeed, for the income of the clergy, but making the payment of it dependent on government. All this might have passed and been forgiven in the ardent hopes of national benefit from the Revolution; but the assembly did not stop here. Considering both the court of Rome and the court of France inveterately hostile to the Revolution, they determined to detach the clergy from both, and sought to compel their adherence, by imposing on them an oath of fidelity to the new constitution, on pain of forfeiture of their livings. The sincerity of the clerical body was now put to the test, and a striking proof was given of their being actuated by that conscientious feeling for which the public in Protestant countries are so little disposed to give them credit. In every rank, whether prelates, vicars, or the humble curates, the majority preferred the hazard of losing their livelihood to taking an oath at variance with their conscience. The violent party continued to triumph at Paris, and the nonconforming clergy had no alternative but to fly their country. Hence the crowds of emigrants who, in 1791 and 1792, sought refuge in Italy, Germany, and, above all, in England. Those who remained in France were exposed to all the atrocities of the Jacobins. Hundreds of them were sacrificed in the massacres of September 1792, and hundreds more were brought to the guillotine in the dreadful years 1793 and 1794. With the fall of Robespierre (July 1794) the executions ceased; but a tone of hostility to the church was still kept up, and accounted an indispensable part of the policy of the revolutionary government. The only class allowed to remain in quiet were the *curés*, whose humble station and scattered position created no political alarm. It was not till the established sway of Bonaparte (in 1801) that circumstances admitted of cooler calculation, and enabled that skilful ruler to seek in a hierarchy a prop to his own power, and an engine of opposition to the liberal party, which still hoped to secure to France advantages from the Revolution. With this view he affected great respect for the Roman Catholic Church, concluded a concordat with the pope, and made a pecuniary provision for a specified number of sees. His next step was to frame and circulate throughout all France a catechism, calculated to impress the rising generation with a profound veneration for a sovereign who had been "anointed by the pope, and received his mission from the Almighty." The power of Bonaparte received in this manner a most substantial support, and would have taken deep root with the lower orders, had he not counteracted it by his subsequent quarrel with the pope, which assumed an angry aspect in 1809, and became more and more aggravated during the remainder of his reign.

On the restoration of the Bourbons in 1814, the Catholic clergy hailed the change with enthusiasm; but the public, at least the great majority of the middling classes, soon showed a marked distinction between their cause and that of the king. The conduct of Louis in regard to the clergy was marked by moderation and judgment. He sought to revive similar impressions among his subjects, to enforce the observance of the Lord's day, and to relieve from indigence the country curates. But he placed no clergymen in political situations, nor attempted to give the bishops or archbishops seats in the House of Peers.

Concordat.

A concordat or compact between the pope and the king is a transaction of high importance in a Catholic country, where the public are impressed with the belief, that in all that relates to religion, reference ought to be had to the court of Rome, and that their temporal sovereign possesses authority in such affairs only as far as it is delegated by the holy father. The object of a co̅ncordat is to define the respective powers of the pope and the king. In France the aim of the executive government has long been to secure the patronage of the church, and to stipulate that no bulls, briefs, decrees, or other acts of a nature to agitate the public mind, should be promulgated without the royal or imperial sanction, or the sanction of the head of the executive power. Three centuries ago, when the alarm of the Reformation, and some urgent political considerations, made it of importance to the court of Rome to attach to its cause the reigning sovereign of France, there was passed between Leo X. and Francis I. a concordat, declaring that the power of nominating the archbishops and bishops of France resided in the crown, the sanction of the pope being required only for their inauguration (*institution canonique*). This compact was considered a kind of charter or standard document in the long discussions which afterwards ensued about the independence of the Gallican church, until the whole sunk into insignificance before the storm of the Revolution. During the ferment of that convulsion, the Jacobins, and even the Directory, made no proposition for accommodation with the holy see, and bade, or affected to bid, it defiance. Bonaparte, more politic, concluded a concordat, which, though it reinstated only 50 of the 130 secs existing before the Revolution, stamped him in some measure a restorer of the church. That he did not afterwards augment their number, is to be accounted for solely by a dread of alarming the revolutionists. The Bourbons, on their restoration, appear to have felt all the delicacy of such a measure; and there appears no ground for believing that they intended to restore the lands, the tithes, or temporal influence of the clergy. Negotiations for a concordat were early begun with the court of Rome, but its conclusion was delayed till 1817; and the interest with which it was received in France can be comprehended only by persons resident among a people still agitated by political division, and dreading the influence of the clergy as an engine for the revival of all past abuses. From this, and from differences with the court of Rome that are foreign to our subject, the execution of the new concordat was very tardy.

The prelates of the church of France are as follows:—Cardinals, at present six in number, with an annual income of about L.1000; 15 archbishops, average income about L.600, except the archbishop of Paris and the cardinals being archbishops; 65 bishops, average income about L.400.

The next in rank are the vicars-general, to the number of more than a hundred; and the chanoines or canons, who also exceed a hundred; after which come the *curés* or parish priests, in number nearly 3300, and divided into three classes (first, second, and third), with incomes of only L.40, L.50, or L.60, but with certain emoluments from surplus fees, which vary according to the population of their respective districts. Lastly come the *desservants*, or acting curates, of whom there is one in almost every country *commune* or parish in the kingdom, amounting in all to 26,000, but with incomes of only between L.20 and L.30 a-year; a pittance equal to about L.40 in England, but still too small to provide for even the limited wants of a state of celibacy. There are also a number of *succursales*, or chapels, appended to large parishes; but of these a considerable number (at present about 2000) are vacant from want of funds, bad repairs of the building, and other causes. These various appointments are all paid out of the public treasury. The expense of the Catholic Church is about L.1,100,000 sterling a-year; but as there are other heads of disbursement, particularly salaries to Protestant ministers, the total ecclesiastical charge is about L.1,300,000.

The nomination of all clergymen, whether Catholic or Protestant, under the Bourbons, was vested in the crown. As to political feeling, the Roman Catholic clergy are generally hostile to the interests produced by the Revolution; but when the republic was in the ascendant they busily planted trees of liberty. In fact they cling to anything established, or that promises stability.

Convents.

Female convents have all along existed in France, with the exception of a few years of the worst part of the Revolution, when their inmates were obliged to forsake their establishments, and to seek an abode with their relations. They are now (1855) very numerous in Paris and throughout France. The most famous and *fashionable*

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convent under the Restoration and under Louis Philippe still exists—the Convent de l'Abbaye au Bois. Monasteries are not now very numerous, and no idea is entertained of re-establishing the abbeys, priories, and other endowed establishments; but since the establishment of the empire the power of the clergy has increased, and Jesuits are again openly conducting educational establishments, and preaching in the pulpits of Paris and the great towns.

What, it may be asked, have been the effects of the first Revolution on the state of religion in France? There can be no question, that within the three years between 1852 and 1855 there has been an evident reaction, and in some sort a revival of the religious sentiment among all classes of Frenchmen; the Romish churches and chapels are better attended by the younger and middle-aged men, and are crowded by women of all ages. The first Revolution undoubtedly has subverted the power of the Church, and, what is much more serious, the belief of Christianity in the minds of the young and the middle-aged of the male part of the population; but with the elders of that sex, and with almost all females, the Roman Catholic creed preserves undiminished sway—a sway which extends much farther than can readily be conceived by Protestants. The extent of this influence is owing to various causes; in part to commendable conduct in the clergy, who in general act the part of careful pastors, and attentive visitors in sickness or distress; but in part also to that blind credulity with which the tenets of the church are received both by the hearers and their spiritual guides, whose education has by no means kept pace with the general progress of knowledge; for it does not embrace the philosophical course of the universities of France, but is conducted in separate seminaries, and upon a much more confined plan.

Protestants.

The Protestants in France amount to above 2,000,000, and are most numerous in the south, particularly at Nimes and its vicinity. The Bourbon government received with attention the applications of the Protestants, whether for increase of pastors or repair of churches. They form an industrious and valuable portion of the population; but they are animated by a strong *esprit de secte;* and during the reigns of Louis XVIII. and Charles X. they evinced considerable distrust of the reinstated government. The Lutherans in France have 387 pastors, the reformed religion (of the Augsburg confession) 387, making a total of 775 pastors.

Hospitals.

The hospitals of France are numerous, and derive their revenues from three sources, namely:—

	Francs.
Permanent revenues............	24,453,654·90
Casual sources	16,164,117·36
Sums reimbursed (it is presumed by the state)......	13,498,888·42
	54,116,660·68

The value of the property from which the permanent revenues are derived is about 500 millions of francs. The necessary deductions for repairs and management render the clear sum available under this head 11,291,878·56 francs. The sources styled casual or accidental are derived from sums voluntarily granted by the communes to the hospitals within their boundaries out of their revenues. Before the Revolution, or in 1780, there were only 870 hospitals; there are now 1270. The revenue now, 54,000,000 francs, was then only 20,000,000 francs. At the first period only 110,000 indigent sufferers were relieved, now 126,500. The rate of mortality was nearly the same in 1847 as in 1780, notwithstanding the great ameliorations introduced in all such establishments.

The poor.

The poor in France are reckoned as 1 in 8 of the population. The poor are relieved by what are called the *bureaux de bienfaisance,* which number in all 9336, and possess a revenue of 17,381,267 francs, arising from various sources, such as *monts de piété*, a tax on the theatres, confiscations, legacies, rentes, casual receipts, &c. Of the above sum 683,346 francs are expended in medicines, above 8,000,000 in corn, and above 2,300,000 in cash relief; a fifth part of the total revenue is defrayed in its management. It would appear the poor are but insufficiently succoured. The differences in the numbers of indigent in different parts of the empire are remarkable. In the north the indigent are as 1 to 9, the mendicants as 1 to 62; in the east as 1 to 14, and 1 to 181; in the south as 1 to 18, and 1 to 130; and in the west as 1 to 11, and 1 to 106. In Paris there is one indigent to 12 inhabitants, and 1 mendicant to 397; in Lyon 1 to 10, and 1 to 532; in Marseilles 1 to 7, and 1 to 1429; in Bordeaux 1 to 7, no mendicants; in Rouen 1 to 31, no mendicants; in Toulouse 1 to 33, and 1 in 310; in Lille 1 in 3 are paupers, and 1 in 307 mendicants. The mean relief rendered by the *bureaux de bienfaisance* is 12 francs 70 centimes per head.

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Charitable establishments.

Before the Revolution the poor in France, as in Italy and other Catholic countries, were supported chiefly by the abbeys, priories, or other beneficed establishments. On the absorption of these sources of income by the first revolutionary government, a provision for the poor became a subject of legislative inquiry; and, after long investigation, it was determined to avoid a poor-rate on the English plan, but to provide for the aged and helpless an annual fund to the proposed amount of L.2,000,000 sterling. Several years elapsed before this was acted on, and the fund eventually provided consisted of a revival of part of the old *octrois*, or dues levied on wine, cider, spirits, and other articles of consumption, on their entrance into towns; a tax from which the Revolution had relieved the public, and which was now disguised under the specious name of *octroi de bienfaisance.* These dues, however, were soon extended and applied to the general expenditure of the government, after retaining a portion, which at present constitutes the only regular fund for the poor. Further sums are collected by subscription in the depth of winter, or on the occurrence of extraordinary distress. From the public treasury, likewise, there are made occasional issues, in a season of hardship, on the application of the mayors or local magistrates. There are at Paris a number of hospitals, of which by far the largest is the Hôtel Dieu. In the provincial cities there are in general two hospitals for the poor—one for the sick, the other for the aged; besides other charitable institutions.

The money advanced for the succour of mendicity in France varies according to circumstances, such as the customs and resources of the localities. In each commune or parish there exists a committee composed of the mayor, the parish priest, rector, or curate, the Protestant minister, if there be one, and two or three of the principal inhabitants. This committee procures exact information upon the wants and resources of each family, and provides the quantity of head-meat and firewood necessary. A species of voluntary subscription is raised the more easily, as it is levied in kind. The farmer gives bread or wood, the butcher meat, the physician his attendance, the apothecary his drugs. A strict discipline is preserved in the division of the alms, and in fixing the preliminaries and conditions of good conduct. In France the proportion of persons who are succoured by eleemosynary aid is 1 in 10 in the great towns and 1 in 15 in the country. In France a pauper is maintained all the year at L.1 a-head, whereas in England the cost is L.4.

IX. ESTABLISHMENTS FOR EDUCATION.

Educational establishments.

The organization or framework of the system of public instruction in France is one of the happiest applications which has yet been made of the principle of centralization. It is due to the genius of Napoleon. In 1808 he promulgated his decree for establishing the University of France, the provisions of which, being full of the wisdom and foresight so characteristic of his *civil* acts, have engrafted themselves on the institutions of the country, and, with a few slight modifications suggested by experience or by the course of events, are now in full operation, and producing the happiest effects. By this decree the establishments for education throughout France, whether endowed or not, from the village school, through all the gradations of grammar schools, academies, and colleges, up to the faculties and universities, were comprehended under one great central administration, called *l'Université Impériale de*

France. The term *University,* therefore, in the sense first introduced by Napoleon, and now naturalized and generally adopted in France, does not describe, as in Britain and elsewhere, an institution for liberal education, but a branch of the administration or government of the state. Napoleon applied his system of centralization to the university as well as to the government and army. The university has, nevertheless, so much of the nature of a corporate body, that it possesses large disposable funds of its own, consisting partly of real property, partly of pecuniary endowment secured on the public revenue, and partly of the produce of a tax levied on every institution for educating the children of the wealthier classes, which is called *retribution universitaire.* All professors, public teachers, and schoolmasters are necessarily members of this vast body, called the University, the control and direction of which rested under the government of the Restoration.

Administrative Body of the University.

1. The grand master, who was at the restoration also minister of public instruction, with a seat in the cabinet. The grand master, under the kingly government, appointed all the officers of university administration, and filled up all the vacancies in colleges and schools, only, however, upon the recommendation of the inferior local authorities, and after rigorous examinations and comparative trials by them.

2. The second university authority under the kingly government was the royal council of public instruction, composed of ten members, selected from the names most eminent in the various branches of science and literature. They held their sittings in Paris, and were generally distinguished members of the Institute. Their province was to suggest and sanction improvements in the method of teaching; to direct and superintend the compilation of books to put into the hands of youth, and to see that they be adopted in schools and colleges; to judge and remove incompetent teachers, upon the reports of general inspectors; in short, to watch over the concerns and interests of public instruction in all its branches.

3. The university, or, in other words, the whole territory of France, as far as regards the purposes of education, was, under Louis Philippe, divided into *twenty-seven academies,* each comprehending three or more departments; for the term *academy,* like *university* itself, no longer designates a local institution for the training of youth, but a certain territorial extent of educational jurisdiction. In the central town of each academy resided a rector, whose business it was to superintend all the schools, colleges, and faculties within the departments forming his district, to promote their moral and intellectual improvement, to collect the reports of the inspectors employed to visit and examine all places of education under his jurisdiction, to transmit the result to the central administration at Paris, and to serve as the organ of communication with the minister of public instruction. He was assisted and controlled in the exercise of his functions by an academical council of ten, who were partly official persons connected with the university, with the department, and with the municipality, and partly respectable inhabitants of the town, the seat of the academy.

4. Attached to the *conseil royal* were ten inspectors-general of the university, France being divided into ten districts, each visited once a-year by a different inspector, for the purpose of making a survey of the principal establishments, controlling their administration, and reporting to the minister of public instruction.

Besides these inspectors, or agents of the central administration, each rector has, acting under him, two or more *inspecteurs d'academie,* to examine more minutely every primary school or college within the limits of his jurisdiction, and report to him on the general condition of the establishments, on the progress of the pupils, and on the conduct and character of the teachers.

With regard to the constituent parts of the great *corps enseignant,* beginning with the highest, there are,

1. *Les facultés.* The faculties under the imperial system are five; the sciences mathematical and physical, letters, law, medicine, and theology; and all these faculties, with their complement of professors, a dean at the head of each, and an attendance of students more or less numerous, are established in eight towns, namely, Paris, Caen, Toulouse, Strasburg, Dijon, Poictiers, Rennes, and Metz.

It is by the faculties alone that degrees can be conferred, and these degrees are of three kinds: Bachelor's (*le baccalauréat*), which cannot be obtained before sixteen years of age; licentiate's (*la licence*), which presupposes the former, and at least one additional year of age and study; and doctor's degree (*le doctorat*), granted to licentiates when still further advanced in age and acquirements.

2. Subordinate to the faculties, and intended to be a preparation for them, are the colleges; institutions which resemble a good deal the schools of Eton, Harrow, Westminster, &c. The French *collèges* are either royal or communal. Of the former there are at present 39, of the latter 320. Of the 320, by far the greater number are in a very imperfect and inefficient state. The College Royal in the time of Louis Philippe was under the special management of the government. Its directors and professors were paid out of the funds of the nation. The whole was conducted at the charge of the state, and the course of instruction was higher than in the communal colleges. The professors at the college communal are paid out of the funds of the commune.

3. The third and lowest stage of national instruction is that of the *écoles primaires,* corresponding to our parochial and village schools. The law of the 28th of June 1833 new-modelled and added greatly both to the number and value of the *écoles primaires.* It ordains that there shall be a school in every one of the 37,187 *communes* or parishes into which France is divided.

This law provides also for a somewhat fuller and more comprehensive education of the children of the middle class and wealthy burghers in large towns, by ordaining that in every commune which contains above 6000 souls (the number of these in France is 273) there shall be en *école primaire supérieure,* corresponding to and borrowed from the Burger or Mittel-schule of Germany, in which a considerable extension is given to the list of subjects taught in the primary schools. It is also provided that departments may unite themselves to neighbouring departments with a view to have *écoles primaires.* By the law of the legislative assembly, 15th March 1850, there are to be two species of primary schools—the schools founded or sustained by the communes and the departments of the state, which take the name of *écoles publiques;* and the schools founded by private individuals or associations, which take the name of *écoles libres.* The inspection of primary teaching is confided in each arrondissement to an inspector named by the Minister (after having taken the opinion of the Academic Council), and to the cantonal delegates, the mayor, the parish priest, the pastor, or the delegate of the Israclite consistory.

Primary instruction is gratuitously given to children whose parents are not able to pay for it. In order to exercise the profession of *instituteur primaire,* in public or free schools, the teacher must be a Frenchman of the age of twenty-five, and possess a certificate or brevet of capacity, but it may be dispensed with in cases in which the academic council certifies that the individual has during three years taught, in public or free schools, the subjects which form the basis of primary instruction; likewise where the candidates have the diploma of bachelor, or a certificate stating that the bearer has been admitted into one of the special schools of the government. A clergyman, too, of any of the religions recognised by the state, who has not been revoked or interdicted, may be an *instituteur primaire.*

Instituteurs communaux are named by the municipal council of each commune. Every commune is bound to maintain one or more primary schools. Every commune of 800 souls is bound, if its resources permit, to have a school for girls. The academic council also can compel communes of a less population, if they have the means, to maintain a girls' school. All communal schools or girls' free schools kept by lay teachers or by religious associations, cloistered or uncloistered, in so far as regards teaching, are submitted to the inspection and surveillance of the authorities instituted by the law of the 15th March 1850.

The educational system of France may be considered as now happily established, and rendered permanent and efficient, by two other parts of the system. One of these is the *école normale,* established at Paris by Napoleon in 1808, for the purpose of maintaining 300 pupils, and training them not only to considerable acquirements in literature and science, but to the art of communicating their knowledge to others in an attractive and interesting form, and thus to become able regents in the *collèges* and professors in the faculties. None are admitted into this institution who are under the age of seventeen complete, and who have not distinguished themselves in the previous stages of their education. The pupils are divided into two sections, that of the sciences and that of letters, and remain three years in the one or the other. The first two years are employed in confirming and extending their acquirements by a rigorous and effectual discipline under the best professors and teachers that Paris can afford. During the last year they are regarded as future teachers, and trained particularly, both by theory and practice, to the art of communicating instruction. The other security is an extension and application of this noble conception of Napoleon, so as to embrace a preparatory course of discipline for the teachers of the primary schools. This idea, though originated and even acted upon long before the revolution of 1830, never was followed out with energy and effect till after that event; and even so late as 1828 there existed only three *écoles normales primaires,* as these seminaries for schoolmasters are called.

The Institute of France is divided into five academies, viz., the French Academy, the *Académie des Inscriptions et Belles Lettres*, the *Académie des Sciences*, the *Académie Royale des Beaux Arts*, and the *Académie des Sciences Morales et Politiques*.

The *Académie de Médicine* now replaces the Royal Society of Medicine and the Academy of Surgery.

X. ESTABLISHMENTS FOR THE PURPOSES OF WAR.

Army.

The French army first assumed a regular form under Henri IV.; but its peace establishment, including both horse and foot, did not then exceed 10,000 men, whilst the whole charge for the war department, including ordnance and half pay, was L.500,000. In 1610 Henri carried his army to a war establishment of 40,000 men. In 1640, under the able administration of Richelieu, France took an active part in the war of Germany, carrying her force at one time to 100,000 men, and her expenditure to the then unexampled sum of L.4,000,000 sterling in one year. In 1659, Louis XIV., already full of ambitious projects, kept up a peace establishment of 70,000 men; and the war of 1672 having brought Germany, Holland, and Spain into the field against France, the force of the latter country was carried to the number of 160,000 men. From 1679 to 1688 there was peace; but Louis passed the interval in preparing for war; and the introduction of the funding system now enabled France, England, and Holland, to surpass all their former exertions. The contest begun in 1688 required on the part of France a force of between 200,000 and 300,000 men. The peace of Utrecht gave a long repose to exhausted France, and the war of 1741 did not, until conducted in its advanced stage by Marshal Saxe, call forth a military force equal to that of Louis XIV. In the war of 1756 the French army was less numerous, and far less ably commanded. During the continental peace of thirty years (from 1762 to 1792) its establishment was kept, with little fluctuation, at 100,000 men.

The war of the Revolution began with a force on the part of France[1] of only 140,000 men; but this was speedily augmented by the compulsory levies of February 1793, and by the still more comprehensive operation of the requisition in September. It was Carnot, the author of the *Eloge de Vauban* and *l'Essai sur les Machines*, who organized the camp of Châlons, and who at the end of 1793 was enabled, by his indomitable energy, industry, and perseverance, working sixteen hours out of the twenty-four, to oppose to the coalesced enemies of France no less than fourteen different armies.[2] Carnot's was the head and hand which alone directed the war office, and which traced the plans of the different campaigns. During his ministry the finest campaigns of Napoleon and Moreau were organized. It was he who conferred with the generals, and who, without the aid of a secretary, corresponded with the fourteen armies. The republican spirit was now at its height; and the unlimited issue of assignats led to the maintenance of a force hitherto unexampled in the annals of any country, ancient or modern. In 1794, the Frenchmen in *actual service* in the Netherlands, on the Rhine, in Piedmont, the Pyrenees, and La Vendée, appear to have amounted to between 500,000 and 600,000; a force which, though imperfectly disciplined and officered, baffled the greatest confederacy that had at that time been formed in Europe. In 1795 the assignats lost their value, and France was obliged to reduce her army by a third; but its discipline was now greatly improved. During the campaigns of 1795, 1796, and 1797, as well as those in 1799 and 1800, the force maintained by France and Holland was between 300,000 and 400,000. Were the soil of France threatened, or a new declaration of Pilnitz proclaimed, voluntary battalions would assemble as in 1797. France had then 690,000 men under arms, which number could be increased in a few months to 871,000. At the peace of Amiens, Bonaparte kept up a peace establishment of 300,000 men; and after the renewal of war it was raised to 400,000;[3] a force with which he triumphed in 1805 over the united arms of Austria and Russia. His annual levy of French conscripts, though apparently only 80,000, amounted (see Declaration of the Minister at War, 18th September 1809) to 100,000; a supply which, joined to the recruits of his allies in Germany and Italy, kept up his numbers, and even increased them, notwithstanding the wasteful campaigns of 1806 and 1807 in Poland, followed by the no less wasteful campaigns of Spain. In 1812 the force of France and her allies reached their *maximum*, Bonaparte having led against the Russian empire a mass of 360,000 men, whilst there remained in Spain, Germany, and France, a number which carried the aggregate to between 500,000 and 600,000. Need we then wonder that, even after the almost total loss of his troops in Russia, there remained a force competent, with the aid of fresh levies, to withstand the efforts of the allies during two campaigns?

In 1815 Bonaparte, in returning from Elba, found under arms in France about 120,000 men, all of whom, with the exception of a few thousands, rejoined his standard. But so sick were the French of war, that the greatest efforts during the next three months added only 60,000 to this number, and the loss of one battle exposed all the hopelessness of resistance to the allies.

On the second restoration of the Bourbons in 1815, the army had fallen into a very disorganized state, the disciplined soldiers being dispersed, and the ranks slowly filled by new levies. This led to the legislative act of the 10th March 1818, which revived the conscription, but in a mitigated form, and allowing a great latitude in providing substitutes. A recurrence to this method of raising levies was held to be the only effectual method of filling the ranks with men of steady habits; for the army in France, never a receptacle for the refuse of the populace, has in general been composed of young peasantry and labourers of good character. Such was its constitution in the war of the Revolution, and its discipline was exemplary, until Bonaparte adopted the unprincipled practice of making war without magazines, and obliged the soldiers to live at free quarters on the inhabitants. The conscription of the Bourbons was indeed greatly modified, the numbers annually required being limited to 40,000, and the term of service to six years; but the measure is still compulsory, and falls heavily on the middle and lower classes; the alternative for a youth, when drawn, being either to give up his intended profession, or to pay L.40 or L.50 for a substitute. In 1832, the French army amounted to 411,816 men, including 19,036 officers and 3794 children. The infantry, then including the guards, amounted to 264,141 men, including 9505 officers; the cavalry, consisting of various denominations of chasseurs, dragoons, cuirassiers, and hussars, to 51,235 men, including 2805 officers; and the artillery to 32,594 men, including 1190 officers; besides gendarmerie, engineers, &c.; the latter being a numerous and well educated body of officers.

The army is now composed of the imperial guard, the gendarmerie and regiments of cavalry and engineers, and the troop connected with the administrative service of the army. The imperial French cavalry is composed of 12 regiments of cavalry of reserve, *i.e.*, 10 of cuirassiers, and 2 of carbineers; of 20 regiments of cavalry of the line, comprising 12 of dragoons, 8 of lancers, and 1 regiment of guides; of 21 regiments of light cavalry, comprising 12 of chasseurs, and 9 of hussars. There are besides 3 regiments of spahis, and 4 of *chasseurs d'Afrique à cheval.* The organization of the artillery is based on the effective strength of the army in cavalry and infantry. The amount of the corps of engineers is on well-defined principles of military administration, determined by the number of divisions of infantry to which they can be attached, the strong places to defend, and the reserve required for sieges. Troops in France are now said, by the official exponents of the imperial system, to be recruited by voluntary enlistment, and by an appeal to young men of twenty years of age. The effective force of the French army in 1854 before the re-establishment of the guard, and before the new organization of the artillery, amounted in round numbers to 570,000 with 178 field batteries and 1008 guns. By the *budget provisoire* of 1855 the expenses of the *ministère de la guerre* were fixed at L.12,635,911.

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[1] Jomini, *Traité des Grandes Opérations Militaires.*

[2] *Champagnac sur l'armée de France, Mémoirs sur Carnot.*

[3] *Tableau Historique des Guerres de la Révolution.*

The word conscription, which signifies the raw material or levies from which the French army is taken, is somewhat new to the French language, dating only from the year VI. of the Republic (1798). A law of the 10th of March 1818 re-establishes the conscription on bases which, though modified, have not been essentially changed. Every young man is liable to the conscription, and once a year may be selected by "tirage" to serve his country by becoming "chair à canon." To say that the conscription is popular in France, would be to disguise the truth; for large sums are given to procure substitutes, and many *compagnies d'assurance* have been formed to obviate its inconveniences and unpopularity. Every conscript should be sound in wind and limb, but the standard of height required in the French service is much lower than in ours, being only 4 feet 9 inches. Mutilated, lame, gouty, scrofulous, and consumptive men, as well as those who have lost an eye or a finger, who are near-sighted, deaf or dumb, or have lost the incisive teeth, are refused. In time of peace, though less frequently in war, maladies are simulated in order to escape selection. But such poltroons would incur universal odium at a time when the soil of France was threatened. In all military schools, and, indeed from the moment a Frenchman is destined for the service, he is subjected to a military government. Each school has its uniform. The scholars are formed into companies, and are commanded by officers, so that from the earliest years they are subjected to a military hierarchy with but one motive power. Thus the aptitude of the nation for war is strengthened, formed, and created by habit, by education, and by the discipline of the government. (See CONSCRIPTION.)

There is a perfect organization through intermediate steps, by which a direct relation is established between the meanest soldier and the minister of war. This minister is in correspondence with all commanders and generals of divisions of the army. He receives all military despatches; orders the movements of troops; directs and controls all the general and extraordinary expenses of military expeditions. He has the charge of the recruiting, clothing, provisioning, and paying of the army; has the direction of the asylums for invalids at Paris and Avignon; has the sole control of the gunpowder and saltpetre manufactories; of the barracks, military hospitals, arsenals, depots, and magazines of military stores, government foundries and manufactories of fire-arms. His department pays all officers on active service, on half-pay, or on retired pensions, as well as the allowances to officers' widows and orphans. The war minister is the head of the ordnance, and has the direction of the military schools. He has likewise the organization and inspection of the *gendarmerie* as well in Paris as in the departments, and he issues general orders as to the regulation and discipline of the army.

The chief marshal, minister of war, has three aids-de-camp, and four officers on his staff. Independently of these, his private Cabinet is presided over by a *chef-d'escadron* of the staff, and in this Cabinet the opening and registering of despatches takes place, and the departure of military couriers is regulated. In this office are managed what is called *Centralization du travail avec l'Empereur, affaires de franchise et contre-seing,* public audiences, communications with the journals, secret affairs, and affairs which are not within the specialty of any department of the offices.

The *direction (personnel),* which is the first, is under a general of brigade and a colonel of the staff. It contains seven bureaux, each under a chief with a multitude of clerks. The first bureau is devoted to *Correspondance générale "opérations militaires."* The second to the staff and military schools; the third to recruiting; the fourth to military justice; the fifth to the gendarmeric; the sixth to the infantry; the seventh to the cavalry.

The second *direction* or division is the artillery, with sections for the *personnel,* the *matériel,* and the *comptabilité.* The third direction is the engineers, with sections of *personnel, matériel,* and *comptabilité.* The fourth direction is *administration,* in which there are five bureaux, comprising *intendance militaire,* hospitals, clothing, bedding, camp-furniture, pay-audit, internal administration, &c. The fifth direction is devoted to the affairs of Algiers. The sixth to what is called the *depôt de la guerre,* with two sections, comprising geodesy, topography, drawing, engraving, military history, military statistics, archives, maps, and plans. The seventh direction is dedicated to audit and control of accounts, with sections devoted to pensions, aid, military law, &c.

Independently of these, there are eight consulting committees, composed of from six to fourteen superior officers, one a consultative committee for the staff, one for the infantry, one for the *gendarmerie,* one for the artillery, one for fortifications, one for Algiers, &c. There is also a Council of Health in the army, a commission *d'Hygiène Hippique,* and a mixed commission of public works, all under the eye and in the offices of the minister of war. The minister of war is also represented at the *Conseil d'état* by a general of brigade, by four counsellors of state, three *maitres des réquêtes,* two auditors, and a secretary.

The ministry of war, with its general directors, chiefs of division, chiefs and subchiefs of bureaux, subordinate employés, comprising the administrative service; the victualling service, with their directors, accountants, head clerks, writing clerks, porters, servants, messengers, &c., employs about 3000 persons, all working under the immediate direction of one individual. The expense is immense, but there is certainty, celerity, efficiency, and unity of action. No wonder that under a system like this such a genius as Napoleon entered Berlin after a campaign of eighteen days, or that his Austrian campaign scarcely lasted three months. It was the business of the minister of war of that day, and is his business now, to consider the frontiers of the enemy, the advantages and disadvantages of the ground, to obtain information of the resources of the country, and the dispositions and feelings of the army to which the troops of France were and are opposed. With the minister of war there can be no divided power—no opposing interests, no clashing of jurisdictions. He has sole and undivided authority and responsibility in command of the army, and all functionaries connected with the service are not merely subordinate, but obedient to him. There is no board of ordnance, treasury, paymaster-general, secretary-at-war, to interfere with the minister-of-war. The garrison service of France, an open continental country touching the frontiers of Belgium, Prussia, Baden, Switzerland, Savoy, Spain, Holland, imposes on the military service the necessity of being always prepared. Numerous changes of garrison take place with a view to relieve the monotony of the service; and portions of the artillery are always at Paris, Vincennes, La Frère, Toulon, Metz, Strasburg, Besançon, Lyon, Toulouse, and Rennes.

System of military education.

The system of military education is better in France than in England, and the military profession is viewed as it was at Athens, at Sparta, and at Rome; and valour and military skill are more regarded and more appreciated than great civil qualities among us. Skill and address in the art of war are more admired than civil wisdom, or, we fear we must add, than civil liberty. The French cultivate in their military schools gymnastics and bodily exercises, as well as the theory of strategy and war. Young men are instructed in these sciences by rule and precept, illustrated by practice. They read and ponder on the lectures that have been delivered to them; they discuss questions of strategy among themselves; and in all their barracks and garrisons there are libraries of reference, to which they can have recourse. In France, whenever war occurs, it assumes an intellectual complexion, and officers and men devote to it all their vivacious energy and strength.

The French, like the Roman soldiers, are inured to fatigue, and hardened by exercise. Drilled to walk at quick paces, carrying heavy burdens, to climb steep acclivities, and to creep along the sides of precipices, they are early taught that success in warfare is a more constant attendant on boldness, intelligence, address, and audacity, than on mere numbers and brute force. The military art, in truth, becomes among the French a national and patriotic sentiment, and every feeling, thought, and aspiration of the soldier is bound up in the service of his country. No nation is so vain of military successes as the French, and this is one of the reasons why they more easily become soldiers than other men. The Frenchman is by nature and disposition a campaigner. He is of an eager and adventurous disposition, gay, jocund, and somewhat reckless, and disposed to make the best of everything in this world. No man more easily accommodates himself to circumstances, or makes himself more at home in a strange land. He is an excellent marcher, an expert forager, and above all, a skilful cook. He can bake, and roast, and stew, and make sauces, and dress eggs, and produce omelettes in scores of ways. He can darn his own stockings, patch his own coat, and wash his shirt in a running brook, or cobble his shoes under the shade of a tree. He can hut himself with the ingenuity of a beaver, pitch his tent in a salubrious spot, and sing and dance with real light-heartedness. He can subsist on much less than would satisfy an Englishman. There is scarcely a French regiment that does not contain, among officers and men, voluntary societies established for a daily review of their individual progress in military and strategetical knowledge. They discuss and question each other, and enter on particular illustrations most profitable in a professional sense. Tactics, fortification, military geography, and military maxims are in turn handled, so that any man with ordinary intelligence and industry may become a most competent soldier.

The gradations of rank in the French service are *sous-lieutenant, lieutenant, capitaine, chef d'escadron, colonel, maréchal-de-camp, lieutenant-général, maréchal de France.* The number of the marshals of France is limited to twelve; the number of the other ranks, even that of *lieutenant-général*, is very large; for the *état major*, or staff of the army, after a reduction in 1818, consisted of 430 *lieutenants-généraux*, and 260 *maréchaux de camp.* There are on full pay twice as many officers as are necessary for the duty; but the number of half-pay officers exceeds all proportion; for this part of Bonaparte's vast machine has remained, whilst most of the private soldiers have sunk tranquilly into the occupations of the lower classes.

Promotion in the French army never takes place by purchase, and not often by special order: seniority at present determines more than half the appointments, a course which renders promotion extremely slow.

Of the military seminaries of France, the one of highest repute is the *Ecole Polytechnique;* a school for the instruction of young men in mathematics and drawing for the engineer and artillery corps. None but candidates of talent are admitted; and it is well entitled to the name of a nursery (*pepinière*) of intelligent officers. This school was founded in the year III. of the Convention (1794), and no man laboured more to place it on a secure basis than Carnot. It was above all things destined to produce engineers, and some of the most celebrated military and civil engineers of France have been bred within its walls. The number of pupils is fixed at 300, and the age of admission is from sixteen to twenty, and to twenty-five for military men who have two years of effective service *sous drapeau.* Some of the most celebrated men have been professors and teachers in this school, as Lagrange, Laplace, Berthollet, Fourcroy, Guyton de Morveau, Pelletier, Chaussier, Porny, Poisson, &c.

The charge to government of a foot soldier in France does not, in time of peace, exceed L.20 a year; that of the cavalry soldier is nearly double. The pay for either officer or soldier is little more than half the rate in England, and its inadequacy is much complained of. The whole charge of the war department under Bonaparte was about L.20,000,000 sterling. In the year 1833 it amounted to L.8,564,470. The war budget twenty years later, *i.e.* in 1853, was 324,232,663 fr., or about thirteen millions sterling. The war budget for 1855 is 339,861,842 fr.

The gendarmerie are not a part of the regular army, but a corps charged with the police duty, and scattered in small divisions throughout all France. The *gendarmerie* is now (1855) composed of twenty-six legions for the eighty-six departments, and for Algeria; 2dly, of the colonial gendarmerie; 3dly, of a regiment of 2 battalions of the regiment of gendarmerie of the Imperial Guard, formerly called *gendarmerie mobile*, and then *gendarmerie d'élite;* 4thly, of a squadron of *gendarmerie à cheval* of the Imperial Guard; 5thly, of the *garde de Paris*, formerly *garde républicain*, and before that called *garde municipale;* 6thly, of a company of veteran *gendarmes*, amounting in all to about 25,000 men. The *gardes nationales* corresponded to our yeomanry and volunteers.

The National Guard rendered incontestable services by its courage and moderation during the reign of Louis Philippe, first, during the process of the ministers of Charles X. in 1830; secondly, on the 6th June 1832; and thirdly, on the 13th April 1834. In 1848 (see HISTORY OF FRANCE) the reform banquets had many partisans among the National Guard; and after the revolution of February the provisional government suppressed the *compagnies d'élite* of grenadiers and *voltigeurs*, whence the abortive manifestation called *bonnets à poil.* On the 26th June 1851 the National Assembly promulgated a law which organized the National Guard in all France by communes in the departments, and by municipal arrondissements at Paris. By this law it was provided that the National Guard should be composed of all citizens, and that the right of suspension and dissolution should remain with the president of the republic. Till this period the officers, *sous officiers*, and corporals of the National Guard were named by universal suffrage. A mode of election was now adopted somewhat resembling the system under Louis Philippe. The *chefs de bataillon* and the *porte drapeau* were elected by the officers of their battalion, and by an equal number of delegates named in each company; and the *chefs de legion* and the lieutenant-colonels were elected by all the officers of the legion, united with the before-named delegates. This law remained in vigour till the decree of the President of the Republic of 11th January 1852. In consequence of this decree the National Guards were dissolved and re-organized upon new bases, in such localities only as their co-operation should be deemed necessary for the defence of public order. In the department of the Seine the general commanding was charged with this re-organization, which took place by battalion. From the period of the promulgation of this law special corps of cavalry, artillery, or engineers, could only be authorized by the minister of the interior. The chief of the state (now the Emperor) names the officers of all grades on the recommendation of the superior officer commanding in the department of the Seine, and on the recommendation of the prefect in the other departments.

The chief fortifications of France, on the side of Belgium, are the towns of Lille, Valenciennes, Condé, and Douai; on the side of the Alps, Embrum, Grenoble, and Antibes; on the side of the Pyrenées, Perpignan, Bellegarde, Mont-Louis, and Bayonne. The fortified sea-ports are Brest, Toulon, Cherbourg, Rochefort, and Boulogne.

The navy.

The superiority of the English navy over the French existed in ages when our pecuniary means were far inferior; and though, during the middle of the reign of Louis XIV. the French, by financial sacrifices, obtained a numerical superiority, one great battle, that of La Hogue, in 1692, was sufficient to restore our ascendancy. The war of 1741, however successful on the part of France by land, was, particularly towards its close, unfortunate to her at sea. In the succeeding interval of peace, great efforts were made to reinstate the French navy; but the war of 1756, though the French admiral De la Galissonière boasted of a success over Byng, proved doubly disastrous, and at last swept it almost entirely from the ocean. A very different scene opened in the war of 1778, when France, unembarrassed by a continental struggle, was enabled to direct all her disposable resources to her marine, an object of great care and solicitude to Louis XVI. She was then enabled to keep in an effective state about seventy sail of the line, the crews of which, added to those of the frigates and corvettes, formed a total of 60,000 seamen. The injuries sustained by this force, towards the end of the war, were repaired with great diligence during the peace; and to prepare young officers for the sea in preference to the land service, became a favourite object in several of the government schools. In 1791, an official report stated the effective French navy at seventy-four sail of the line, sixty-two frigates, and twenty-nine corvettes; a state of preparation which accounts for the resistance made to our navy by the revolutionary government under all the disadvantages of an unparalleled continental struggle. This proud force, however, disappeared progressively at the capture of Toulon, the victory of the 1st June 1794, and still more in the victory of Aboukir; so that Bonaparte, on his accession to power, found the French marine in a very reduced state. He laboured, however, to reinstate it; the years of continental peace, 1801, 1802, 1803, and 1804, were favourable to his efforts; and in 1805 he boasted of having in equipment sixty sail of the line, a force destined to an early diminution at Trafalgar and St Domingo. The Bourbons, on recovering their crown, found little more than half the force which existed previously to the Revolution. It has since been augmented, and in 1831 it amounted to thirty-five ships of the line, forty frigates, twenty-three corvettes, fifty-seven brigs, twenty-nine galliots and cutters of eight and four guns, twelve steam-boats, sixteen armed store-ships, thirty-two armed transports, two yachts; total, two hundred and eighty-four; and in 1854, according to the last authentic account, it consisted of—

		Guns.
53	vessels—9 carrying 120, 14 = 100, 19 = 90, 11 = 80 or 82 guns—total	5,096
58	frigates—42 = 50 to 60, and 16 = 40 to 46	3,955
39	corvettes	868
101	brigs, schooners, and cutters	1,066
39	corvettes de charge and gabarres	788
290		11,773

Steam Fleet.

3	vessels of the line,	Amounting together to 28,750 guns.
20	frigates,	
30	corvettes,	
64	other vessels,	
407	(1855)	

In the present year (1855) 14 ships of iron (9 being vessels of the line) have been launched, and 32 new vessels are on the stocks.

On the 1st January 1855 the officers of the French navy consisted of 2 amirals, 17 vice-amirals, 37 contre-amirals, 108 capitaines, 238 capitaines de fregate, 658 lieutenants, 614 enseignes.

XI. REVENUE AND EXPENDITURE.

In France the ancient system of taxation and finance was extremely unequal and oppressive. Her various provinces, though they were united under one head, retained many of their own peculiar laws and privileges, which were absurd in themselves, and opposed to the general interests of the empire. Among these was an exemption from certain imposts, to which some were subjected, and consequently over-taxed; and others, again, contributed a certain quota of revenue to government, which they raised by taxes imposed by their own local authorities. The consequence was, that no uniform system of taxation could be established throughout the country. The taxes on many commodities were higher in one province than in another; and custom-houses were accordingly established on their respective frontiers, to prevent the importation of goods until they had paid the duties. In this manner, owing to the inequality of taxation, commodities could not freely pass from one district of the country to another; and the kingdom was thus broken into separate divisions, to the great interruption of trade. The partiality shown to the privileged orders was another serious grievance in the ancient system of French taxation. The taxes by which the public revenue was raised were, first, the *taille*, a tax on real property, or on income derived from commerce and industry. From this tax the lands of the noblesse and clergy were exempt. "The tax was called *taille*," says Borel, "because the peasant collectors, not knowing how to write, marked down what they had received on a wooden tally." Secondly, the *vingtième* was a tax of one twentieth on property, from which the clergy alone were exempted.[1] Thirdly, a poll tax was levied on all classes indiscriminately. Many of the taxes were farmed by rich capitalists called farmers-general or *fermiers-generaux*, who paid annually into the treasury a fixed sum, and collected the taxes from the people. Those farmers-general held the monopoly of the manufacture and sale of tobacco and salt; and also the *octroi*, which was a duty on all articles entering Paris and other large towns. The power delegated to these contractors was the source of grievous oppression to the people. The duties called *aides* were imposed on spirituous liquors and other articles of consumption; they also included duties on all articles worked in gold or silver, on wrought iron, playing cards, leather, paper, starch, &c. These duties levied by collectors for the benefit of government were abolished by the National Assembly in 1790. The *corvée*, which consisted in so many days' labour annually, of men, horses, oxen, carriages, &c., was nominally applicable to the maintenance of roads. The tax was payable either in money or in labour. This system of taxation, so prejudicial to internal commerce, was to a certain extent reformed by Colbert, the minister of Louis XIV., who, though his views in regard to the principles of commerce were narrow and illiberal, yet improved in many particulars the system of taxation, by rendering it more uniform, and thus breaking down the barriers which obstructed the free intercourse between the different provinces. Under his administration the public revenue of France amounted in 1682 to L.5,000,000.

The long and expensive wars of Louis XIV. produced a great accumulation of debt (nearly L.100,000,000 sterling), which, after his death, was lessened by an appeal to a singular privilege, of which advantage has often been taken in France, viz. that a new sovereign is not bound to pay the debts of his predecessor in full. During the eighteenth century the revenue of France increased progressively, but more slowly than that of England; the vicious system of farming the taxes still continued. Necker, appointed to office in 1776, endeavoured to teach the French court the value of publicity in financial statements, and exhibited the rare example of a war conducted for several years without new taxes, the supplies being found by loans, the interest of which was provided for by successive retrenchments in the public expenditure. His successor, M. de Calonne, pursued a very different course, and was found altogether incapable of the measures necessary to remedy an annual deficiency of L.2,000,000. The revenue of France was then about L.22,000,000 sterling. The sum required for payment of the interest of the public debt was nearly L.10,000,000,[1] leaving only L.12,000,000 for the army, navy, civil list, and other public expenses.

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[1] This tax was established in 1750, and was levied upon all property of whatever description. In 1754 it was taken off the amount of income arising from personal industry.

Such was the state of the French finances at the era of the Revolution of 1789, which was followed by invasion on the frontier, and in the interior by all the confusion consequent on the reign of terror. In this era of confiscation and judicial murder, the national debt could hardly be respected. It was not, however, openly cancelled, but the interest was issued in assignats of no value except for purchases of national property. At last, in 1798, on an approximation to regularity in the management of public business, there was passed a law declaring that one-third of the old national debt should be sacred, and the interest on it payable in *bons*, or paper receivable in discharge of taxes. This third was called *la tiers provisoire*, but its price in the market continued very low until Bonaparte succeeded to power, and placed Guadin, afterwards Duke of Gaeta, at the head of the treasury, when means were found to redeem the public funds from their depression, and to resume the payment of the dividends in cash. The amount of the revenue was greatly impaired by the general confusion of the revolution. In 1799 the expenditure exceeded the receipt by L.8,000,000 sterling.[2] A partial reduction of expenditure, and improvements in the collection of the taxes, brought in 1803 the receipts to L.19,500,000, whilst the expenditure was L.20,000,000. In subsequent years both received a progressive augmentation, and in 1813 the revenue derived from France, exclusive of conquered territory, was about L.27,000,000. On the restoration of the Bourbons in 1814, the public debt, funded and unfunded, did not exceed L.123,000,000;[3] its interest L.7,900,000. France had thus a fair prospect of financial prosperity, when the return of Bonaparte, and a second invasion by the allied troops, overthrew public credit, and produced a national loss and a general derangement of trade. It has been estimated that the return of Napoleon from Elba, which led to the second invasion of France by the allied troops, occasioned a loss to the country of 4,000,000,000 of francs. The direct loss, which included the expenses paid to the allied powers, and those incurred by the maintenance of their armies, placed in cantonments throughout France, may be estimated; but the indirect evils occasioned by the ravages inseparable from the invasion of a hostile army, by the confusion and derangement of all commercial relations, and the impossibility of collecting the revenue in such a time of trouble, cannot be summed up in money. At the same time there are scarcely any national difficulties which may not be overcome by the energies and industry of a free and intelligent people such as the French. With an inconsiderable addition to her debt, France has defrayed all these heavy expenses, the contributions imposed on her by the allied powers, the expenses of the temporary maintenance of their armies, and her own warlike expenses. For this purpose, however, it became necessary in 1815 to impose additional taxes. In 1817 a loan was required of 392,989,000 francs; and in 1818, to defray the extraordinary contribution of 575,807,197 francs, paid in that year to the allies, the minister had recourse to another loan of 220,510,718 francs; whilst by the taxes which had been imposed, the revenue of that year was carried to L.35,000,000.

Mean Revenue of France in the ten years between 1832 *and* 1842.

	1832. Francs.	1842. Francs.
Direct Taxes	341,386,157	401,900,335
Registrations, Stamps, &c.	181,108,061	230,896,780
Forests, &c.	27,080,175	34,700,000
Customs and Salt	152,855,890	181,107,236
Indireet Taxes	198,188,051	240,568,321
Post Office	49,468,948	47,025,500
Algerian Revenue		4,349,082
Prod. Universitaires		19,127,972
Prod. Eventuels, &c.		2,390,000
Divers Sources	14,018,509	12,519,749
	954,105,791	1,174,584,975

The Expenditure of 1853 *was as follows :—*

	Francs.
Interest on Public Debt, &c.	372,314,577
Dotations—Civil List, &c.	17,268,580
Expenses of various Ministries — Justice, Foreign Affairs, &c.	787,553,516
Expense of Collecting and Paying Taxes, &c.	151,095,335
Drawbacks, Discounts, Bounties, &c.	83,942,983
	1,412,274,991
Travaux Extraordinaires or Additional Works	72,738,334
	1,485,013,325

Besides the public revenue of the empire, the communes raise a revenue for their own local expenses. According to the latest published accounts, this revenue arises partly from *octrois*, which amount throughout France (there being 1436 *octrois*) to 95,176,602 francs, and partly from other sources, the whole of which amounted to 230,633,909 francs in 1850. The total of the ordinary ways and means of France in the *Budget Provisoire* of 1855 amounted to 1,528,110,288 francs. During the administration of M. Vilèle, the five per cents. in France were converted into a three per cent. fund, at the rate of 133·33 cents. for every hundred of the five per cent. stock; so that the whole five per cent. stock, bearing an annual interest of 30,574,116 franes, was converted into a three per cent. fund, of which the capital was increased one-third. The effect of this transaction was in reality to reduce the interest on the five per cent. stock to four per cent., by which he saved annual interest to the amount of six millions, though by a very useless complexity in his operations. The interest on the public debt of France, thus reduced, may be stated as follows:—

It amounted in 1855 to 418,370,442 francs. The sinking fund or *caisse d'amortissement*, ceased altogether its operations on the 14th July 1848. In the thirty-two years of its operation the *caisse d'amortissement* liberated the country from liabilities to the amount of 1,633,474,090 francs, and placed at the disposition of the treasury, from 1833 to 1848, 1,016,693,856 francs.

System of taxation.

The ancient system of taxation in France was subverted by the National Assembly in 1791, and new taxes were substituted in lieu of those formerly in force. These consisted of direct and indirect taxes. The direct taxes are, 1. *Contribution foncière*, or land-tax; 2. *Contribution personelle et mobilière*; 3. A tax on doors and windows; 4. *Droits de patente*, or a license duty on particular trades and professions, and a duty on mines.

The *contribution foncière* is raised equally on all lands and houses in proportion to their nett revenue. There are no longer any exemptions in favour of the nobility since the first revolution in 1789. The imperial domains and the property of the state are alone exempted. The *contribution personelle et mobilière* is divided into two parts. The first is a species of poll-tax, rated at three days' labour, calculated in money value to be from 10 to 30 sous per day, and levied on all males above eighteen years of age. The *contribution mobilière* is a house-tax levied on all rents from 200 to 2500 francs. For the *contribution personelle*, the *octroi*, which is a custom-duty on all goods entering a town, is substituted in Paris and other large cities. The tax on street-doors, gateways, and windows, varies in proportion to the size of the town in which the house is situated, and also in proportion to the size and value of the house and the number of windows. It is regulated by a tariff, in which are two divisions. The *droits de patentes* or license-duty is levied on every person following a profession, trade, or business; and is divided into two heads—the proportional tax, or the fixed tax, which depends on the extent and population of the town where he exercises his profession. A merchant pays from 40 to 500 francs per annum, according to the population of the place where he resides, and an additional ten per cent. on the rent of his dwelling-house. Bankers in all cases pay 500 francs a-year; and there is in like manner a fixed rate for other inferior trades and professions. The duty on mines is in proportion to the extent of the surface, and also to their nett produce.

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[1] Report of Camus to the National Assembly in September 1790.

[2] Gaudin, *Notice Historique des Finances de la France.*

[3] Bignon, *Exposé Comparatif de la France.*

The law which fixes the amount of the direct taxes also determines the quota which each department is required to pay. This is announced by the minister of finance to the prefect of the department, who communicates it to his sous-prefect and to the mayors. The sum thus assigned by the prefect to each arrondissement is subdivided by the councils of the arrondissement and by the communes; and the amount allotted to each is apportioned among the inhabitants by persons appointed for that purpose, called *repartiteurs* or assessors. These assessors regulate the amount of taxable property, and they fix the scale. The land-tax is however very unequally assessed, amounting in some departments to six per cent., whilst in the department of the Seine it is seventeen per cent. The equalization of the land-tax has always been accounted a capital object in the financial policy of France; and with this view a minute survey and measurement of all the landed property in France (termed the *cadastre*) was begun in 1808, and finished in 1847. The *cadastre*, accurate as it generally is, cannot, however, be considered as the expression of actual facts. The *propriétés imposable*, or taxable property, consists, according to the *cadastre*, of 25,581,658 hectares of cultivable land; 5,159,226 hectares of meadows; 2,090,533 hectares of vines; 628,235 hectares of orchards, nurseries, and gardens; 4,175 hectares of mines; and 17,400 hectares of lakes, ponds, &c. The inequality of the land-tax has long been a subject of loud and just complaint; and various plans have been adopted for a more accurate classification of the land. But these have generally proved inefficient and unsatisfactory.

The indirect taxes consist chiefly of fourteen principal kinds—of the *droits réunis* or excise duties on articles of consumption, of stamp duties, registration duties, duties on carriages, on canals and ferry-boats, on gold and silver plate. A revenue is raised from the monopoly of tobacco and gunpowder; from the post-office; the *octroi*, or custom duty on all articles entering large towns, one-tenth of which goes to the imperial treasury, the remainder being applied to local expenses. The customs form an important branch of the French revenues.

The *droits réunis* or excise duties are laid on wine, brandy, &c., which pay one-and-a-half francs per hectolitre of 120 English quarts, on being removed from one place to another.[1] Wine in bottles pays 10 francs per hectolitre on its removal; cider, perry, and mead, pay 80 centimes per hectolitre. Ten per cent. of the above duty is paid on their removal from the wholesale warehouse. Prior to 1830 a duty distinct from the octroi was levied on the entry of all wine or spirituous liquors into communes the population of which amounted to 1500 and upwards. All communes whose population does not amount to 4000 are exempted from this tax; and a new tariff has been established, rising progressively from 4000 to 5000 inhabitants, in proportion to the estimated wealth of the departments, which are divided into four separate classes—a very vague, as we should suppose, and uncertain standard of taxation. There is a further duty on wine and liquors sold by retail, which since 1830 has been reduced from fifteen to ten per cent. A reduction of three per cent. on this duty is made to dealers, and of twenty-five per cent. if the wine be grown by the retailer himself. Strong beer pays a duty of 2 fr. 40 c., and small beer a duty of twelve sous, per hectolitre. Retailers of liquors must take out a distinct licence, which varies, in proportion to the size of the town, from six to twenty francs.[2] Proprietors of public carriages pay one-tenth of the price of each place for passengers, a third being deducted for vacant places, and one-tenth of the price received for merchandise. Private carriages are subjected to a moderate duty, according to their size, of 40 fr. per annum for a carriage with two wheels, and holding two persons; and of 150 fr. per annum for a carriage with four wheels, and holding nine persons. The *enregistrement*, or registration duties, embraces a variety of transactions, where property is conveyed or given away by marriage-settlement or otherwise. There is a duty on gifts *inter vivos*, which increases with the distance of the relation between the parties. It was modified by an ordonnance of Louis Philippe in 1832. The duties payable on registry are either fixed or *ad valorem*; the fixed or certain duties apply to common certificates, those of life or residence, account books, bills of lading, appointments of arbitrations, valuations of furniture, and the like. The *ad valorem* duty applies to all bonds or obligations, discharges, judgments, deposits or releases of sums of money, and for every transfer of property, &c. The stamp duty applies to receipts, bills of exchange, newspapers, handbills, playbills, admission cards to public places, and upon paper used for civil and judicial *actes*.

The total received from the *impôt direct* in 1854 was 411,273,000 francs. In 1853 the sum received was 420,064,000 francs, which shows a deficit of nearly nine millions of francs in 1854.

The total receipts of the *impôts indirects* in 1854 were 847,260,000 francs. The impôt on salt produced in 1854 a sum of 33,270,131 francs. The total of "droits" received in 1854 amounted to 149,337,510 francs.

Land carriage or roulage 31,000,000 of tons, the mean transport at 15 leagues, at the mean price of 1 franc per ton	465,000,000 fr.
The public voitures which travel 18 leagues per day, in place of the common carriages of 8 or 10 leagues, yield, per annum	60,000,000 ,,
The duty on the public conveyances returns 6,000,000 francs; three-fourths are derived from the passengers, and one-fourth from the goods they convey.	

The share capital of the French railways in 1848 was L.49,044,000 sterling.

The total merchandise conveyed per transit in 1844, was in value 229,820,795 francs. In 1854, = 54,926,640 francs official value.

Value of wine, spirits, beer, and cider consumed in France, reckoned at 500,000,000 francs, give 311,000,000 francs wine, 54,000,000 francs brandy, 59,000,000 francs beer, and 76,000,000 francs cider.

The duties levied on this branch of the French revenues produced L.5,483,765 in 1852 and L.5,505,686 in 1853. In France these duties are laid on in many cases more with a view to restriction and monopoly than to revenue. France sacrifices a large revenue for the encouragement of the colonial monopoly; paying for the produce of the colonies an exorbitant price, and afterwards, as in the case of sugar, the staple article that is imported from the colonies, giving a great portion of the duty as a bounty on its exportation to foreign countries, to indemnify the exporter for the loss that he would incur if he were selling the sugar at its ordinary price in the markets of Europe. In 1830 the gross receipts from the sugar duty amounted to L.1,397,340, of which one-third, namely, L.420,903, were paid back in bounties on the exportation of the surplus. Thus the nett duty only amounted to L.976,437, while in

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[1] According to the existing law in France, wine, cider, perry, and hydromel are subject to three principal duties or imposts; 1. *Droit de circulation*; 2. *Droit de detail*; 3. *Droit d'entrée*. Any one of the liquors named may be subject to two of these imposts, but never to three at the same time. Alcohol pays a *droit particulier de consommation*, to which is added the *droit d'entrée* into the localities subject thereto. Beer only pays a *droit de fabrication*. Wholesale dealers, retailers, distillers, *liqueur* makers, are subject to a *droit de licence*. The city of Paris is, however, under special regulations in this respect, and the *droit de circulation* is subject to a variety of minute modifications only interesting to the French retailer of wine, beer, or spirit. Every sale less than a *hectolitre* in cask, or 25 *litres* in bottles, is considered a retail sale. The *droit d'entrée* and the *droit de consommation* are also the subject of minute regulations and exceptions, into which it is not necessary to enter. Paris wine-merchants pay no licence, nor are there any private bonded cellars as in England.

[2] In a majority of the departments, distillers pay 50 francs and brewers 30 francs licence, and *marchands en gros de boissons* 50 francs. *A tarif du droit d'entrée*, based on the population of the communes of four different classes, ranging from 50,000 to 4000, as well as a *tarif des droits de licence* will be found appended to the *Enquête Législative sur l'impôt des Boissons*, ordered by the law of the 20th Dec. 1849.

1822, though the quantity of sugar consumed was only 1,086,596 cwts., or 281,075 cwts. less than in 1830, the nett amount of the duty was L.1,234,653. The consumption of sugar in France in 1847 only reached to about 2,570,000 cwts. It is by means of heavy custom-duties that the French legislators endeavour to preserve the monopoly of the home market to their own manufacturers, by which policy they compel the French community to buy at a high price the inferior articles of their own manufacture, rather than the better articles of the foreigner at a lower price.[1] The increased numbers and superior vigilance of the custom-house officers have been still counteracted by the new expedients and persevering ingenuity of the smuggler.

The frontier of France is the scene of this persecution against commerce, where all the illegal, daring, and ingenious resources of the contraband traders are called into activity. Amongst other expedients, they trained packs of dogs, according to Messrs Villiers and Bourtry, to carry prohibited goods across the frontier. These dogs being conducted to the frontier, are kept without food for many hours; they are then beaten and laden with goods, and are started on their travels when it begins to grow dark, and reach the abodes of their masters as soon as they can, where they are well treated, and receive a full meal. According to the accounts of the French custom-house, 40,278 of these dogs were destroyed in the year 1830, on which account premiums were paid to the custom-house officers to the amount of 40,278 francs. That the trade, though it may be obstructed, is not prevented, is evident from the circumstance that there are regular rates of insurance on the conveyance of contraband goods into France, varying from ten to seventy per cent. A revision, and if possible a reduction, of these heavy duties would be the true policy of France.[2] Monopoly was never yet the source of commercial greatness in any country.

XII. NATIONAL INCOME AND CAPITAL; POPULATION.

Cadastre.

Of the official surveys of the French territory, by far the most minute and accurate is the *cadastre*, a survey which became indispensable from the time it was determined to exchange the taxes on consumption for taxes on produce. A return of the rent of land, such as was made under the property-tax act in England, would not have been practicable in France, where so many thousands of petty lots are cultivated by their proprietors. At first the *cadastre* proceeded on the plan of an estimate *par masses de culture*, or continuous valuation of extensive tracts; but this proving unsatisfactory, it has been conducted since 1807 on a plan of such minute detail, as to give the value of every separate *parcelle* or patch of land. The progress of this minute survey of the landed property in France has been retarded by many causes; and in 1830 not above two-thirds of the land had been surveyed. It was estimated in the report of one of the committees of the chamber in 1832, that it would still require from that period about eight years, and an expense of above L.2,000.000 sterling, to complete it. They had only surveyed thirty-one millions of hectares, or sixty-eight millions of acres. The annual expense of the survey is L.120,000.[3]

The wages of mechanics are so fluctuating and various, that a satisfactory statement of them can scarcely be produced. It may, however, be assumed that they are generally twenty or thirty per cent. lower than in England. The rate of wages of the agricultural population was thus estimated in 1851:—

		Francs.
6 millions of men, at 1 franc 50 centimes per diem		1,800,000,000
6 millions of women, at 75 centimes	„	900,000,000
6 millions of children, at 25 centimes	„	3,000,000
18 millions of agricultural labourers paid yearly		3,000,000,000

Expense of living.

A quarter of a century ago the difference in the expense of living in France and in England was about a third less in favour of England. As far as regards provisions, this difference was somewhat greater; but it received a counterpoise in the cheapness of our fuel. Paris is now as expensive compared to the rest of France, as London is compared to the rest of England. In 1855 prices were generally on a par with prices in London, and in house-rent and the prices of lodgings and fuel, Paris exceeds London.

In the end of the seventeenth century, the territory of France, when very nearly equal to its present extent, appears, from the report of the intendants or provincial governors, to have contained about 20,000,000 of inhabitants. This number was found, by the census made by order of the National Assembly, to have increased nearly a third in the course of a century; the amount, in 1791, being 26,363,600, a number which, by computation, made in 1817, had further increased to above 29,000,000. In the year 1820 the population was 30,451,187; and, according to the ordonnance of January 1832, it amounted to 32,661,678. By the census of 1851 it appears that the population of France was 35,781,628. The marriages in 1832 and 1833 were annually about 236,996, and the deaths about 785,268, of which 395,250 were males, and 388,018 females. The births were 967,533, of which there were 498,707 boys and 468,826 girls. The number of illegitimate children was then 68,081. In 1852, twenty years after the period here spoken of, the total number of births was 965,080, of which 895,236 were legitimate, and 69,844 illegitimate. The number of children still-born in 1852 amounted to 37,901, the number of deaths to 811,695, and the number of marriages to 281,360.

Population of France, 1851.

Old Provinces.	Departments.	Population.
Isle of France	Seine	1,422,065
	Seine et Oise	472,554
	Seine et Marne	345,076
	Oise	403,857
	Aisne	558,989
Picardy	Somme	570,641
Artois	Pas de Calais	692,994

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[1] On the 1st August 1847 a uniform duty of 45 francs per 199 kilogrammes was imposed on *Sucre brut Français*, native as well as colonial. In the space of three years the native product has more than doubled. Native sugar to the value of 30,000,000 fr. was manufactured in 1844, and to the value of 67,000,000 fr. in 1847. We know from reports made to the council of state by M. Behic, and to the legislative assembly by M. Beugnot, that the production of sugar in the French colonies has fallen lower than it has been for twenty years.

[2] The duties upon *matières premières* and upon corn date from the restoration. The first republic and the first empire favourably considered the raw material so necessary to labour; under the restoration the object in laying on these duties was in the hope, the vain hope, of creating a territorial aristocracy as in England. Impelled by the scarcity of 1853, recent decrees of Louis Napoleon have relaxed the prohibitive system and given a provisional liberty to the trade in corn and meat. An imperial decree of the 22d November 1853 reduces the import duties on coal and iron. Coal paid with the *decime*, 55 centimes per 100 kilogrammes, from Sables d'Olonne to Dunkirk; on the rest of the French coast it paid 33 centimes. On the land frontier the duty was 165 centimes, excepting by the Meuse, and in the department of the Moselle, where the duty was 11 centimes. Thence from d'Olonne to Dunkirk, and onward by land to Halluin, there is but one duty of 33 centimes by French ships, and 88 by foreign bottoms. The rest of the maritime frontier is assimilated to the greater part of the land frontier.

[3] It is positively stated in the *Statistique de la France*, published by the minister of agriculture, commerce, and public works, in 1855, that the *cadastre* was finished in 1847, and it is as positively averred by M. Achille de Vaulabelle, the historian of the restoration, and minister of public instruction under the republic, that the work is unfinished, that there are not merely arrondissements, but whole departments not *cadastré*. One thing is certain, that in some departments proprietors pay 8 per cent. of their nett revenue, whereas in others they pay twice and thrice as much.

Statistics.

Old Provinces.	Departments.	Population.
Flanders	North	1,158,285
	Ardennes	331,296
Champagne	Marne	373,302
	Aube	265,247
	Upper Marne	268,398
	Meuse	328,657
Lorraine	Moselle	459,684
	Meurthe	450,423
	Vosges	427,409
Alsace	Lower Rhine	587,434
	Upper Rhine	494,147
Franche Comté	Doubs	296,679
	Upper Saône	347,469
	Jura	313,361
Burgundy	Ain	372,939
	Saône et Loire	574,720
	Côte d'Or	400,297
	Yonne	381,133
Orleannais	Loiret	341,423
	Loir et Cher	261,892
	Eure et Loire	294,892
Normandy	Eure	415,777
	Lower Seine	762,039
	Orne	439,884
	Calvados	491,210
	La Manche	600,882
Maine	Mayenne	374,566
	Sarthe	473,071
Anjou	Maine et Loire	515,452
Brittany	Lower Loire	535,664
	Ille et Vilaine	574,618
	Morbihan	478,172
	Côtes du Nord	632,613
	Finistère	617,710
Poitou	Vendée	383,734
	Deux Sèvres	323,615
	Vienne	316,738
Touraine	Indre et Loire	315,641
Berry	Indre	271,938
	Cher	306,261
Nivernais	Nievre	327,161
Bourbonnais	Allier	336,758
Marche	Creuse	287,075
Aunis	Lower Charente	469,992
Saintonge et Augoumois	Charente	382,912
Limousin	Upper Vienne	319,379
	Corrèze	320,864
Auvergne	Puy de Dôme	596,897
	Cantal	253,329
Guienne et Gascony	Gironde	614,387
	Dordogne	505,789
	Lot et Garonne	341,345
	Lot	296,224
	Avignon	394,183
	Tarn et Garonne	237,553
	Gers	307,479
	Landes	302,196
	Upper Pyrenees	250,934
Bearn	Lower Pyrenees	446,997
Foix	Ariège	267,435
Roussillon	East Pyrenees	181,955
	Upper Garonne	480,794
Languedoc	Tarn	363,073
	Aude	289,747
	Hérault	389,286
	Gard	408,163
	Lozère	144,705
	Ardèche	386,555
	Upper Loire	304,615
Lyonnais	Loire	472,588
	Rhone	574,745
Dauphiné	Isère	603,497
	Drôme	326,846
	Upper Alps	132,038
Venaissin	Vaucluse	264,618
Provence	Mouths of Rhone	428,989
	Lower Alps	152.070
	Var	357,967
Corsica	Corsica	236,251

The estimates of population in France subsequently to 1791 are formed, not like our population returns on an actual survey, but by adding for the period which has intervened, the births, and deducting the deaths, of which an accurate record is kept in the public offices.

Population of Towns with 18,000 *Inhabitants and upwards in* 1832 *and in* 1851.

	1832.	1851.		1832.	1851.
Paris	774,338	1,053,262	Rennes	29,680	33,066
Marseilles	145,115	185,082	Besançon	29,167	35,345
Lyon	133,715	156,169	Versailles	28,477	29,975
Bordeaux	99,062	123,935	Toulon	28,419	45,510
Rouen	88,086	91,512	Clermont-Ferrand	28,257	30,563
Nantes	77,992	91,303	Limoges	27,070	37,010
Lille	69,073	68,463	Montauban	25,460	23,314
Toulouse	59,630	85,554	Dunkirk	24,937	26,886
Strasbourg	49,712	64,642	Grenoble	24,888	26,852
Amiens	45,001	49,139	HavredeGrace	23,816	26,410
Metz	44,416	43,484	Troyes	23,740	25,636
Nîmes	41,266	49,480	Tours	23,235	
Caen	39,140	40,569	Poitiers	23,128	25,818
Reims	35,971	43,643	Aix	22,575	24,255
Montpellier	35,825	40,222	Boulogne	20,856	29,488
Angers	32,743	43,088	St Omer	19,344	19,226
Avignon	29,889	31,812	L'Orient	18,322	22,561
Brest	29,860	36,492			
Nancy	29,783	40,289			

The ratio of the increase of population in France is greatest in the lower classes; the middling and upper ranks have seldom large families. In that country, as with us, the population evidently increases faster since the adoption of vaccine inoculation.

XIII. GOVERNMENT.

The charter in virtue of which Louis XVIII. ascended the throne of his ancestors was the basis of the government of France so long as it continued a monarchy.

By that instrument, the king was declared the supreme head of the executive power, in whom was vested the power of declaring war and making peace; the command of the national force, whether by land or sea; and the nomination of all ministers, ambassadors, and other public functionaries, civil and military.

The legislative power was exercised under the monarchy by two chambers, the Chamber of Peers and the Chamber of Deputies, in conjunction with the king, without whose concurrence no measure had the authority of law.

Chamber of Peers.

The Chamber of Peers consisted under the monarchy of no definitive number, as the king had the unlimited power of creating peers. The number of peers in 1826 was 214, and in 1827 it was increased to 290 by the creation of seventy-six new peers. But this great and sudden addition to the peerage being considered as an unconstitutional exercise of the prerogative by Charles X., was declared null and void after his abdication; and in 1833 the number of peers, including five princes of the blood and several new creations, only amounted to 262. Louis XVIII. could by his prerogative convoke this chamber when that of the Deputies was not sitting. But this power was withheld in the new charter of 1830, excepting in the case of the chamber sitting as a court of justice; and on such occasions it is strictly confined to its judicial functions. No meeting of the chamber could take place except by an express order of the king; and it is convoked by his majesty at the same time as the Chamber of Deputies, the session of the one commencing and finishing at the same time with that of the other. A peer of France under the monarchy of the elder and junior Bourbons was admitted into the chamber at the age of twenty-five; but was not admitted to the exercise of any prerogative until he had completed his thirtieth year. The chamber under Louis XVIII., Charles X., and Louis Philippe took cognizance of high treason, and of all crimes committed against the security and peace of the state. Those who were members of the senate during Bonaparte's reign were created peers after his abdication, and their pensions of L.1500 a-year were confirmed. By an ordonnance of Louis XVIII, no person could be created a peer unless he possessed a certain entailed property in trust or in the funds, producing, in order to enable him to support the title of a duke, a clear income of 15,000 francs, or L.600 per annum; for the title of a marquis, 10,000 francs; and for viscounts and barons, 5000 francs. In order to exercise the privileges of a peer of France, double the amount of clear income is required.

Chamber of Deputies. The popular branch of the French legislature consisted under the monarchy, according to the original provisions of the charter, of 258 members, who were elected by a committee of voters (*collège électoral*), each paying direct taxes to the amount of L.40 per annum, and who were delegated to elect a deputy by a lower class of electors, whose qualification was the payment of L.12 per annum of direct taxes. One-fifth of the chamber was to be renewed every year; so that every five years the whole would be re-elected anew. In 1817 a law was passed abrogating the intermediate class of electors, and giving to all the voters the right of immediately electing the deputy; and in 1821 the plan of renewing the chamber by one-fifth at a time was also abrogated, and a law was passed for dissolving and re-electing the whole assembly at once. In 1831 a new electoral law was passed, reducing the qualification of the electors to 200 francs (L.8, 6s. 8d.), and also the age from thirty to twenty-five years, and reducing the qualification of deputies from forty to thirty years of age, and the pecuniary qualification from 1000 to 500 francs. It was estimated, that by thus lowering the pecuniary qualification of electors, the number would be increased from 100,000 to 190,000. (See HISTORY OF FRANCE.)

The French Chamber of Deputies under the monarchy consisted of 430 members, chosen for 86 departments. The original charter of Louis XVIII. assigned to the monarch the exclusive right of proposing all public measures; and it was necessary in proposing any new law to move an address to his majesty, praying that it might be presented to the chamber for its adoption. The charter of 1830 dispensed with this form, and gave the right of initiating laws to all the branches of the legislature, with the exception of taxation bills, which originated with the representatives of the people. When the session commenced under the monarchy, *bureaux*, or special committees, nine in number, were formed, and were periodically renewed; and when any new law was presented to the chamber on the part of the king, it was referred in the first instance to these special committees; if the law was approved by two or more of them, it was reported by the chamber, when the principle of the measure was discussed by the chamber, and the clauses voted article by article. The decision of the *bureaux* was reported by the chairman or *rapporteur* to the whole chamber; which frequently pronounced an opposite decision. The special clauses of a law were voted by *assis et levée*; those who are for the law, the *ayes*, rising, and those who are against the law, the *noes*, keeping their places. The vote on the whole measure was by secret scrutiny, the ayes being indicated by white balls, and the noes by black ones, thrown into an urn placed on the tribune of the chamber. The sittings of the chamber were, under Louis XVIII., Charles X., Louis Philippe, and the Republic, public; but on the demand of any five members, all strangers were excluded. No deputy could be arrested for debt during the sitting of the chamber, nor within six weeks previous to its assembling, or six weeks subsequent to its prorogation in the time of the monarchy; and if arrested at any other period, he must be liberated during the session; nor could any deputy be arrested or prosecuted for a criminal charge, except he were detected in the act, unless by permission of the chamber. It will be remembered (see HISTORY) that the Duke de Praslin was not arrested by the police. The senators of Bonaparte received each a salary of 10,000 francs per annum. The deputies to the chamber received no salary under the monarchy. The president, the secretaries, and the officers attached to the chambers, such as *questeurs*, *huissiers*, &c., were the only persons paid. The salary of the president was, under the elder Bourbons, 100,000 francs per annum, besides a furnished hotel, horses, equipage, &c. But it was reduced to 4000 francs per month, payable only during the session in the reign of Louis Philippe.

Executive government. The executive department of the government was administered by the king and his cabinet council, consisting of nine ministers, viz.—

1. The minister of finance, whose business it was to receive the taxes from the receivers-general, and all the other revenues of government. He disbursed, and still disburses the payments for the other departments of the state, for the interest of the public debt, and all pensions, &c. To this ministry are attached certain other offices, the chiefs of which are called directors; namely, directors-general of taxes, customs, registries and domains, ports, woods and forests, and the mint. The salary of the minister of finance was reduced by the Chamber of Deputies under Charles X. in 1828, from 150,000 to 120,000 francs per annum; and the salaries of the directors vary from 40,000 to 50,000 francs per annum. The revenue was under the monarchy, and is still, conveyed to the treasury through various subordinate offices. There is a *percepteur* or collector in each commune, who pays his collections to the special receiver for each arrondissement, who transmits the revenue to the general receiver of taxes for the department, by whom it is, lastly, remitted to the office of the finance minister.

2. The minister of the interior. This minister was, under the monarchy, and still is under the empire, one of the most important, if not the most important of the functionaries of the state. He is in direct correspondence with all the civil authorities of the kingdom; no local tax can be imposed, nor any disbursements made, in any of the departments, districts, or communes, without his authority. The general police of the kingdom, with all its various details, is under his superintendence; besides poor-houses, charities, and hospitals, the national guard of France, the censorship of the theatre, the royal institute, the public libraries and government archives, the examination of all passports, and all reports from prefects and sub-prefects of departments. He takes cognizance also of the press. He has directors under him, who relieve him from the trouble of details. His salary is 120,000 francs, and there are at least 204,000 officials under his orders.

3. Minister of justice and keeper of the seals. He is at the head of the law department, though he seldom presides in any court of justice. He corresponds with the law officers of the crown throughout France, and takes cognizance of all cases of criminals after conviction, and of all applications for royal mercy. There are more than 30,000 officials under his orders. His salary is 120,000 francs.

4. Minister of marine, who has the direction of the navy and the colonies of France. The dockyards and maritime prefects are under his authority; 10,000 workmen and mechanics are employed in the building or repairing of ships, under about 400 *maitres entretenues*. The colonial affairs of the empire are also under the supervision of this minister. His salary is 20,000 francs.

5. Minister of foreign affairs. His duties are expressed in his designation. All passports to cross the frontiers must be nominally countersigned by him. His salary is 150,000 francs.

6. Minister of war. He superintends of course the whole service of the army. He has also the sole control of the gunpowder and saltpetre manufactories, barracks, military hospitals, &c., and the government founderies and manufactories of small arms. He has also the charge of organizing and inspecting the corps of gendarmerie of Paris, as well as in all the departments. Salary 120,000 francs.

7. Minister of ecclesiastical affairs.[1] His salary is 120,000 francs.

8. Minister of public instruction. His functions are strictly con-

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[1] The ministry of ecclesiastical affairs was suppressed in 1829, and the duties were transferred to the minister of public instruction. Under the elder Bourbons the minister of ecclesiastical affairs was in direct correspondence with the court of Rome. He then published all briefs, bulls, &c., nominated all archbishops, bishops, and other clerical functionaries, and had the administration of the expenses of cathedrals, churches, &c.

fined to secular education. He nominates the different functionaries in the public academies and faculties, authorizes the opening of private boarding-schools for both sexes, and regulates the works to be used in these seminaries; he grants diplomas in law and medicine, superintends the receipts of colleges, fixes the pensions of retired functionaries, grants aids and indemnities to collegiate corporations, and generally takes cognizance of all institutions for public instruction. He has now a superior or imperial council of public instruction. His salary is 100,000 francs.

9. Minister of commerce and manufactures. This is a new office, of which the business partly belonged to the minister of finance and the minister of the interior. In 1829 the minister of commerce was suppressed, and the business was transferred to the home office. In 1830 a ministry of public works was created. The minister of commerce corresponds with the chambers of commerce; nominates exchange-brokers, with the exception of those in Paris, who are nominated by the minister of finance; examines all demands made for the establishment of assurance offices, their rules and regulations; grants patents for inventions; establishes or suppresses fairs or markets; decides on the qualifications of candidates for the office of judge in any of the commercial courts; and has an especial jurisdiction over all that may promote the prosperity of commerce and manufactures. His salary is 120,000 francs.

Besides these cabinet ministers, the Bourbons had a privy council, the members of which were seldom summoned, the public business being entirely managed by the cabinet council.

Under the last monarchy each of these ministers presented to the Chamber of Deputies his own budget of expenses, which was examined by a committee specially appointed for the purpose. It was competent for these committees to propose a reduction in the items of these ministerial budgets, which might be adopted by the chamber. After these various budgets had been considered and discussed, the general account of the national expenditure was considered and put to the vote.

The council of state.

Ministers of state were nominal functionaries under the monarchy, and the appointments were generally given to retired cabinet ministers, as a reward for past services. The pension was formerly 20,000 francs per annum, but after the revolution of 1830 it was restricted to 12,000 francs a-year.

The council of state was a favourite institution of the Emperor Napoleon, and under the consulate and the empire he loaded it with administrative business. Sometimes he used it to control the acts of his ministers, and generally he submitted to it the most delicate and thorny affairs of his government. The first restoration reconstituted the council of state by royal ordonnance of the 29th June 1814. The peculiar organization then given to it was suppressed in the Hundred Days, and again re-established by the second restoration on the 23d August 1815. After the revolution of 1830 seven projects of law were submitted to the Chambers with a view to improve the council of state. The seventh alone was discussed, and carried in the session of 1845. It had scarcely been more than put into execution before the revolution of February broke out. The provisional government commenced by reducing the number of councillors of state from thirty to twenty-five. It attached great importance, however, to the council of state, a whole chapter being dedicated to that subject in the republican constitution. The imperial decree of the 25th January 1852 has definitively regulated the council of state, rendering its functions among the most important in the empire, imposing on it the preparation of all projects of law, and the sustaining of those projects before the legislative body. The council of state is necessarily called upon to give its opinion upon all decrees concerning the public administration.

The council of state now (1855) consists of a president and vice-president, of from forty to fifty councillors of state in ordinary service, of councillors of state out of particular sections, whose number cannot exceed fifteen; of councillors of state in extraordinary service, whose number cannot exceed twenty; forty *maîtres des requêtes* divided into two classes of twenty each; a general secretary having the title and rank of a *maîtres des requêtes.* The ministers have their rank, seats, and voice in the council of state, and the members are named by the emperor. Neither councillors of state nor masters of requests can be senators or deputies of the legislative corps, their functions being incompatible with all other salaried functions. The councillors of state on actual or ordinary service received under the monarchy a salary of 12,000 francs a-year, a deduction being made if they enjoyed any other situation of emolument under government. To the council of state are attached the *maîtres de requêtes,* appointed likewise for ordinary and extraordinary service, but some are merely honorary. Their business is to draw up all acts of council, for which they receive a salary of 6000 francs a-year. The office of *maître de requêtes* was considered as the first step towards the rank of councillor of state.

Audit office.

Audit office, or *cour des comptes.* It is the business of this court to receive and examine all the accounts of the different ministers, and those of the receivers-general and prefects of the departments; and to certify the correctness of the general accounts published every year by the minister of finance. The ordinary business of this court was under the monarchy managed by three chambers, each having a president; and there was then also a chief president, who sat when these chambers were united; but a fourth temporary chamber was instituted by decree of 15th January 1852. There is also a councillor of reference in each chamber (*reférendaire*), whose duty is the verification of the accounts; also a procureur-general, whose office corresponds to that of solicitor of some of the public offices in England, and who sees that all the necessary accounts are delivered into this office within the period fixed by law, and who, in case of neglect, proceeds against the offending parties for the penalties they have incurred. There is likewise a chief registrar, in whose custody remain all the accounts and vouchers transmitted to his office. The court is composed of a first president, 3 presidents, 18 *conseillers, maître de comptes,* 80 *conseillers referendaires,* in all 103 magistrates. The whole court meets every three months in public to go over the accounts of the three preceding months.

Revenue of the king.

The revenue of the king, or the civil list, in the time of the monarchy, was fixed at the restoration, by the budget of 1814, at 15,510,000 francs per annum; and a further grant was made to the other branches of the royal family of 4,000,000 a-year. By the budget of 1816 the income of the king was augmented to 30,000,000; but at the accession of Charles X. it was fixed at 25,000,000, whilst the allowances to the other branches of the royal family were increased to 7,000,000 a-year.

The royal household, as it was designated, included the following appointments:

Lord steward (grand maître)	140,000 fr.
One maître d'hôtel	40,000
Four chamberlains of the household	40,000
Nine stewards	72,000
Four under stewards	20,000
Four cooks	12,000
Chief purveyor of fish	3,000
Ten assistants	20,000
Wine	172,000
Kitchen consumption	585,000
Charcoal	65,000
Other expenses, 528,700	1,697,700 fr.
In the department of the king's chamberlain the expenses amounted to	988,000

There were, besides, thirteen palaces, each with a separate and expensive establishment; a large sum was annually paid in pensions; and, under the heads of music, the wardrobe, medical establishment, stables, the annual disbursements amounted to between two and three millions of francs. The support of the magnificent manufactory of porcelain at Sèvres, and the manufactory of tapestry at Gobelins in Paris, cost a large annual sum; the expenses connected with the *garde meuble,* where the crown jewels and royal insignia were kept, and the expense of coining medals, were considerable; the establishments for the support of the museum of painting and sculpture at Paris amounted to nearly 3,000,000 of francs a-year; an annual sum of 80,000 francs was allowed for the support of the Italian opera, and a sum of 45,000 francs for the encouragement of sacred music. After the revolution of 1830, the civil list of Louis Philippe was settled in 1832; and in fixing his allowances the Chamber had two matters to deal with; the royal domains, which had hitherto been appendages of the crown, and the money-grant of an annual allowance. The real property of the crown consisted of the Louvre; the Tuileries with their dependencies; the Elysée Bourbon; the chateaux, houses, buildings, manufactories, lands, meadows, farms, woods and forests, composing the domains of Versailles; Marly; Saint Cloud; Meudon; St Germain-en-Laye; Rambouillet; Compiegne; Fountainebleau; Strasbourg; Bordeaux; Pau, and others. Of these, the chateau of St Germain-en-Laye, and those of Strasbourg and Bordeaux, with several other items, amounting to L.626,000, were taken from the crown, and made applicable to the purposes of the state. The money allowance to the king was fixed at 12,000,000 of francs, or L.480,000 per annum; and the annual sum of 1,000,000 francs, or L.40,000, was allowed to the prince royal; and the allowances to the daughters were regulated by special laws.

Imperial government.

The imperial government of France is based on the sovereignty of the people and the great principles of 1789. The title of the chief of the state is Emperor of the French by the grace of God and the national will.[1] The crown is hereditary in the male line only, and by right of primogeniture. The members of the imperial family are alone eligible to the throne. The emperor exercises legislative power conjointly with the senate, the legislative body, and the council of state. The emperor is alone invested with the executive power, is completely independent of great state functionaries, and enjoys all the prerogatives pertaining to sovereign power. The members of the legislative body, as well as the councils general and of arrondissements, are said to be named by direct universal suffrage. The emperor is responsible to the French people. He is chief of the state; commands the land and sea forces; declares war; makes treaties of peace, alliance, and commerce; nominates to all employments; and alone initiates the laws. The ministers depend on the chief of the state. They, as well as all persons employed by the state, take an oath of obedience to the constitution and of fidelity to the emperor. The senate, whose number shall not exceed 150, is composed of cardinals, marshals, admirals, citizens, &c., named by the emperor. The dignity is for life.[2]

The constitution was modified by a *senatus-consulte* of 23d December 1852, by which it was decreed that the emperor has the right to pardon and to grant amnesties; and, when he thinks fit, to preside over the senate and council of state. It was also decreed that treaties of commerce have the force of law with respect to modifications of tariff therein stipulated. All works of public utility are ordered by the emperor. The ministerial departments under the Emperor Louis Napoleon amount to nine, namely, the minister of state and of the household of the emperor; the ministers of justice; of foreign affairs; of finance; of the interior; of war; of marine and the colonies; of agriculture, commerce, and public works; and of religion and public instruction.

Provincial government.

The system of provincial government throughout France is simple and effective. The kingdom is at present divided into 86 departments, with their capital towns. These departments are subdivided into 363 arrondissements or districts, 2847 cantons, and 36,835 communes. In each department the prefect is the chief magistrate, and, as well as the sub-prefect, is paid by government in proportion to the population and the extent of his jurisdiction, the salary varying from 40,000 to 10,000 francs a-year, whilst that of the sub-prefect is 4000 francs. The prefect of the department of the Seine has 100,000 francs a-year.

Councillors of prefecture.

To each prefecture and sub-prefecture are attached councillors (*conseillers de préfecture*, and *conseillers d'arrondissement*), who are likewise paid by government; and each has, besides, a general council, composed of the most opulent and respectable persons in the department, appointed by the king, which he convokes when necessary; and before this council he lays all public matters for its approbation. He is at the head of the police and of the national guard within his prefecture. It is his business to superintend all necessary repairs of public buildings, bridges, fortresses, walls of towns, &c.; to direct the cleaning and paving of streets and highroads; to inspect ports, quays, common sewers, poor-houses, &c. He superintends public libraries, museums, primary schools; fixes the price of bread; and grants passports. He is in correspondence with all the subordinate functionaries in his department, as well as with the minister of the interior, from whom he receives instructions to settle the question of all general taxes, and to provide for the public expenses of the department. He receives the produce of the *octroi*, a custom-duty levied on all articles of general consumption as they enter the town; and of all the rents of government entrepôts; of stalls and shambles in public markets; of slaughter-houses; of the proceeds from the sale of manure; as well as fines of police, and other imposts. One-tenth only of the octroi was under the monarchy paid to the government; and out of the remainder, and from other funds, was defrayed all the local expenses of police, lighting and cleaning streets. All the accounts are transmitted to the minister of the interior, who sends them to the *cour des comptes*. The functions of a sub-prefect are the same as those of a prefect. A *juge de paix* is at the head of every canton, who has also similar duties, and is, besides, employed in deciding civil suits to a certain amount. The mayors of the communes possess similar powers to those of the prefects of departments; and their receipts and expenses are provided for in a similar manner. In case of their requiring any extra funds for local expenses, they have the authority of the legislature to raise a contribution called *centimes communaux* from the inhabitants of the commune. To the office of mayor are attached municipal councillors, who have the same functions as the general council of the prefecture. The mayor may celebrate marriages, and at the *mairie* of the commune a marriage register is kept, as well as one of births and deaths; a notice of which the relatives of the parties are obliged to deposit at the office of the mayor, under a penalty of a fine in case of neglect. There is in every town a commissary of police, who is paid according to its population. Paris is divided into twelve *mairies*, called municipal arrondissements, in each of which is a mayor with two assistants. It is also distinguished from all other cities by having a prefect of police, who has very extensive functions, exercising all the multifarious duties of police within its precincts, having under his immediate orders the whole corps of police officers, the 48 commissaries of police belonging to Paris, and the corps of firemen.

Legion of Honour.

The most comprehensive, though the least ancient order, is that of the *Legion d'Honneur;* an order instituted by Bonaparte, and maintained on nearly the same plan by the Bourbons. The usual title to admission is the discharge of functions, either civil or military, with distinction; and, in time of war, the performance of an action of eclat. The gradations are, *chevaliers*, of whom the number is unlimited, and very great; *officiers*, who amount to no more than 2300; *commandeurs, grand officiers*, and *grand croix*. A member must serve several years as a chevalier before becoming an officer, and the same progressively through the other ranks. Admissions take place once, and frequently twice, a-year; a specific number being allotted to each great department of the public service, the military, the judicial, and the administrative.

The other orders under the monarchy were, that of St Louis, which is strictly military; that of St Michel, which dates from 1469, is limited to a hundred members, and is conferred as a recompense for distinction in science, literature, or the arts. Eminent professional men and artists, and the authors of discoveries of public utility, constitute the members of this order. The order *du St Esprit*, created in 1578, and of the very highest rank, comprised princes of the blood, prelates, and members of the order of St Michel; the whole being limited to the number of a hundred.

XIV. LAW, AND ADMINISTRATION OF JUSTICE.

In this great department France shows nothing of the backwardness apparent in her situation in many other respects, but is entitled to the particular attention of other nations, and of none more than our own. Law does not rest on tradition, nor is it necessary to study it in a never-ending accumulation of decisions. It is reduced to a compact and definite form, the result of a code formed recently, and with all the benefit of the application of the knowledge of an enlightened age to the principles of jurisprudence. Nothing could be more heterogeneous than the administration of justice in France before the revolution. The first stage of a process took place before judges appointed, not by the king, but by the *seigneur* or lord of the district. These judges had power to impose a fine, to decree a short imprisonment or other correctional punishment, and to give, in a civil suit, a decision subject to appeal. The *seneschals* and *baillis* ranked a degree higher, and were entitled to give a verdict in cases of importance, subject, however, to an appeal to one or other of the parliaments, of which there were in all thirteen in France; and which, very different from the parliaments with which we are familiar, were composed of judges and public officers of rank. The whole of this inharmonious mass was reduced into a simple and uniform system by the National Assembly, in 1791. Indeed, on the famous night of the 4th August 1789, seignoral and ecclesiastical judges may be said to have been buried in the ruins of feudal institutions, and on the 24th August 1790 a system entirely new, and founded on the territorial division of the country, was instituted. The seignoral judges were replaced by justices of the peace, and every district of importance (*arrondissement*) obtained its court, or *tribunal de première instance.* The higher courts were not added till afterwards, but the judges of every description were elected by the inhabitants of the province, a right which continued with them until the rule of Bonaparte.

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[1] Preamble of the Constitution of 1852.

[2] *Moniteur Universel*, 15th January 1852.

Different codes.

But there remained for the National Assembly another and a much more laborious work. Each province had its peculiar code, or *coutoumier*, some founded on the Roman law, others on tradition and local custom, but the whole replete with ambiguity and discrepancy. To digest a complete body of law, that might suffice for the country at large, and supersede the provincial codes, was the labour of many years, and of a number of eminent lawyers. It was not completed until the beginning of the present century, when it was promulgated under Bonaparte, and gave to the jurisprudence and judicial constitution of France nearly the form they at present bear. This body of law consisted of five codes, entitled respectively, 1. *Code Civil;* 2. *Code de Procédure Civile;* 3. *Code de Commerce;* 4. *Code d'Instruction Criminelle;* 5. *Code Pénal.* To these have been added the *Code Forestier*, the *Loi relative à la Peche Fluviale*, and other laws too numerous to mention here. A *Code Administratif* (in which, however, some progress has been made since the work of Cormenin), a *Code Militaire*, and a *Code Maritime* are still wanting. The five codes were the result of the deliberations of the most eminent jurisconsults, in which Napoleon himself took part, and aided the men of science by his genius, his vast experience, and intuitive sagacity.

The *Code Civil*, the first and by far the most comprehensive of these divisions, defines the rights of persons in their various capacities of citizens, parents, sons, daughters, guardians, minors, married, unmarried. It next treats of property in its respective modes of acquisition and possession, as inheritances, marriage portions, sales, leases, loans, bonds, and mortgages.

The *Code de Procédure Civile* prescribes the manner of proceeding before the different courts of justice, beginning with the *juge de paix;* also the mode of carrying into effect sentences, whether for the payment of damages, the distraining of goods, or the imprisoning of the party condemned. It declares likewise the course to be followed in transactions distinct from those of the law courts; as in arbitration, taking possession of an inheritance, or a separation of property between man and wife.

The *Code de Commerce* begins by defining the duties of certain officers or commercial agents, such as sworn brokers and appraisers: it next treats of partnerships; of sales and purchases; of bills of exchange; of shipping, freight, and insurance; of temporary suspensions of payment, and bankruptcies.

The *Code d'Instruction Criminelle* explains the duties of all public officers connected with the judicial police, whether mayors, assistants of mayors (*adjoints*), *procureurs du roi*, *juges d'instruction*, &c. After prescribing the rules regarding evidence, it regulates the manner of appointing juries, and the questions which fall within their competency. Its further dispositions relate to the mode and nature of appeals, and to the very unpopular courts authorized to try state offences, termed *Cours Speciales* under Bonaparte, and *Cours Prévotales* under the Bourbons.

The *Code Pénal* describes the punishment awarded for offences in all the variety of gradation, from the penalties of the *police correctionnelle* to the severest sentence of the law. All offences are classed under two general heads; state offences, such as counterfeiting coin, resisting police officers, sedition, rebellion; and offences against individuals, as calumny, false evidence, manslaughter, murder.

These codes, the first attempt to reduce the laws of a great nation to the compass of a volume, consist of a number of sections and short paragraphs, each paragraph marked by a number, as a means of reference. The style is as concise as is compatible with clearness. The arrangement is minute and elaborate. The whole, together with the *Code Forestier* and the *Code de la Pèche Fluviale*, the work of the restoration, are sold for a few shillings, in the shape of an octavo or of two duodecimo volumes; and copies of it are in the possession, not only of all judges, pleaders, and attorneys, but of agents, merchants, and persons in business generally, who, without being enabled by it to dispense with the aid of lawyers in a suit, find in it a variety of useful explanations relative to questions of frequent occurrence in their respective occupations.

Juges de Paix.

The *juges de paix* are very numerous, there being one for each canton, and consequently nearly three thousand in the kingdom. They never are, as in England, clergymen, and seldom country gentlemen, but persons acquainted with law, and in circumstances which make the salary, small as it is (from L.30 to L.40), an acceptable return for a portion of their time. They are sometimes provincial attorneys, or *avocats* retired from business. The *juge de paix* is authorized to pronounce finally under fifty francs, or L.2; and in questions of greater amount up to a hundred francs, to give a decision subject to appeal. He takes cognizance likewise of disputes about tenants' repairs, servants' wages, and the displacing of the landmarks of property. No action can be brought before a court of justice in France until the plaintiff has summoned his adversary before a *juge de paix*, with an amicable intent (*cité en conciliation*), and received from the *juge* a *procès verbal*, showing that the difference could not be adjusted. The number of *juges de paix* is about 3000, and their salaries amount to about two and a half millions of francs.

Primary courts.

Of the *Primary Courts* there is one for every arrondissement, making above three hundred and sixty for the whole of France. Each is composed of three or four members, of two or three *suppléans*, or assistant members, and of a *procureur du roi* acting on the part of the crown. In populous districts, *cours première instance* comprehend six, seven, eight, or more members, and are divided into two or three chambers. They are chiefly occupied with questions of civil law, and hold, in the extent of their jurisdiction, a medium between the limits of the *juge de paix* and the large powers of the *cour royale;* their decisions being final wherever the income from a property does not exceed forty shillings, or the principal forty pounds, but subject in greater matters to an appeal to the *cour royale.* The members of these inferior courts are named, like other judges, by the crown, and hold their places for life; the salary of each is only L.80 a-year; their number throughout all France, including *suppléans procureurs-genéraux*, is about 4300, and their salaries, in round numbers, amount to 6,000,000 francs.

A section of the *Tribunal de Première Instance* is appropriated to the trial of offences, under the name of *Tribunal de Police Correctionelle;* and here the English reader must be careful to distinguish between judicial and government police; the former having no reference to state offences, such as libel or treason, but comprehending a very numerous list of another kind, viz. all offences which do not amount to crimes, or subject the offender to a punishment *afflictif ou infamant.* These offences, when slight, are called *contravensions de police*, and are brought before a *juge de paix*, or the mayor of the commune; when of a graver stamp, and requiring a punishment exceeding five days' imprisonment, or a fine of fifteen francs, they are brought before the court now mentioned, whose sentences, in point of imprisonment, may extend to the term of five years. The trespasses brought before a justice of the peace or mayor are such as damaging standing corn, driving incautiously in the highway, endangering a neighbour's property by neglecting repairs. The offences referred to the *Tribunal Correctionnel* are such as assault and battery, swindling, privately stealing, using false weights or measures, &c.

Cours royales.

We now come to the higher courts of justice, which equal in jurisdiction our courts in Westminster Hall and on the circuit, but with the material distinction, that in France the civil courts are always stationary. The *Cours Royales*, in number twenty-seven, are attached to the chief provincial towns throughout the kingdom. They are all formed on the same model, and possessed of equal power, though differing materially in extent of business and number of members. The number of the latter depends on the population of the tract of country (generally three departments) subject to the jurisdiction of the court. In a populous quarter, like Normandy, a *cour royale* comprehends twenty, twenty-five, or even thirty judges, and is divided into three or four chambers, of which one performs the duty of an English grand jury, in deciding on the bills of indictment (*mises en accusation*); another is for the trial of offences (*police correctionnelle*); and a third, with perhaps a fourth, is for civil suits. These courts are often called *Cours d'Appel*, as all the cases which come before them must have been previously tried by an inferior court. The collective number of judges in these higher courts is not short of twelve hundred; an aggregate hardly credible to an English reader, and which would prove a very serious charge on the public purse, were not their salaries very moderate, viz. from L.100 to L.300 a-year, according to the population of the town where the court is held. In the financial pressure of 1816 and 1817, a reduction of this numerous body was much called for; but no diminution was made in the number of the courts, whatever gradual decrease may be allowed to take place in the members from decease or retirement. The salaries of these 1200 magistrates do not annually exceed five millions of francs.

Paris does not, like London and Edinburgh, absorb almost all the civil business of the country. It has, it is true, a *cour royale* on a large scale (five chambers and fifty judges), but confined in its jurisdiction to the metropolis and the seven adjacent departments. There is a *procureur du roi* for every *tribunal de première instance*, and a *procureur general* for every *cour d'appel*.

Assize courts.

The assize courts take cognisance exclusively of criminal cases; that is, of the crimes or serious offences referred to them by the *cours royales*. They consist, since 1837, in the departments where a court of appeal is situated, of three judges, members of the *cours royales*, but never belonging to the section that finds the indictments. The grand accompaniment of a French assize court is a jury, which, as in England, consists of twelve members, and decides on the facts of the case, leaving the application of the law to the judges. Complete unanimity was at no time necessary in a French jury. At first a majority of ten to two was required; but this was subsequently altered, in 1835, to a simple majority, with the qualification that, in case of condemnation by only two voices (seven to five), the verdict should be re-considered by the judges, and the party acquitted, if, on taking judges and jurymen collectively, there was a majority in his favour. The assizes are the only courts that are not stationary. They are generally held in the chief town of a department once in three months. The costs of suit are exactly defined by a printed *tarif*; and it is a rule in criminal as in civil cases, that the party condemned is liable in all expenses.

Cours spéciales.

The *special courts* were constituted out of the usual course for the trial of state offences. The *cours spéciales* were appointed by Bonaparte, the *prévotales* during the period of political effervescence (fortunately short-lived) which succeeded the second entry of the king, and the misfortunes brought on the nation by Bonaparte's return frm Elba. In both cases the courts were considered as under the influence of government, and were of course obnoxious to the enlightened part of the public. The *prévotal courts* established in 1815 were abolished in 1818.

Tribunaux de commerce.

The name of *tribunal*, or court, is given in France to a committee of five merchants, or leading tradesmen, appointed by the mercantile body in every town of considerable business or population. Their competency extends to all disputes occurring in mercantile business, and falling within the provisions of the *code de commerce*. Their decisions are founded on that code, and on the customs of merchants. They are final in all cases below L.40. The presence of three members is necessary to form a court. The duty is performed gratuitously. There are about 220 special tribunals of commerce in France. The number of commercial affairs decided between 1846 and 1850 amounted to 201,207. The tribunal of commerce of the Seine determines about 50,000 commercial causes a-year. Lyon, in round numbers, 10,000; Rouen, 5000; Marseilles, 5000; Bordeaux, 3500.

Cour de cassation.

The *court of cassation*, the highest in the kingdom, is held at Paris, and is composed of three chambers, each of fifteen members and a president, making, with the *premier president*, a *procureur-général*, and six *avocats-généraux*, a total of fifty-two. The three chambers are called *chambre des requêtes, chambre de cassation civile*, and *chambre de cassation criminelle*. Its province is to decide definitively in all appeals from the decrees of the *cours royales*; investigating not the facts of the case, but the forms of law, and ordering, wherever these have been infringed or deviated from, a new trial before another *cour royale*. This revision takes place in criminal as well as in civil cases. The royal court chosen for the new trial is generally, for the convenience of the parties, the nearest in situation to the other. The *cour de cassation* has farther powers, and of the highest kind. It determines all differences as to jurisdiction between one court and another, and exercises a control over every court in the kingdom. It has power to call the judges to account before the minister of justice, and even to suspend them from their functions; acting thus as a high tribunal for the maintenance of the established order of judicature.

Ministry of justice.

The minister bearing the title of keeper of the seals and minister of justice may be compared to the chancellor of England, though his patronage is much less extensive, and his functions much more suitable to the station of minister. He rarely acts as a judge, but exercises a general superintendence over the judicial body. He is the medium between the head of the state and the courts of justice, in the same way as the minister of the home department in regard to the civil authorities. The expenses of the judicial body fall under his cognizance. The *procureurs-généraux* and *procureurs du roi* throughout the kingdom address their correspondence to him; and it is his province to report to the king on the alleviation of punishment, or pardons; in short, on all disputed points, whether of legislation or administration.

Juries.

Juries were introduced into France soon after the first revolution in 1789, and confined at first to criminal trials. After the revolution of 1830 all cases of libels were tried in the courts of assize by a jury. During several years there were in France grand juries constituted as in England; but under Bonaparte their functions were transferred to the *cours royales*, on the plea that none but judges could be made to understand the difference between bringing to trial and bringing to punishment; and that the consequence frequently was a discharge, when a true bill ought to have been found.

State of crime.

One of the chief improvements made by the French National Assembly was a general mitigation of the penal code, or rather the substitution of punishments likely to be enforced, for others of such severity as in general to put their application out of the question. Stealing privately in a dwelling-house was formerly punishable in France by the rack and death; an extreme which prevented respectable persons from bringing delinquents before a court, and thus tended to the increase of crime.

There still exists in France the singular practice of parties engaged in a law-suit visiting the judges in private; a practice originating in an age when suitors thought a personal interview the only effectual mode of explaining their case, and continued in more enlightened times from that over-complaisance which is the groundwork of several of the defects of the national character. Such interviews are little else than an exchange of compliments; nor have the judges ever been charged with acting under the influence of such *ex parte* statements.

The salaries of French judges must appear insignificant to an English reader; but there are in that country many men of small patrimony and good education who are disinclined to the exercise of trade or professions, but attach much importance to government employment; moreover, the functions of judges and of public officers in France engross much less time than in England.

The law style of the French is much more brief than ours; their deeds, such as leases, mortgages, and sales, being generally contained in a very few pages, and free from obscure or antiquated phraseology.

Prior to the year 1825 there existed in France no authentic documents respecting the administration of criminal justice in France; and in order to know the nature and the number of the crimes committed during the preceding years, it would have been necessary to look back into the records of every prefecture throughout the country; and such a work, besides its extreme difficulty, would have been too incomplete to be of any utility.[1] Within the last quarter of a century, however, the statistics of crime and of criminal justice in France have been made familiar to the world by a series of official reports, in which the details of the criminal calendars throughout France are brought together and perspicuously arranged. In these reports, the crimes and offences brought under consideration are divided into three great branches: the first relating to such crimes as are tried before the courts of assize, with the assistance of a jury: the second to offences of minor importance, decided by correctional tribunals; and the third to such as are disposed of by the ordinary magistrates of police. Of 6962 persons tried in the courts of assize in the year 1830, 3910 were for crimes against property, and 1158 for crimes against the person. The proportion between the number of persons judicially accused of offences, and the general population of the kingdom was, in 1829, as one in 4321; and in 1830, as one in 4576. Of the 6962 brought to trial in 1830, 5608 were men, and 1354 were women. There were 5440 accusations brought before the courts of assize in 1853, affecting 7317 persons. Of these 2403 were for crimes against the person, and 4914 for crimes against property. If the number of accused persons in 1853 be compared with those of the two preceding years, a gradual diminution appears in the number accused of crimes against the person. In 1851 the number accused was 2773. In 1852 the number was reduced to 2487, and in 1853 to 2403. The number of crimes against property has on the contrary increased from year to year. From 4298 in 1851 the number increased to 4609 in 1852, and to 4914 in 1853.

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[1] See *Essai sur la Statistique Morale de la France*, par. A. M. Guerry, p. 5.

The accusations, in the mean, from 1831 to 1835, were 7466; for the next 5 years, to 1840, 7885; and from 1840 to 1845, 7209. Of 7195 accused, 2031 were for crimes against the person, and 5164 for crimes against property, and 5898 were men, 1297 women. The proportion of persons criminally accused is generally 1 in 4500; the mean for 19 years being 1 to 4445. On 5000 condemned in each of four years, the following were the sentences:—

Death	50	42	50	51
Perpetual hard labour	178	174	196	209
Limited term	930	918	929	961
Seclusion	875	858	905	827
Banishment	1	0	0	0
Imprisonment	11	0	0	0
Civil degradation	1	1	1	0
Correctional penalties	2946	2682	2777	2825
Correctional detention	24	27	26	29
	5016	4702	4884	4902

Of 100 accused, about 30 are acquitted. Most of the accused are illiterate, the women especially. Before 1840 there were 56 in 100 who could not read; after 1844 the number fell to 52. Between 1846 and 1850 crime augmented considerably, especially crimes of a heinous character.

The public peace is maintained by an armed police, or *gendarmerie*, partly on foot and partly mounted; and in all emergencies, when this force is found insufficient for the preservation or execution of the laws, the national guards and troops of the line may be called in to assist, being, however, subject to the orders of the police.

In France, the prisons, which constitute an important department of the criminal police, are under the special direction of the minister of the interior. His delegates are the prefects; and the jailors or governors of the prisons are called directors. In every city containing a prison there is an inspector-general, who attends to the proper distribution of the provisions, and sees that they are of good quality; he daily visits the prisons, listens to the complaints of the prisoners, and attends to their comforts. The departmental prisons are for the confinement of debtors, for persons to be brought to trial for crimes, and for those who are condemned to imprisonment for a shorter period than a year. The annual expense of these prisons makes part of the budget of the minister of the interior. The other prisons (*maisons centrales*) are nineteen, for the confinement of prisoners whose sentence is for a longer term than a year.

It is estimated that during the last thirty years the mere building of prisons in France has cost more than 60,000,000 francs, and that the maintenance of these prisons has cost annually 12,000,000 fr., including the support of 100,000 *détenus* of all categories of crime. More than 4,000,000 francs has been annually paid for the expenses of prosecutions, and a like sum for the expense of police and surveillance. Labour was carried on in the prisons of France antecedently to the revolution of 1848, though several complaints were made of the rivalry thereby encouraged with legitimate trade. For instance, the Chamber of Commerce of Troyes complained to the minister of the interior of the ruinous rivalry produced by the prison labour of the *Maison Centrale of Clairvaux*, where 2000 *détenus* were confined, and chiefly employed in the fabrication of *bonneterie*. In the *Maison Centrale* of Melun a great manufactory of ironmongery was established. In the penitentiary of St Germain they made hats and horn buttons; and a printing-office also was established, where, among other things, the *Moniteur* was cheaply reprinted. In 1848 the provisional government suspended prison labour, but this decree had no other effect than to throw the prison into disorder. By a law of the 9th January 1849, labour in prisons was under certain restrictions renewed. The average price of a day's work is fivepence. The labour of 11,865 men in the 21 *maisons centrales* of France has a value of 1,749,000 fr., that of 3457 women 400,000 fr., forming a total of 2,100,000 fr., a small sum when compared with the products of free labour. The produce of prison labour is thus divided:—Those condemned to *travauxforces* receive 3-10ths, the reclusionnaires 4-10ths, the correctionnels 5-10ths.

FRENCH WEIGHTS AND MEASURES.

The weights and measures of France were reduced, as is well known, to a very simple and uniform scale soon after the first revolution; but there has been much difficulty in accustoming the inhabitants, particularly in country districts, to the adoption of the new system, which unluckily preserved none of the names with which they were familiar. In 1812 a kind of compromise took place, government sanctioning the retention of the old names, such as pounds, ounces, ells, and bushels; but requiring that their contents should be calculated by a reference to the new standard. It is accordingly on this footing that business is now transacted in France. The new weights and measures are in general larger by a fraction than the old, and the use of the latter is prohibited by law.

The fundamental standard adopted in France for the metrical system of weights and measures, is a quadrant of the meridian; that is to say, the distance from the equator to the north pole. This quadrant is divided into ten millions of equal parts, and one of these parts or divisions is called a MÈTRE, which is adopted as the unit of length; and from it by decimal multiplication and division all the other measures are derived.

The length of this quadrant was ascertained by MM. Delambre and Méchain, by measuring an arc of the meridian between the parallels of Dunkirk and Barcelona, and has been found to contain 5,130,740 French toises, or 32,808,992 English feet. This number divided by ten millions gives 3·2808992 English feet, or 39·37079 English inches very nearly, for the true length of the French mètre.

In order to express the decimal proportions, the following vocabulary of names has been adopted:—

For multipliers the prefix DÉCA means 10 times.
... HECTO ... 100 times.
... KILO ... 1,000 times.
... MYRIA ... 10,000 times.
For divisors the prefix DÉCI expresses $\frac{1}{10}$th part.
... CENTI ... $\frac{1}{100}$th part.
... MILLI ... $\frac{1}{1000}$th part.

It may assist the memory to observe that the prefixes for multiplying are Greek, and those for dividing Latin; thus, décamètre means 10 mètres, and décimètre $\frac{1}{10}$th of a mètre; hectomètre means 100 mètres, and centimètre $\frac{1}{100}$th of a mètre; kilomètre means 1000 mètres, and millimètre $\frac{1}{1000}$th of a mètre. The mètre (as before stated) is the element or prime unit of long measure, and is equal to 39·37079 English inches.

The ARE, which is a square *décamètre* (or 100 square metres), is the elemental unit of square or superficial measure. It is equal to 119·6033 square yards, or very nearly $\frac{2}{81}$ parts of an acre.

The STÈRE, which is a cubic mètre, is the elemental unit of solid measure, and equal to 35·3166 cubic feet English, or nearly $35\frac{1}{3}$ cubic feet.

The LITRE, which is the cubic *décimètre*, is the elemental unit of all liquid measures, and of all other measures of capacity. It is equal to 61·02705 cubic inches, or is very nearly $\frac{11}{50}$ths or $\frac{22}{100}$ths of an imperial gallon.

Lastly, the GRAMME, which is the weight of a cubic centimètre of distilled water at its temperature of greatest condensation, is the elemental unit of all weights, and is equal to 15·4325 grains troy, or $\frac{13}{23}$ of an avoirdupois dram nearly.

Tables of French Weights and Measures, with their values in the English Imperial Standards.

LINEAL MEASURE.

	Inches.		
Millimètre =	·03937079		
Centimètre =	·3937079		
Décimètre =	3·937079		
	Feet.		
MÈTRE =	39·37079	= 1·093633	
		Yards.	
Décamètre =	32·80899	= 10·93633	
Hectomètre =	328·0899	= 109.3633	= $\frac{5}{80}$ mile.
Kilomètre =	3280·899	= 1093·633	= $\frac{18}{29}$ mile.
Miriamètre =	32808·99	= 10936·33	= $6\frac{3}{14}$ miles.

SUPERFICIAL MEASURE.

	Sq. Yards.	Sq. Feet.	Sq. Inches.
Centiare =	1·196033 =	10·7643	= 1550·059
Déciare =	11·96033 =		
		Acres.	Acre.
ARE =	119·6033 =	·0247114	= $\frac{1}{40}$ nearly.
Décare =	1196.033 =	·247114	= $\frac{1}{4}$ ...
Hectare =	11960·33 =	2·47114	= $2\frac{1}{2}$ ...
Killiare =	119603.9 =	24·7114	= $24\frac{7}{10}$ ...
Miriare =	1916033· =	247·114	= $247\frac{1}{9}$ ...

SOLID MEASURE.

	Cubic Inches.	Cubic Feet.	Cubic Yards.
Centistère =	610·2705 =		
Décistère =	6102·705 =	3·53166	
Stère =	61027·05 =	35·3166	= 1·30802
Décastère =	610270·5 =	353·166	= 13·0802

MEASURE OF CAPACITY.

	Cubic Inches.	
Centilitre =	·6182705	
Décilitre =	6·102705	
LITRE =	61·02705	= $\frac{11}{50}$ gallons nearly.
Décalitre =	610·2705	= $2\frac{1}{5}$ ...
Hectolitre =	6102·705	= 22 ...
Mirialitre =	61027·05	= $220\frac{1}{100}$ ...

MEASURE OF WEIGHT.

	Grains Troy.	
Centigramme =	·154325	
Décigramme =	1·54325	
GRAMME =	15·4325	
Décagramme =	154·325	= ·35275 oz. av.
Hectogramme =	1543·25	= 3·5275 oz. av.
Kilogramme =	15432·5	= 2·2047 lbs. av.
Miriagramme =	154325·	= 22·047 lbs. av.

The following are some near approximations to the values of the weights and measures of most frequent occurrence.

MÈTRE about.... 1 yard 3 inches.
DÉCAMÈTRE..... 11 yards.
HECTOMÈTRE... $\frac{1}{16}$ mile.
KILOMÈTRE..... $\frac{5}{8}$ or more nearly $\frac{18}{29}$ mile.

One of the old measures frequently used, the toise, is = 2 yards 5 inches.

ARE about........ $\frac{1}{40}$ acre.
DÉCARE.......... $\frac{1}{4}$ acre, or 1 rood.
HECTARE......... $2\frac{1}{2}$ acres.

DÉCISTÈRE...... $3\frac{1}{2}$ cubic feet.
STÈRE........... $1\frac{2}{3}$ cubic yards.
DECASTÈRE...... $13\frac{1}{10}$ cubic yards.

LITRE about..... $\frac{1}{5}$ or $\frac{11}{50}$ gallon.
DÉCALITRE...... $2\frac{1}{5}$ gallons.
HECTOLITRE.... 22 gallons, or $2\frac{3}{4}$ bushels.
MYRIALITRE.... $3\frac{1}{2}$ quarters.

GRAMME......... $\frac{5}{9}$ dram avoird.
DÉCAGRAMME... $\frac{1}{3}$ oz. avoird.
HECTOGRAMME. $3\frac{1}{2}$ oz.
KILOGRAMME... $2\frac{1}{5}$ lbs.
QUINTAL, or 100 Kilogrammes.. } is $3\frac{1}{2}$ lbs. less than 2 cwt.

FRENCH MONEY.

The French monetary *unit of value* is the FRANC, which in the gold coinage of 20 and 40 franc pieces is equal in value to 9·525 pence sterling, and in the silver coinage of francs and five-franc pieces is = 9·705 pence; but the common rate of exchange is twenty-five francs for one sovereign, which gives the value of a franc = $9\frac{3}{5}$ pence sterling.

Centime............... = ·096d. = ·384 farth. = $\frac{2}{5}$ farth. nearly.
Décime................ = ·96d. = 3·84 farth. = $3\frac{21}{25}$ farth.
FRANC................. = 9·6d. = $9\frac{3}{5}$ pence.
Five-france piece... = 4 shillings.
Napoléon or 20-franc piece...... } = 16 shillings.

In reducing French money to English, from any number of francs subtract their fifth part, and the remainder will be their value in shillings. Or multiply the francs by four, point off the two right hand figures of the product for decimals, and the result will be their value in pounds and decimals of a pound sterling. (A. V. K.)

Isle of France, or Mauritius. See Mauritius.

FRANCHE COMTÉ, an old province of France, now divided into the departments of Haute Saône, Doubs, and Jura. Its capital was Besançon.

FRANCHISE, in *Law*, is used as synonymous with *liberty*, and is defined "a royal privilege, or branch of the king's prerogative, subsisting in the hands of a subject." Being thus derived from the crown, a franchise must arise from the king's grant; or in some cases it may be held by prescription, which presupposes a grant. The kinds of franchise are almost infinite.

For an account of the nature of the *elective franchise*, see Parliament.

Franchise is also used to denote an asylum or sanctuary, where persons are secure from arrest. One of the most remarkable capitulars made by Charlemagne in his palace of Heristal, in 779, was that relating to the franchises of churches. The right of franchise was held so sacred that even the less rigidly righteous kings scrupulously observed it; but in course of time it was carried to such excess, that Charlemagne reduced it, by forbidding the conveying of provisions to criminals who had fled for protection to these sanctuaries.

FRANCIS, Philip, an English versifier and dramatic writer, but more distinguished for his translations of classical authors than for his original compositions. His father was dean of Lismore, and rector of St Mary's, Dublin, whence he is said to have been ejected at the Revolution on account of his principles. The son received his theological education at Dublin; but, after taking orders, he came over to England, and settled at Esher in Surrey, where he opened a school. He obtained the degree of LL.D., and was afterwards presented to the rectory of Barrow, in Suffolk, and made chaplain of Chelsea hospital. He wrote two tragedies, *Eugenia*, 1752, and *Constantia*, 1754, neither of which, however, met with a favourable reception at the time of its appearance, and both have now fallen into oblivion. But his translation of Horace with notes was completely successful, and has been often reprinted. In 1757 he published a translation of the orations of Demosthenes and Æschines, in two vols. 4to. Dr Francis was also a political writer of some note, and was said to have been employed by government. He died at Bath in 1773.

Francis, *Sir Philip*, a distinguished politician, and the supposed author of the *Letters of Junius*, was the only son of the preceding Dr Francis. He was born at Dublin in 1740; received the chief part of his education at St Paul's School, London; and when only sixteen years of age was placed as a clerk in the Secretary of State's office by Mr Henry Fox, afterwards Lord Holland, in whose family Dr Francis had been tutor. When Mr Pitt (Lord Chatham) succeeded as Secretary of State, he continued young Francis in the office, and seems to have noticed his precocious talents for public business. More than a quarter of a century afterwards Francis gracefully acknowledged this in the House of Commons. "I hope," he said, "it will not appear improper in me to say that in the early part of my life I had the good fortune to hold a place, very inconsiderable in itself, but immediately under the late Earl of Chatham. He descended from his station to take notice of mine, and he honoured me with repeated marks of his favour and protection. How warmly, in return, I was attached to his person, and how I have been grateful to his memory, those who know me know. I admired him as a great, illustrious, faulty human being, whose character, like all the noblest works of human composition, should be determined by its excellencies, not by its defects. . . . But he is dead, and has left nothing in this world that resembles him." The last allusion is, of course, an insidious, Junius-like blow at Chatham's son, the second William Pitt. Before he had come of age, Philip Francis was secretary to General Bligh in the expedition against Cherbourg, and also secretary to the Earl of Kinnoul on a special embassy to Lisbon. In 1763 he was appointed to a principal clerkship in the War Office, with a salary of about L.400 per annum. He held his post during the period in which the Letters of Junius appeared in the *Public Advertiser* until the year 1772, when a Mr Chamier was appointed over him as Deputy Secretary at War. In consequence of this slight, Francis resigned his clerkship, indignant at Lord Barrington, the head of the War Office, and full of bitterness and contempt towards the new deputy. It will be recollected how keenly Junius attacks Lord Barrington, and how he descends from the usual elevation of his style to pour out low and scurrilous invectives against Chamier. Of all the subordinate points of the evidence connecting Francis with Junius, this affair of Chamier appears to us one of the most convincing. Junius claimed to be a man of rank, above a common bribe; but the spirit of the subordinate official—the disappointed War-Office clerk—breathes through all his references to this subject, and destroys his factitious dignity. Having left the War Office, Francis went abroad, and travelled for about a year in France and Italy. There was at the same time a cessation in the correspondence of Junius with his publisher Woodfall, but he addressed him again in January 1773, and Francis had then returned from his continental tour. In June of the same year Francis received from Lord North what must be considered a splendid appointment. He was, *on the recommendation of Lord Barrington*, made one of the Supreme Council of Calcutta, constituted by Act of Parliament, with a salary of L.10,000 per annum each, for the purpose of co-operating in the government of India. The chief of this new board was Warren Hastings, styled Governor-General, and the councillors were Mr Barwell (an able servant of the Company in India), General Clavering, Colonel Monson, and Philip Francis. The advancement of Francis from a clerkship in the War Office, and especially through the instrumentality of Lord Barrington, who formerly thwarted his rise in the public service, to a post of such high trust and emolument, has led to a belief that the ministry had somehow become aware of the authorship of Junius' Letters, and by this important foreign appointment effectually removed and silenced Francis. His talents, however, justified the confidence placed in him, and Lord Barrington may have been anxious to repair his former injustice. It is certain that no further letters from the pen of Junius appeared after Francis had sailed for India. His seat at the council-board of Calcutta was not favourable to his peace or happiness. From the moment of their arrival Warren Hastings disliked his new coadjutors. He received them with less than the customary etiquette, and was jealous of the power they came to divide with him. Francis, on the other hand, was proud, unbending, and irascible; and the quarrel rose to such a pitch, that while the councillor pretty plainly accused his chief of deliberate fraud, extortion, and cruelty, the latter stated in a minute delivered to the council-board that "he judged of the public conduct of Mr Francis by his experience of his private, which he had found to be void of truth and honour." A duel was the consequence, and Francis received a dangerous wound, the ball striking him below the shoulder, and passing out at the lower part of the body. He recovered; but finding that Hastings was triumphant in his Indian policy, and supported by public favour, as well as by a majority of the board, he returned to England in the year 1781. A man of strong passions and implacable in his resentments (which he identified with public duty and patriotism), Francis now devoted himself to the impeachment of Hastings, giving his powerful assistance to Burke, Fox, and the other Whig leaders. He was proposed as one of the managers of the public im-

Francis.

Franciscans || Franeker.

peachment (having been returned to parliament for the borough of Yarmouth), but his appointment was negatived on what were sufficient grounds—his duel with Hastings, and the avowed enmity that had so long subsisted between them. The result is well known. The trial of Hastings fixed the attention of Europe, and has been drawn in imperishable colours by Mr Macaulay in the most popular and magnificent of his historical pictures. Francis was the mainspring of the whole. He supplied the information which Burke and Sheridan expanded into eloquent orations and burning invective; and these services, as well as his general support of Whig measures, rendered him conspicuous among the public men of his day. He was a forcible and impressive parliamentary speaker, but wanted fluency, and this was probably the cause why he so often resorted to the press, with letters and pamphlets on political questions. On the accession of the Whig party to power in 1806 Mr Francis was invested with the Order of the Bath. He died in December 1818.

A full statement of the claims of Sir Philip Francis to be considered the author of Junius' Letters would require greater space than the nature of a work like the present would permit. They rest upon circumstantial evidence—on the correspondence of dates and incidents in the life of Sir Philip with the dates and incidents in the publication of the letters—in the agreement of style, sentiment, and literary ability—and in the similarity of handwriting, peculiarities of spelling and punctuation, and other minute resemblances. Of all the candidates for the Junius' laurel, Francis alone seems to have possessed the requisite intellectual power and tastes. None of his acknowledged productions are so highly finished, but they are racy and vigorous in style, and abound in vivid illustration, and in interesting reminiscences of his early great contemporaries, and past events. He inherited all the friendships and antipathies of Junius, indulged in strong personal animadversions, and despised the cold infusions of prudence and moderation in the discussion of public questions. We have seen Francis's practical acquaintance with the War-Office, and his resentment at the appointment of Mr Chamier, both so conspicuous in Junius. He owed his first introduction to the public service to the family of Lord Holland, and Junius uniformly spares Lord Holland, even when heavy charges of malversation of the public money impended over him. He frequently heard Lord Chatham speak, took notes of his speeches, and gave them to the printer; and Junius gives extracts from speeches of Lord Chatham closely resembling those of Francis. During the publication of the letters, Francis was exactly in the situation to know all the interior movements of the different departments; and he is known to have been in close intimacy with Calcraft, the army agent, a political jobber, who furnished information to Chatham and the Grenvilles. Dr Francis, the father of Sir Philip, may have unconsciously contributed details, for he moved in the higher political circles, was patronized by the Holland family, and was the favourite chaplain of Lord Chesterfield. When the first of the undoubted letters by Junius (signed "Atticus") appeared, Philip Francis was in his twenty-sixth year, an early age certainly for so active a plotter and politician, but he had then been ten years in public employment, had known Chatham and other statesmen, and was all his life restless and ambitious of personal and literary distinction. He was twenty-nine before the signature of Junius was adopted. Late in life—we believe when a septuagenarian—Sir Philip Francis entered into a second marriage; and this lady, his widow, has adduced almost direct testimony to support his right to the name of Junius. In a communication published by Lord Campbell in his *Lives of the Chancellors*, Lady Francis states that she never entertained a doubt that Sir Philip was the author of the letters, though he never avowed himself more than by saying he knew what her opinion was, and never contradicting it. "His first gift after our marriage," adds Lady Francis, "was an edition of Junius, which he bid be take to my room, and not let it be seen, or speak on the subject; and his posthumous present, which his son found in his bureau, was *Junius Identified*, sealed up and directed to me." This work, *Junius Identified*, was written in 1816, to prove that Sir Philip Francis was Junius; and the evidence it contains has been pronounced satisfactory by the ablest of our critical judges—by Mackintosh, Brougham, Macaulay, Lord Mahon, and Lord Campbell. According to Lady Francis, Lord Chatham gave assistance after the éclat of Junius's controversy with Sir William Draper, but probably without knowing that Francis was the writer. In Calcraft, however, there was a ready and safe medium of communication. Since the publication of the *Grenville Papers* it seems pretty clear that Junius received hints from Lord Temple and his brother, George Grenville, whose patronage he had in a private letter solicited, stating that he would avow himself when Grenville became prime minister. (See GRENVILLE.) In the case of Sir William Draper, a difficulty has lately been removed by Mr Macaulay. To the military knight Junius put a direct and searching question—"When you receive your half-pay do you, or do you not, take a solemn oath, or sign a declaration, upon your honour, to the following effect—*That you do not actually hold any place of profit, civil or military?*" Sir William answered decidedly in the negative: he took no such oath, nor made any such declaration; and this not only gave him a great advantage over his assailant, but seemed to prove that Junius was not so well acquainted with the forms of the War-Office as Philip Francis must of necessity have been. But how stands the fact? In the English War-Office such a declaration was necessary, but Draper drew his half-pay from the Irish establishment, and the declaration was not required from him. Francis relied on his official knowledge, and did not consider that there might be a difference between the practice at Westminster and the practice at Dublin. On the whole we may conclude that a clearer case of circumstantial evidence has rarely been submitted than that which identifies Sir Philip Francis with Junius. That he made no open avowal himself is easily accounted for. We believe he could not have done it without implicating others. The letters, by their malevolence and injustice, were as injurious to his moral reputation as they were honourable to his literary talents. He had received great benefits from some of the persons he had libelled, and he mixed in society with the immediate descendants of some of the powerful families he had wantonly and malignantly aspersed. The letters contain few great constitutional principles or maxims, like the writings of Burke, and they defend some political measures and opinions (such as the American Stamp Act, and the retention of the rotten boroughs in our parliamentary representation) which the mature judgment of Francis must have condemned. In his own family Sir Philip seems to have all but dropt the veil. He evidently had a lingering desire for posthumous fame when he made the partial disclosures to his wife. The letters had cost him great labour. They were polished to the utmost brilliancy, and inflicted deep and envenomed wounds, with matchless dexterity and skill. His shafts had been aimed at the highest quarters, and invaded the most sacred and private recesses of life—a degree of daring which must be considered as audacity rather than courage, for the mask of invisibility was strictly and marvellously preserved. There were also noble sentiments and bursts of fine feeling scattered through the letters, which seemed to betoken a great and generous nature warped by passion, arrogance, and secret motives of faction. These, however, bear but a small proportion to the rash assumptions, the bold invective and scandal which, aided by all the graces of style—unrivalled sarcasm, terse expression, and happy imagery—raised Junius into almost unparalleled popularity, and bid fair to continue him, now that the mystery and immediate interest are dispelled, as a great and unique English classic. (R. C—S.)

FRANCISCANS, the followers of the rule of St Francis, constituting one of the four orders of mendicant friars. In the beginning of the fourteenth century the whole Franciscan order was divided into two parties; one of which embraced the severe discipline and absolute poverty of St Francis, and were called *spirituals;* and the other, who insisted on mitigating the austere injunctions of their founder, were denominated *brethren of the community.*

The Life of St Francis was written by Bonaventura, and has often been published. But of all the writers who have given an account of this famous enthusiast, the most minute is Lucas Wadding, in his *Annales Minorum.* This work has been much enlarged by subsequent writers, the edition of 1731 and onwards extending to 18 vols. folio. See also the Life of St Francis in Sir James Stephens' *Ecclesiastical Biographies.* See FRATRICELLI.

FRANCONIA, German *Franken*, a circle of the old German empire, lay between Upper Saxony, Bohemia, Bavaria, Swabia, and the Upper Rhine, and had an area of about 10,400 square miles, with about 1,500,000 inhabitants. It is now almost entirely comprised in Bavaria, and gives name to three circles of that kingdom. The soil of Franconia is reckoned among the most fertile in Germany.

FRANEKER, a town of Holland, province of Friesland, 10 miles W. of Leeuwarden, on the canal between that town and Haarlingen. A university was founded here in 1585, but was converted into an athenæum in 1815. There are several other schools, a public library, and a botanic garden. The chief manufactures are silk and woollen goods, and tiles. Pop. (1850) 5288.

FRANK, the name by which the Turks, Greeks, Arabs, &c., designate a Christian. It probably originated during the crusades, in which the French (descendants of the German Franks) particularly distinguished themselves. Europe itself, too, was named *Frankistan*, or the country of the Franks.

The Frank language, *Lingua Franca*, is a jargon which is spoken in the Levant, as the common medium of communication between Europeans and the inhabitants of the East. Its chief ingredient is Italian, and it probably originated during the crusades, which brought so many different nations together.

Frank-Almoigne (*libera eleemosyna*), or free alms, a tenure of a spiritual nature, by which a religious corporation, aggregate or sole, holds lands of the donor granted to them and their successors for ever. The service which they were bound to render for these lands was not definitively stated; but only in general they were to pray for the souls of the donor and his heirs, dead or alive. Hence they did no fealty, which is incident to all other services, because this religious service was of a higher and more exalted nature. This is the tenure by which almost all the ancient monasteries and religious houses held their lands, and by which also the parochial clergy, and many ecclesiastical and eleemosynary foundations hold them at this day; but the nature of the service was altered at the Reformation, and made conformable to the reformed doctrines of the Church of England. It was an old Saxon tenure; and continued under the Norman domination, from the veneration paid to religious institutions. This was also the reason why tenants in frank-almoigne were exempted from all other services except the *trinoda necessitas* of repairing the highways, building castles, and repelling invasions, just as the Druids, amongst the ancient Britons, had *omnium rerum immunitatem*. And even at present this is a tenure of a very different nature from all others, being not in the least feudal, but merely spiritual; for, if the service be neglected, the law gives no remedy by distress, or otherwise, to the lord of whom the lands are holden, but merely enters a complaint to the ordinary or visitor to correct it. The statute 12th Car. II., which abolished military tenures, expressly excepts tenure in frank-almoigne.

Frank-Pledge, in *Law*, signifies a pledge or surety for the behaviour of freemen.

FRANKENBERG, an important manufacturing town of Saxony, circle of Zwickau, on the Zschoppau, 7 miles N.N.E. of Chemnitz. It has extensive cotton and linen factories and bleaching-works. Pop. (1849) 6988. This is also the name of a town in Hesse-Cassel, province of Upper Hesse, on the right bank of the Eder, 34 miles W.S.W. of Cassel, with 3250 inhabitants.

FRANKENHAUSEN, a town of Germany, principality of Schwartzburg-Rudolstadt, on the Little Wipper, 36 miles N.N.E. of Gotha. It consists of an old and a new town, the latter mostly rebuilt since a very destructive fire in 1833; and has an old castle, two churches, a college, hospital, printing establishment, and mineral baths. In the vicinity is a salt mine. Pop. 5000.

FRANKENSTEIN, a town in the Prussian province of Silesia, government of Breslau, and 34 miles S. by W. of the town of that name. It is connected by a branch with the Berlin and Dresden railway; and has a considerable trade. The chief manufactures are linen, woollen, and cotton goods, straw-hats, &c. Pop. (1849) 6168.

FRANKENTHAL, a town in the Rhenish circle of Bavaria, 9 miles N.W. of Mannheim, and communicating with the Rhine by a canal 6 miles in length. It owes its rise to some Flemish Protestant refugees who settled here in 1562. It rose very rapidly, so that in 1577 it became a town, and in 1682 it was the third town in the Palatinate. It suffered severely in the wars of 1688 and 1794–5. The manufactures are considerable, including linen, silk, and cotton goods, porcelain, &c. Pop. 5000.

FRANKFORT-ON-THE-MAINE (German *Frankfurt Am Main*), one of the four free cities of Germany, and so called to distinguish it from the Prussian town of Frankfort-on-the-Oder. It took its name (*Franken Furt*) from the river being fordable at this point; and is supposed to have been founded by the Franks in the fifth century. It had a palace, the seat of the early dukes of Franconia, and afterwards the frequent residence of Charlemagne. This monarch held a council here in 794. Louis the Pious built a palace at Frankfort in 822, and in 838 surrounded the town with walls and ditches. In consequence of the treaty of Verdun in 843 it became the capital of the empire of the Eastern Franks, and hither the fairs held by the Austrasians were transferred. In 1152 Frederick I. was elected here, and from that time it continued to be the place of election of the German emperors, a privilege confirmed to it by the golden bull of Charles IV. in 1356. In 1245 it was erected into a free imperial city. In the history of the latter part of the middle ages Frankfort occupies a distinguished place; many important assemblies were held within its walls; matters of peace and war were discussed; controversies were settled; and occasionally its tranquillity was disturbed by intestine quarrels. From 1562, when Maximilian II. was crowned here, it continued to be the coronation town of the emperors till the dissolution of the empire. The Thirty Years' war had but little direct influence upon Frankfort; but it was not equally fortunate in the wars of Louis XIV. In 1688-9 it escaped falling into the hands of the enemy only by its vigorous preparations for defence, while some of the neighbouring villages were plundered and set on fire. In the French revolutionary war it suffered severely, being alternately in the possession of friend and foe. In 1806 it became a member of the Confederation of the Rhine, and was made the capital of a prince primacy. In 1810 the grand duchy of Frankfort was created, with an area of nearly 2000 square miles. After the battle of Leipzig in 1813, the allies restored it to its former independence; and by the Congress of Vienna in 1815 it was made one of the four free cities of Germany, and the seat of the Germanic diet.

The city of Frankfort is situated on the right bank of the Maine, 20 miles above its confluence with the Rhine, in N. Lat. 50. 6. 43., E. Long. 8. 41. 24. It is connected with its suburb Sachsenhausen on the opposite bank of the river by a fine stone bridge of 14 arches. Its fortifications were destroyed during its occupation by the French, and their site is now occupied by public walks and gardens. It still possesses nine gates, which form the entrances to the town, two of which are in Sachsenhausen. The old town, with its narrow streets, and quaint wooden buildings, the gables of which overhang their basement stories, has a very antique appearance. The new town, however, contains many magnificent houses, not a few of which are justly entitled to the appellation of palaces. Of its squares, several are ornamented with fountains. Some of the finest houses line the quay, which extends along the right bank of the river nearly the whole length of the city. The *Römer* or council-house is not remarkable for its architectural beauty, but is historically interesting as being the place where the German emperors were elected. The *Wahlzimmer* or election-room is a spacious and handsomely furnished apartment, appropriated to the meetings of the senate. The walls of the *Kaisersaal*, or imperial hall, where the emperors were entertained on their election, and waited upon by kings and princes, are covered with portraits of the emperors —from Conrad I. to Francis II. In the archives of this building is preserved the golden bull of Charles IV. which re-

Frankfort-on-the-Maine.

Frankfort-on-the-Oder.

gulated the mode of election and number of electors. The cathedral, or church of St Bartholomew, a Gothic structure in the form of a cross, was commenced in the time of the Carlovingian princes, but the greater part of it belongs to the thirteenth and fourteenth centuries; and its tower, which is 260 feet high, is still unfinished. It contains some curious monuments, among which is one of the emperor Günther of Schwarzburg, who was slain by his rival Charles IV. In the *Wahlkapelle*, or election-chapel, the emperor was formally elected, and afterwards crowned in front of the high altar. The present German diet assembles at the residence of the Austrian ambassador, formerly the palace of the prince of Tours and Taxis, an edifice of the last century, containing 150 apartments, and richly adorned with paintings, sculptures, &c. The church of St Leonhard occupies the site of the old palace, of which no traces now exist. The *Saalhof*, a sombre-looking building of the last century, stands on the site of the palace erected by Louis the Pious. The chapel is almost the sole remains of the old building. Among the other public buildings are the *Braunfels* or old exchange, the *Börse* or new exchange, the new hall of justice, the ancient palace of the knights of the Teutonic order in Sachsenhausen, the theatre, casino, &c. The literary and scientific institutions of Frankfort are numerous, comprising a college, medical institute, natural history society, geographical society, academy of arts and sciences, philosophical society, &c. The public library contains about 80,000 volumes and 1500 MSS.; and in the museum of the Lenkenberg Society of Naturalists is the valuable collection of Dr Rüppell, the Abyssinian traveller. The Städel museum (so named from its founder, who bequeathed his collection of paintings and engravings, together with a sum amounting to about L.83,000 for building and maintaining a public gallery and school of arts) contains a good collection of paintings, chiefly of the Flemish and Dutch schools. There are also many private collections of pictures. The celebrated statue of Ariadne seated on a leopard, by Dannecker, is exhibited in the garden of Mr Bethmann, and is considered one of the finest productions of modern art. Immediately beyond the Friedburg gate is a colossal monument to the Hessians who fell there in the defence of Frankfort in 1792. Among the benevolent institutions, which are numerous, are four hospitals, an orphan asylum, deaf-mute institution, house of refuge, &c.

The chief manufactures are carpets, table-covers, oilcloth, cotton, woollen, and silk fabrics, jewellery, tobacco, playing-cards, &c. Frankfort was made a free port in 1831, and is also one of the four great emporiums for supplying Germany with merchandise. The river Maine, which is navigable to Bamberg in Bavaria, where commences the Donau-Maine Canal leading to Kelheim on the Danube, and the numerous railways which centre in Frankfort, render it the industrial and commercial centre of the S.W. and W. parts of Germany. No German city, with the exception of Berlin, is the centre of so great a number of railways. Four great lines, and several others of a more local character, meet in the city. The Main-Neckar railway leads southward to the Grand Duchy of Baden, whence railways proceed to Switzerland, Wurtemberg, and Bavaria. The Taunus railway leads west and north-west to Mayence, and to Wiesbaden. From Mayence a railway goes to Ludwigshafen, the harbour of the Bavarian Palatinate opposite Manheim, thence to Strasburg, and therefrom to Paris as well as to Switzerland. Another branch from Ludwigshafen meets the Strasburg and Paris railway at Nancy. From Wiesbaden a line is now (1855) in course of construction to Coblentz. The Main-Weser railway passes through the greater part of the two Hesses to Cassel, and communicates with Hanover, Bremen, Hamburg, &c. On the right its branches lead to Berlin and Saxony, and on the left a line will soon be opened to Cologne. The Hanau railway connects Frankfort with Hanau and the chief places on the Maine to Bamberg, from which southward with Nuremberg, Augsburg, Munich and Austria, and in another direction with Leipsic, Dresden, and Bohemia. There are also local lines to Offenbach, the chief manufacturing town of Hesse Darmstadt, to Soden, a much frequented bathing-place, and to near Romburg, one of the famous spas of Germany. Frankfort, however, is chiefly indebted for its great wealth to being the seat of extensive banking, commission, and funding transactions. In proportion to its size, it is probably the richest city in the world. There are about twenty first-class banking houses; among these are the Rothschilds, Grunelius, Metzter, and others, well known in the commercial world. The number of those in the stock and exchange business amounts to at least 200. A city bank with a capital of 10,000,000 florins was established last summer, and has just (1855) commenced business operations. The two fairs of Easter and Michaelmas are still much frequented. Goethe was born here in 1749. Civil pop. (1852) 62,361, being 47,100 Protestants, 10,661 Catholics, and 4600 Jews; military, 5650—1717 being Austrians, 1713 Prussians, 1391 Bavarians, and 829 natives. The population of Frankfort is but slowly increasing, on account of the old illiberal laws still in force as to admission to citizenship. Only such are admitted as can prove their ability to maintain a family; so no merchant can be admitted unless he prove that he possesses at least 5000 florins, and generally persons possessing that sum, or even more, are not admitted unless they marry a citizen's daughter, in which case the law is more favourable. The ancient law is also still in force, that none shall mend a shoe or drive a nail unless he be a master and a member of one of the corporations, and he cannot become a member unless he be the son of a citizen, or marry a citizen's daughter. The restrictions to which the Jews were long subject have now mostly been removed. They are entitled to vote at the elections of members to the legislative assembly, and may return four of their own number; they are also admissible to all offices not connected with the senate, the permanent assembly of the citizens, law, religion, or education. The inhabitants of Sachsenhausen are mostly of Saxon descent, and distinguished from their fellow-citizens in manners, dress, and language, as well as occupations, being mostly employed in gardening, fishing, &c.

The city, with a small territory of 38 square miles lying immediately around it, constitutes the free state of Frankfort. The government is vested in a senate, a legislative assembly, and a permanent committee of citizens. The senate, which exercises the executive power, is composed of 44 members, divided into three benches—justices, senators, and councillors, and having two presidents, one chosen from each of the two first-mentioned benches. The legislative assembly is composed of 94 members, of whom 20 are senators, 20 members of the permanent committee of citizens, 45 chosen annually by the citizens collectively, and 9 deputies from the rural districts. The permanent committee consists of 60 members chosen from among citizens of all ranks. The legislative assembly meets annually in the month of November, and sits for six weeks; and its sanction is requisite to all new laws, the budget, &c. With the free cities of Lübeck, Bremen, and Hamburg, Frankfort occupies the seventeenth place in the Germanic Confederation. It enjoys one vote in the general assembly (*Plenum*), and furnishes a contingent of 683 men to the federal army. Pop. of the state (1852) 77,971.

Frankfort-on-the-Oder, a town of Prussia, province of Brandenburg, and capital of the government of Frankfort, stands on the left bank of the Oder, 50 miles E. by S. of Berlin, with which, since 1842, it has been connected by railway. The town is regularly built, and surrounded by old walls with towers and ditches. It has three suburbs, one of which stands on the opposite bank of the river, and communicates with it by means of a wooden bridge. The university founded here in 1506 was removed to Breslau in 1810. Frankfort has a Roman Catholic and six Protestant churches, a synagogue, gymnasium, obstetric school, orphan asylum, workhouse, theatre, &c. Being the capital of a government, it is the seat of a superior and other judicial tribunals, of boards of taxation, agriculture, &c. Though inferior to its namesake on the Maine, it is a place of considerable commercial activity, being situated on the high road from Berlin to Silesia, and on a navigable river communicating by canals with the Vistula and the Elbe. It has three annual fairs in the months of February, July, and November, attended by merchants not only from Germany, but also from other parts of Europe. It has manufactures of woollen and silk goods, stockings, gloves, leather, tobacco, sugar, brandy, mustard, &c. Immediately beyond the bridge is a monument to Prince Leopold of Brunswick, who was drowned here in 1785 while attempting to rescue an unfortunate family from an inundation of the Oder. At Kunnersdorf in the vicinity, Frederick the Great was defeated with great loss by the Austrians and Russians on 12th August 1759. Pop. (1849) 29,969.

FRANKFORT, the capital of the state of Kentucky, North America, occupies a very picturesque situation on the east side of the Kentucky river, 62 miles above its confluence with the Ohio. On the opposite bank of the river, which is here 80 yards wide, stands the suburb of South Frankfort, connected with the town by a chain bridge. Frankfort is well and regularly built, and many of the edifices are of white marble. It possesses some trade; steam-vessels of considerable burden come up to the town, and a railway connects it with Louisville on the Ohio. Among its public buildings are the state-house, penitentiary, court-house, jail, and market-house. It was founded in 1786, and was made the seat of government in 1792. Pop. (1850) 4372.

FRANKLAND'S ISLANDS, a cluster of small islands on the north-east coast of New Holland, about six miles from the land. E. Long. 146., S. Lat. 17. 12.

FRANKINCENSE. See INCENSE.

FRANKLIN, BENJAMIN, one of the most distinguished of Americans, alike in science and in politics, was born at Boston in New England, Jan. 17 (N.S.) 1706. His paternal ancestors had lived for many generations on a small freehold in the village of Ecton in Northamptonshire. About the year 1682 his father, Josiah Franklin, in company with some of his neighbours, emigrated to New England, for the sake of that religious liberty which, as nonconformists, was denied them at home. Of seventeen children Benjamin was the youngest but two. He early displayed a strong taste for reading. At the age of eight he was sent to the grammar-school, his father intending to devote him, "as the tythe of his sons," to the church. The cares of a numerous family soon interfered with this design, and at the end of a year Benjamin was sent to another master to learn writing and arithmetic. When ten years old he was taken to assist his father in his business as a tallow-chandler and soap-boiler, a pursuit to which the aspiring boy soon manifested a strong repugnance. He was extremely desirous to go to sea, but the influence of his father, a man of strong judgment, who took great pains in the moral training of his family, prevailed to keep him at home. The boy's love of books found little scope in the small library of his father: it consisted chiefly of works of polemical theology, which were read through with little advantage, but contained, among other things, a copy of *Plutarch's Lives*, Defoe's *Essay on Projects*, and Mather's *Essay to do Good*. The latter, Franklin thought, exercised considerable influence on his mind. Already in the practical and tangible, the inquiring but unimaginative mind of the boy, "father of the man," had found its congenial aliment.[1] His father at length determined to make Benjamin a printer; and in his twelfth year he was bound apprentice to his brother James. He soon became an excellent workman, and now found more access than ever to books, to which he devoted all his leisure hours. As is usual, even with the least poetical of youths, he essayed rhyme. One or two of his ballads sold well in the streets; but the sound advice of his father discouraged him from further attempts, and impressed him with the necessity of attention to prose composition. An odd volume of the *Spectator* furnished the stimulus to his first efforts, and the model of his style. By carefully cultivating the practice of composition, he at a comparatively early age acquired considerable ease and dexterity in writing. His mature style was extremely clear and simple, generally nervous, often lively, and in rare instances touched with eloquence. The same practical sagacity which so early distinguished his intellectual efforts was manifested in his control over his passions. At the age of sixteen he met a book recommending a vegetable diet. He at once adopted it, saving time and money by the lightness of his meals, and devoting the gain in both to his one luxury of books.[2] About this time he read the *Memorabilia* of Xenophon. The Socratic method of reasoning greatly charmed him; and having already imbibed sceptical principles from Shaftesbury and Collins, he found it peculiarly suited to puzzle others without committing himself to positive assertions. Gradually, however, he left off this method, retaining only the habit of expressing himself with caution and diffidence, a habit of which his acute knowledge of human nature afterwards led him to see the great utility.

In 1721 his brother established a newspaper in Boston,[3] and Benjamin was employed at once as a compositor, printer, and deliverer. Though thus abundantly occupied, he determined to try his hand also as a contributor, and accordingly sent in several anonymous essays. They were highly approved of; but when the authorship was discovered, his brother, apprehensive of Benjamin's becoming too vain, manifested some displeasure. From this time apparently mutual jealousies sprang up between them. Benjamin submitted impatiently to the domination of his brother. "Perhaps," he says, "this harsh and tyrannical treatment of me might be a means of impressing me with the aversion to arbitrary power which has stuck to me through my whole life." An opportunity soon occurred for a disruption. An article in the paper gave offence to the provincial government; James was censured, and imprisoned for a month, and ordered no longer to print his newspaper. To evade this order, it was determined to print the paper in Benjamin's name; and in order to overcome the legal difficulty, the apprentice's indenture was formally discharged, while a new one was privately signed, binding him to fulfil his engagement. On the breaking out of new differences with his brother, Benjamin unfairly took advantage of this compromise, and asserted his freedom. This he styles one of the first *errata* of his life. His brother having warned all the printers of Boston against him, Benjamin determined to leave the city, and accordingly made his escape to New York, where he found himself, in his seventeenth year, with little money and no friends. Obtaining no employment, he set out for Philadelphia. His own account of this journey, and of his first appearance in the streets of Philadelphia, eating a halfpenny roll, with another under each arm, is one of the most interesting passages in his autobiography. Here he formed an engagement with a printer named Keimer, who had recently commenced business. Franklin's industry and frugality soon secured him a comfortable position. His abilities attracted the notice of Sir William Keith, the governor of the province, who encouraged him to set up as a printer on his own account, and even proposed that he should go to England to procure the necessary printing-stock. Franklin set sail, accompanied by his friend James Ralph,[4] arrived in London on the 24th December 1724, and only then discovered that his patron's promises were entirely delusive.[1] He immediately found employment, however. At Palmer's, in Bartholomew's Close, he was engaged in printing the second edition of Wollaston's *Religion of Nature.* Some of the arguments appearing to him defective, he wrote and printed his remarks upon them under the title, *A Dissertation on Liberty and Necessity, Pleasure and Pain.* His aim was to prove that "whatever is is right," and that virtue and vice are mere names. This pamphlet was the means of introducing him to several men of some note, among others to Dr Mandeville. Five years later he had come to very different conclusions on these subjects, and wrote a tract demonstrating the fallacy of his former opinions. Shortly after this he removed to a more extensive printing-house, where his temperance, intelligence, and industry, soon gained him respect and influence.

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[1] There is an anecdote which seems characteristic of what the boy Franklin may be conceived, as the proper type of sharp irreverent young America. His father observed the old Puritan fashion of saying very long graces before and after meat, which caused much weariness to Benjamin. Once, when they were salting the winter store of provisions, he said, "Father, could you not say grace over the cask, once for all; it would be a vast saving of time."

[2] He did not practise Vegetarianism long, his good sense yielding to the force of the argument suggested by seeing a small fish taken out of the inside of a bigger one.

[3] *The New England Courant.* Franklin calls this the *second* newspaper published in America. Mr Sparks (*Works of Franklin*, vol. i., p. 23) shows that it was the *fourth*. "About this time, 1771," says Franklin, "there are no less than five and twenty." In 1850 there were *two thousand eight hundred.*

[4] Afterwards a man of some note as a party writer on history and politics, and commemorated by Pope in the *Dunciad*.

On the 23d July 1726 he left London in company with a Mr Denham, who was about to open a store in Philadelphia. With him he lived several months, assisting in the management of the business. About this time he established a club for mutual improvement and discussion, called the *Junto,* which existed for many years, and proved of no small public utility. On the death of Mr Denham, Franklin resumed his proper work, and again found employment with his former master, Keimer. He soon put the business on a good footing, and, besides his duties as printer and warehouseman, made ink, and even types, for the establishment. As the other hands improved under Franklin's management, Keimer thought he could do without him, and, after a quarrel, they separated. Soon after, however, Franklin was prevailed upon to assist Keimer in executing an order to print bank notes in New Jersey. His mechanical ingenuity here became available in the construction of a copperplate press—the first of its kind seen in America—and the cutting of ornaments for the bills. On leaving Keimer, he had resolved, with one of his fellow-workmen, Meredith, to set up an establishment of their own. Immediately on his return to Philadelphia this design was put into execution; and from that time the prudence, industry, and perseverance of Franklin were rewarded with steadily advancing prosperity. At this time there was but one newspaper in Pennsylvania. Franklin determined to start another. The design came to Keimer's ears, and he hastened to forestall it. After a few months of unsuccessful management he was glad to hand it over to Franklin, in whose skilful hands it became both influential and profitable. In 1729 the want of paper-money was much felt in the colony, and the subject was discussed in the Assembly. Franklin published a pamphlet urging the necessity of a fresh issue; and on the passing of a bill to that effect, he was rewarded by being employed to print the money. His business was now flourishing. On the 1st of September 1730 he married Miss Deborah Reid, to whom he had been engaged on leaving America for England. He neglected her during his absence, and she married another, who soon after separated from her. Franklin found in her a faithful and prudent helpmate during a period of forty-four years. At this time he tells us there was not a good bookseller's shop south of Boston. Lovers of literature were obliged to send to England for supplies. In 1731 Franklin set on foot a subscription for a library. The scheme began with fifty subscribers, mostly young tradesmen. It prospered, like all Franklin's undertakings; and in 1742 a charter was obtained for the "Philadelphia Library Company,"—"the mother of all the North American libraries, now so numerous." His command of books was now greatly increased, and in the midst of unrelaxing application to business he daily devoted an hour or two to study. About this time he conceived the project (characteristic at once of the man and the age) of arriving at moral perfection, "to live without committing any fault at any time." His plan for attaining this happy result is described in his autobiography. While acknowledging that he never arrived at the perfection aimed at, he expresses his conviction that he was a better and a happier man from having made the attempt. He always intended to enlarge this scheme into a treatise, to be called *The Art of Virtue,* but never carried out his design. It was connected with an extensive project for the establishment of a universal society for the promotion of virtue. Even in his old age he does not seem to have regarded this scheme as chimerical.

In 1732 he first published the almanac which, under the name of *Richard Saunders,* or *Poor Richard's Almanac,* became so celebrated. Its great aim was, through choice aphorisms and proverbs, to inculcate industry and frugality, "as the means of procuring wealth, and thereby securing virtue." In the almanac for 1757 these sayings were collected into a discourse, which has been often reprinted and translated into many languages, under the title of "The Way to Wealth." Its influence in Pennsylvania was thought, Franklin says, to have been considerable, and there can be little doubt that the general character of his countrymen still bears testimony to their veneration for the precepts of Poor Richard. It is to be wished that his further advices on the exclusion of "all libelling and personal abuse" from newspapers were followed with equal fidelity. In 1733 he began to study languages. He soon mastered French, so far as to read it with ease. He next studied Italian and Spanish. These he found so helpful to the acquirement of Latin, that he concluded the modern practice of studying the dead language first to be grounded on a mistake.

Franklin's merits as a citizen now began to receive public recognition. In 1736 he was appointed clerk of the Assembly,[2] and in the following year deputy-postmaster-general of America. "I now began," he says, "to turn my thoughts to public affairs, beginning, however, with small matters." The reform of the city watch and the establishment of a fire company were his first services. In 1743 he drew up a plan for the establishment of an academy in Philadelphia. Finding obstacles in the way, he did not publish his views for some time. Six years after he was completely successful. The academy then established was the foundation of the University of Philadelphia. In 1744 he succeeded in establishing a scientific society, which, after various changes, became the *American Philosophical Society,* now the *American Academy of Sciences.* When war broke out in this year between Britain and France, the defence of the colony became a matter of serious anxiety. The governor had in vain striven to induce the Assembly (chiefly Quakers) to pass a militia bill. The practical energy of Franklin overcame the difficulty. As was his usual practice, he promulgated his views in a pamphlet, entitled *Plain Truth,* which produced an immediate effect. At a public meeting held soon after 1200 persons subscribed their names as members of a voluntary defence association. The number afterwards increased to 10,000. These were speedily formed into regiments, and provided themselves with arms. To defray the expense of erecting a battery below the town, Franklin proposed a lottery; and the scheme was immediately carried into execution.[1] Franklin now began to be looked upon as a man of public importance, and in all matters connected with the militia his advice was sought by the governor and his council.

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[1] "He wished," says Franklin, "to please everybody; and having little to give, he gave expectations." He commends him notwithstanding as a sensible man and a good governor.

[2] One of the members opposed his election in the following year. Franklin's method of gaining his goodwill indicates his acute knowledge of men. He requested the loan of a scarce and curious book from the gentleman's library, and returned it soon after with a courteous note of thanks. The lender was thenceforth his friend. "He that has once done you a kindness," adds Franklin, "will be more ready to do you another than he whom you yourself have obliged."

The comparative leisure afforded by the increasing prosperity of his business Franklin now devoted to scientific pursuits, for which his extraordinary ingenuity, acuteness of observation, and sound judgment, peculiarly qualified him. Whilst visiting Boston in 1746, he heard a lecture on electricity, by a Dr Spence from Scotland. He became deeply interested in the subject, and thenceforth devoted much time to electrical experiments. Shortly afterwards Mr Collinson, F.R.S., presented a glass-tube to the Philadelphia Library Company, with directions for its use. To him, in March 1747, Franklin communicated the first results of those observations and experiments which contributed so much to his fame, and ranked his name among those of great discoverers. His views on the nature of electricity, as is not unusual in such cases, were treated at first by many of the learned with comparative contempt, afterwards opposed, and finally universally accepted and confirmed. The Royal Society, in which his first observations on the identity of lightning and electricity were laughed at, in 1753 conferred on him their highest distinction, the Copley medal, and afterwards elected him into their number without solicitation and free of expense. For a particular account of his electrical experiments, see ELECTRICITY.

Anxious as he was to enjoy leisure for the pursuit of his favourite studies, he now began to be in request for public business. He was made a justice of peace, town-councillor, alderman, and representative. The latter office, he says, he was glad to accept, as, besides his ambition to be of use to the public, he had begun to tire of the discussions in which, though compelled as clerk to be listener, he could take no part, and used to amuse himself in drawing magic squares or circles,[2] or anything to avoid weariness. Next year he was appointed with the speaker to negotiate a treaty with the Indians. In 1751 Dr Bond communicated to him his plan for the erection of a hospital in Philadelphia. Franklin took it up warmly, and it was speedily realized. In 1753 he was appointed joint postmaster-general. Under his management the American post-office flourished as it had never done before. In 1754 he attended as one of the Pennsylvanian commissioners at the congress held at Albany, to confer on the means of defence in the event of a rupture with France. Several of the commissioners came provided with plans for a union of all the colonies under one government, among the rest Franklin. His plan received the preference. It was rejected, however, by all the assemblies; and the Board of Trade, to whom it was submitted, did not think it worth recommending to the crown. The former thought there was too much *prerogative* in it, while in England it was thought too *democratic*.[3] From this double objection Franklin argued that his plan had hit the true medium, which, if followed, would have prevented the subsequent revolution. In the following spring he rendered eminent service to General Braddock, in procuring waggons and provisions for his troops. With the ready public spirit which so marked his character, he advanced more than L.1000 of his own money for that purpose. The thanks of the assembly were voted to him on his return from this expedition.

In the disputes which for some years back had been growing ever more serious between the Pennsylvanian Assembly and the proprietaries,[4] Franklin, as might be expected, was one of the strongest opponents of what he considered the unjust and selfish claims of the latter, and gradually came to be looked upon as the leader of the opposition. He spoke seldom, and briefly, but always to the point, and with effect. An appropriate anecdote or apologue was one of his favourite and most effective means of persuasion. About this time he introduced and carried a bill for the establishment of a voluntary militia. While the organization was going on, he undertook, on the solicitation of the governor, to place the north-western frontier in a state of defence. He soon raised a body of 560 men; and in about six weeks accomplished his somewhat difficult and dangerous commission with perfect success, erecting three wooden forts, which at the end of that time he handed over manned and armed to the charge of a military officer. On his return he was chosen colonel of the Philadelphia regiment, and received such marks of honour as gave considerable offence to the proprietors. The assembly having at length resolved to petition the king against the proprietary government, Franklin was deputed as their agent to Britain, and on the 27th July 1757 arrived in London.

Here he found strong obstacles and prejudices to contend against, the assembly and people of Pennsylvania being generally represented by the press as the selfish and refractory opponents of their rightful governors. He found that little was to be expected in the way of concession from the proprietors, while the eyes of the ministry and people of England were too intently directed to Germany (where the Seven Years' War was just going on), to heed much the rising of the little cloud that foreshadowed so great a tempest in the west. Franklin took every opportunity to dispossess the public mind of the unfavourable opinions propagated against his countrymen. Early in 1759 appeared a work entitled *An Historical Review of the Constitution and Government of Pennsylvania*. Though betraying a strong party bias it gave a clear view of the subject, and being written with point and vigour, produced a considerable effect. It had been composed under the direction and with the assistance of Franklin.[5] His business, meantime, made little progress. He wished much to see Pitt, but that great statesman was then too much occupied to be accessible. Franklin's experience and sagacity were duly valued by the government. Whether or not it be true that Wolfe's successful expedition to Canada was suggested by him, it is certain that he was deeply impressed with the importance of these colonies to Britain, and was zealous in inculcating his views.[6] In 1760, when the question of retaining them was under discussion, he wrote an able pamphlet on the subject, which probably contributed to influence the ministerial decision. In the summer of that year he visited Scotland, where he experienced a most cordial and distinguished reception, and formed a lasting friendship with some of the most eminent men then to be found in Edinburgh, such as Hume, Kames, and Robertson.[7]

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[1] Franklin was sent to borrow cannon for this battery from Governor Clinton at New York. At first the request was peremptorily refused. They met at dinner, "where there was great drinking of Madeira wine." The governor softened so far as to grant *six* guns. As the wine passed, his liberality expanded to *ten*; and before the evening closed he good-naturedly offered *eighteen*.

[2] Some very curious specimens of these are given in his works. Sparks' edition, vol. vi., p. 100–105.

[3] The principal feature of this plan (the germ of the Union) was the appointment of a president by the crown, with a grand council nominated by the colonial assemblies.

[4] By this name were designated Penn's immediate successors Richard and Thomas. See PENNSYLVANIA.

[5] This work has generally been attributed to him. In a letter to David Hume, printed for the first time in Sparks' edition of his works, he disowns the authorship, with certain exceptions. The real author was probably Ralph.

[6] A very remarkable passage on the subject occurs in one of his letters to Lord Kames. After the revolution he was equally anxious to secure Canada to the States.

[7] In the same letter to Lord Kames he says of this visit, "On the whole I must say I think the time we spent there was six weeks of the *densest* happiness I have met with in any part of my life." He visited Scotland again in 1771.

After a delay of nearly three years, he succeeded in bringing his business to a comparatively successful termination; an act of the Pennsylvanian Assembly for raising a tax of L.100,000, from which the proprietary estates were not exempted, having, under certain limitations, received the royal assent in June 1760. The *principle* for which the Pennsylvanians had contended was so far conceded.[1] Some financial business still detained him. In the summer of 1761 he visited Holland and Flanders. Meanwhile his scientific pursuits were not neglected. Among other results of his ingenuity was the construction of a musical instrument[2] (the *Armonica*), which was for some time very fashionable. Before leaving England he received the degree of a doctor of laws from Edinburgh and Oxford. St Andrews had conferred the same honour on him some time before. The government about the same time testified their sense of his merits by appointing his son governor of New Jersey.[3]

On his return to Philadelphia (November 1762), he received the thanks of the Assembly, and a grant of L.3000 for his services. The next public transaction in which his ability and influence were exhibited, in strong contrast to the weakness of the provincial government, was the alarming insurrection subsequent to what were called "The Paxton Murders." By his prompt and judicious interference a large body of citizens was armed, and the insurgents were persuaded to retire peaceably. Meantime the contest with the proprietaries had waxed more bitter than ever. The Assembly, exasperated beyond endurance, at length passed a series of resolutions in favour of transferring the government entirely to the crown. Franklin strongly advocated this scheme. A large majority resolved to petition the king. The petition drawn up by Franklin was signed by him as speaker, to which office he had just been chosen. At the next election of representatives, Franklin lost his seat by a trifling minority, after having held it for fourteen years without asking a vote. His party, however, triumphed in the Assembly, and to the disgust of his opponents, Franklin was appointed their special agent to defend the petition at the court of Britain. He arrived in London on the 10th of December.

Though charged with a special commission, he had instructions to use his efforts against the passing of the Stamp Act, "the mother of mischief," as in one of his letters he designated it. These efforts, though zealous and unremitting, were in vain. The question of repealing the act came before parliament early in 1766; and Franklin was summoned to give evidence on the subject at the bar of the House of Commons. His perfect knowledge of the subject in question, the clearness and readiness of his replies, and the manly dignity of his bearing, produced a profound impression on the house, and contributed much both to heighten the public estimate of himself, and to hasten the decision of parliament. In the summer of this year he visited Germany in company with his friend Sir John Pringle. At this time he seems to have studied the whole subject of the mutual relations of Britain and the colonies with much attention, and to have arrived at those conclusions which guided his future conduct in the struggle. The question was mooted about this time, whether a representation of the colonies in the Imperial Parliament might not tend to promote union. This, in Franklin's opinion, afforded the only sure basis of a permanent reconciliation.[4] In the following autumn he visited Paris, where he was received with flattering distinction. He was introduced to the king and royal family, and made the acquaintance of the most distinguished Frenchmen of the time. He was now desirous to return to America, seeing no hope of drawing the attention of government to the object of his mission. He was detained, however, by a letter informing him of his having been appointed agent for Georgia. In the following year he received a similar charge from the state of New Jersey; and in 1770 from that of Massachusetts. His well-known views on the subject of America, and the freedom with which he was in the habit of expressing them, made him obnoxious to many of the ministers, and particularly to the colonial secretary, Lord Hillsborough.[5] Rumours had at various times come to his ears of an intention to deprive him of his office of postmaster-general. Whether true or false, they affected him little. He was equally indifferent to the counter-reports of an intention to raise him to some more important office.[6] The occasion of his actual dismissal from office was a transaction which, though dictated on his part by what he considered a sense of duty, subjected him at the time to the severest obloquy. In December 1772, there were put into his hands[7] certain letters from the governor and lieutenant-governor of Massachusetts, to Mr Thomas Whately, a member of parliament connected with the government, representing the people of that province as purely factious in their opposition to the government imposts, and recommending those coercive measures which produced such mischievous results. Franklin having hitherto attributed these obnoxious measures to the home government, and expressed himself accordingly in his letters to America, thought it his duty to communicate these documents to the Assembly, whose interests they so much concerned. The Assembly petitioned the Board of Trade to remove the authors of the letters from office. Counsel was engaged on both sides, and the case came before the privy-council at a very full meeting on the 29th January 1774. The solicitor-general, Wedderburn, afterwards Lord Loughborough, conducted the defence, and made it the occasion of a bitterly sarcastic and abusive attack on the character of Franklin, who stood by apparently unmoved, while their lordships testified their satisfaction by laughter and cheers. The petition was rejected as "groundless, vexatious, and scandalous," and next day Franklin was informed that his services as postmaster-general were no longer required. Though it is certain that he deeply resented the insult offered to him on this occasion,[1] there is no good ground for assuming that it altered in any degree his views of the question between Britain and America. He had long been convinced of the hopelessness of a reconciliation. After this he had no further intercourse with the ministry; and he now resolved to return home as soon as possible. He was advised, however, to await the issue of the Congress about to be held in America. The petition of Congress to the king arrived in December. All the colonial agents, except Franklin and two others, declined to present it. Their request to be heard in support of it at the bar of the House of Commons was refused, and the petition was rejected by an overwhelming majority. After this Franklin still occupied himself, at the solicitation of his friends Dr Fothergill and Mr Barclay, in drawing up a plan of reconciliation. It was shown to Lord Howe, and several other ministers, but the terms were considered inadmissible, and the affair dropped. Towards the end of the year he had frequent interviews with Lord Chatham, who was then preparing a bill for the settlement of the American difficulty. In reply to an insinuation of Lord Sandwich, in the debate of January 20, 1775, that great man pronounced a high eulogium on Franklin, and ended by declaring that he was "an honour not to the English nation only but to human nature!"

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[1] Franklin's share in this controversy subjected him to special hostility. The following testimony from Thomas Penn, in a letter to Governor Hamilton, is valuable. "I do not find that he has done me any prejudice with any party, having had conversations with all, in which I have studied to talk of these affairs; and I believe he has spent most of his time in philosophical and especially in electrical matters, having generally company in a morning to see those experiments."

[2] Constructed on the principle of educing graduated tones from glasses filled in various measure with water.

[3] This son, William Franklin, remained a firm royalist all his life. His opposition to his father produced a temporary estrangement: they were afterwards reunited, but the old man remembered it in his will.

[4] The wisdom and moderation of his views is seen in the following passage from one of his letters about this time to Lord Kames. "America, an immense territory, favoured by nature with all advantages of climate, soils, great navigable rivers and lakes, must become a great country, populous and mighty, and will, in a less time than is generally conceived, be able to shake off any shackles that may be imposed upon her, and perhaps place them on the oppressors. In the meantime, every act of oppression will sour their tempers, lessen greatly if not annihilate the profits of your commerce with them, and hasten their final revolt; for the seeds of liberty are universally found there, and nothing can eradicate them. And yet there remains among that people so much respect, veneration, and affection for Britain, that if cultivated prudently, with a kind usage and tenderness for their privileges, they might easily be governed for ages, without force or any considerable expense. But I do not see here a sufficient quantity of the wisdom that is necessary to produce such a conduct, and I lament the want of it."

[5] His lordship appears to have been particularly offended by Franklin's success with the Board of Trade in reference to *Walpole's Grant*. As far back as 1766 a company was formed for the settlement of a new territory on the Ohio. Mr Thomas Walpole, a London banker, was at its head, and Franklin was a leading member. Lord Hillsborough opposed their petition for a grant with great zeal, but without success.

[6] In 1768 a vague overture was actually made to Franklin by the Duke of Grafton, through Mr Cooper, secretary of the treasury, but with no result.

[7] How the letters were obtained has never been discovered.

Having at length wound up his business in England, Franklin sailed for America, and arrived at Philadelphia on the 5th of May. He was chosen a member of Congress next day, and thenceforward he was extensively occupied in all its most important business. On the establishment of a new post-office, he was appointed postmaster-general. In March 1776 he was sent as one of the commissioners to negotiate for the co-operation of Canada, an unsuccessful journey, the fatigues of which proved seriously injurious to his health. When the question of independence came to be discussed, he was among the most emphatic in the affirmative, and was selected as one of the five to prepare the declaration.[2] Soon after he was appointed President of the Convention appointed to frame a new constitution for Pennsylvania. The most remarkable feature in this constitution (afterwards changed), viz., a single legislative assembly, is supposed to have originated with him—this having always been one of his favourite political theories. In the futile attempt at negotiation with Lord Howe in the spring of 1776 he bore a leading part. Towards the end of the year the Congress resolved to seek assistance from the European powers, and especially France. Franklin was specially qualified for such an embassy, and though adverse to the policy of seeking foreign alliances, which he opposed in Congress, he was unanimously nominated commissioner-plenipotentiary, in conjunction with two others, to the court of France. Before sailing he put three or four thousand pounds, all the money at his command, at the disposal of Congress as a loan.

He arrived in Paris on the 21st December, and shortly after removed to the suburban village of Passy. Here he resided while in France, an object of interest and reverence to the lively citizens of Paris; adapting himself with easy tact to the national tastes and habits, while his personal peculiarities derived piquancy by contrast. To the brilliant intellectual circle with whom he associated it was specially charming to find in the scientific sage, whose primitive aspect and homely wisdom seemed fresh from antique times, not only an exponent, but a living illustration, of those wonder-working "ideas" by which the new Millennium of "Humanity" was to be achieved. His negotiation was eminently successful. The result of the campaign of 1777, to use the words of Franklin's grandson and biographer, *fixed the French nation in their attachment to the infant republic.*" On the 6th February 1778 the treaties were signed, and on the 20th of March the American plenipotentiaries were received in due form at Versailles. The other commissioners were recalled in the following year, and Franklin was appointed sole minister-plenipotentiary of the United States at the Court of France. The heavy and important duties connected with that office he discharged for the next six years. Attempts were made more than once to have him recalled, but the value of his services was too notorious to give much weight to the charge brought against him of neglecting the interests of his country and being too subservient in his relations to the French cabinet. In addition, moreover, to his proper official work, he carried on an extensive correspondence, and was incessantly harassed by visits, proposals, and applications of the most miscellaneous character.[3] Science, too, continued still to occupy some of his time. He frequently attended the meetings of the Academy, of which (as of the principal learned societies in Europe) he was a member; and in 1779 read a paper on the Aurora Borealis. In 1784 he was appointed to the head of the commission for inquiring into the nature of the experiments then extensively practised by Mesmer and his disciples, and by them attributed to *animal magnetism.* For that delusive term Franklin substituted the word *imagination.* His concern for the interests of science was nobly displayed in his sending, on his own authority, a circular to all the commanders of American cruisers requesting them to offer no molestation to the ship of Captain Cook.[4] As ambassador he was much occupied in negotiating treaties with the principal European powers, a service in which his extreme foresight, tact, and firmness enabled him to secure signal advantages to his country. The provisional treaty with Britain was signed November 30, 1782, and a treaty with Sweden in the following spring. In 1781 Franklin had requested to be relieved from his office; the Congress declined to accept his resignation, but complied, on a repetition of his request in 1785. His last official act was the signing of a treaty with Prussia, containing a new article framed by himself against privateering in time of war.[5]

On the 14th September 1785 he arrived in Philadelphia. On the voyage he had occupied himself in writing on "Improvements in Navigation," on "Smoky Chimneys," and in renewed experiments to ascertain by the temperature the course of the Gulf Stream. He was received with every demonstration of joy, and congratulations from all the public bodies. Next day he was appointed a member of the supreme executive council of Philadelphia, and soon after president of the state. Surrounded by his offspring, at the head of a community which looked up to him with the deepest veneration, enjoying comparative leisure for the cultivation of the pursuits which still formed his chief delight, the few remaining years of his life passed happily away, despite the gradual inroads of disease. In May 1787 he was chosen a member of the convention appointed to frame the constitution of the United States.[1] His motion for prayers in the convention is the most remarkable record of his share in its proceedings, and affords an impressive proof of that religious feeling in which he has often, but unjustly, been regarded as wholly deficient. The conduct of the Congress, in neglecting to settle his accounts, and bestow some adequate compensation for his long and faithful services, seems to have wounded his spirit not a little. To the last he was occupied in works of usefulness and philanthropy. The improvement of the condition of the negroes, and the alleviation of the miseries of public prisons, engaged much of his attention. His last public act was to sign a memorial to Congress as President of the Abolition Society of Pennsylvania. The last paper he wrote, twenty-four days before his death, was an ingenious and spirited parody on a speech delivered in Congress in defence of slavery. For many years he had suffered severely from gout and stone. About the beginning of April 1790 he was attacked by fever, and on the 17th he expired, in the eighty-fifth year of his age. He was buried with great solemnity amidst an immense concourse of people. Congress went into mourning for a month. The National Assembly of France, on the motion of Mirabeau, put on mourning for three days; and numerous other testimonies of respect were offered to his memory in the French metropolis. No monument has yet been raised to him by the citizens of Philadelphia.

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[1] His biographers mention as a significant circumstance that he did not put on again the suit of clothes he wore on that occasion till the day that he signed the treaty with France as American plenipotentiary.

[2] The following anecdote is related in connection with the signing of this important document. "We must be unanimous," Hancock said, "there must be no pulling different ways, we must all hang together." "Yes," replied Franklin, "we must indeed all hang together, or most assuredly we shall all hang separately."

[3] The journal of one day (Dec. 13, 1778) records the following visits. 1. The inventor of a wonderful self-propelling machine. 2. A proposal to levy men for a piratical expedition to Britain. 3. A plan for concealing arms, &c., on the person without suspicion. 4. "Received a parcel from an unknown philosopher, who submits to my consideration a memorial on the subject of *Elementary Fire,* containing experiments in a dark chamber." The "unknown philosopher" was Jean Paul Marat.

[4] In acknowledgment of this act of humanity a gold medal and a copy of Cook's Narrative were presented to him by the Board of Admiralty, with the king's approbation.

[5] Notwithstanding Franklin's opposition to privateering, he considered his own services in this respect worthy of enumeration, in 1788, among his claims on the United States.

America has produced men of genius and ability whose names rank high in science, literature, and politics, but no man in all respects so remarkable as Benjamin Franklin, the first of her citizens who won a European fame. Embodying as he did in a high degree those qualities which have raised the American nation to so commanding a position among modern states, his influence over the character of that race has been greater than that of any other man born in America. His most obvious characteristic was common sense, sagacity, practical wisdom in the management of affairs, whether small or great. In all things he was a man of business; and as he attempted no enterprise which his quick discernment, calculating prudence, and sound judgment did not approve as feasible, his industry, tact, and indomitable firmness crowned all his undertakings with complete success. In his private life he was the personification of frugality; but while he ever kept a steady eye to his personal interests, no man excelled him in public spirit, and his devotion to the service of his country was genuine and unswerving. Passions and affections were less strong with him than intelligence and prudence, but neither was his heart cold nor were his sympathies narrow; and though eminently worldly wise, he was not less conspicuously distinguished by zeal for the good of his fellow men. On the side of imagination, and in all that connects man with the infinite, the mysterious, and the beautiful, he was signally deficient. Utility was to him the test of all human things and pursuits; in the world of practical life he lived and moved and had his being; and in that world reason wielded the empire over faith, and reverence shrank into littleness before the ambition of independence. Yet it would be extreme injustice to Franklin to say that his thoughts and feelings were bounded by the narrow limits of a sordid utilitarianism. His devotion to science alone would suffice to prove the opposite; for though all his researches were guided by a practical aim, if he had not loved truth for her own sake he could never have won from her such secrets as he did.[2] As a statesman and diplomatist, he carried into the high sphere of national policy, and with similar results, those qualities which had stamped success on all his private undertakings. No Briton, indeed, can look back with admiration to that inveterate hostility of his which scrupled not at devices for subjecting to the foot of foreign invaders the country that nursed his fathers and taught them how freedom may be kept or won. Yet it is but just to remember that that enmity was provoked by contemptuous rejection of long advice, and the oppression that makes wise men mad, and that its object was not the people of Britain, but the rulers for whose obstinate folly they were made to suffer. At this date, at least, it is only extreme prejudice that will deny the merit of rare felicity to the epigram of Turgot—*Eripuit cœlo fulmen sceptrumque tyrannis.*

The most complete edition of Franklin's works is that of Jared Sparks, in 10 vols. 8vo, Boston 1840, containing numerous letters and papers not included in that published by his grandson, William Temple Franklin, in 1817, London, 6 vols. 8vo. (A. N.)

FRANKLIN, Sir John, Rear-Admiral of the Blue, was a native of Spilsby, in Lincolnshire. Sprung from a line of freeholders, or "Franklins," his father inherited a small family estate, which was so deeply mortgaged by his immediate predecessor that it was found necessary to sell it; but by his success in commercial pursuits he was enabled to maintain and educate a family of twelve children, of whom one only died in infancy. The fortunes of his four sons were remarkable, unaided as they were by patronage or great connections. Thomas, the eldest, following the pursuits of his father, acquired the local reputation of an acute and highly honourable man of business, whose intellect gave him much influence with his neighbours, and in a time of threatened invasion, he was mainly instrumental in raising a body of yeomanry cavalry, in which he did the duty of adjutant, and was afterwards chosen to be lieutenant-colonel of a regiment of volunteer infantry. The second son, Sir Willingham, educated at Westminster, was elected to a scholarship of Christ's Church, Oxford, and after gaining an Oriel fellowship, was called to the bar, and died a judge at Madras. James, the third son, having, as cadet, exhibited great proficiency in Hindostanee and Persian, was presented by the India Company with a handsome sword, L.50 in money, and a cornetcy in the First Bengal Native Cavalry, in which he rose to the rank of major. He was noted while in India for his scientific knowledge, which procured him a lucrative civil appointment, but his advancement was interrupted by ill-health, and after executing extensive surveys of the country, he was under the necessity of returning to England, where he died. His collections in natural history were highly appreciated by zoologists.

John, the youngest son, and the subject of this memoir, was destined for the church by his father, who, with this view, had purchased an advowson for him. He received the first rudiments of education at St Ives, and afterwards went to

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[1] The following is one of his acute remarks on that subject:—"Though there is a general dread of giving too much *power* to our *governors*, I think we are more in danger from the little *obedience* in the *governed*."

[2] Sir Humphry Davy thus elegantly characterizes his scientific labours. "A singular felicity of induction guided all his researches, and by very small means he established very grand truths. The style and manner of his publications on electricity are almost as worthy of admiration as the doctrine they contain. He has endeavoured to remove all bigotry from the subject. He has written equally for the uninitiated and for the philosopher; and he has rendered his details amusing as well as perspicuous, elegant as well as simple. Science appears in his language in a dress wonderfully decorous, the best adapted to display her native loveliness. He has in no instance exhibited that false dignity by which philosophy is kept aloof from common applications; he has sought rather to make her a useful inmate and servant in the common habitations of men, than to preserve her merely as an object of admiration in temples and palaces."

Louth Grammar School where he remained two years; but having employed a holiday in walking twelve miles with a companion to look at the sea, which up to that time he knew only by description, his imagination was so impressed with the grandeur of the scene that former predilections for a sea life were confirmed, and he determined from thenceforth to be a sailor. In the hope of dispelling what he considered to be a boyish fancy, his father sent him on a trial voyage to Lisbon in a merchantman, but finding on his return that his wishes were unchanged, procured him, in the year 1800, an entry on the quarterdeck of the Polyphemus, 74, Captain Lawford; and this ship having led the line in the battle of Copenhagen in 1801, young Franklin had the honour of serving in Nelson's hardest fought action. Having left school at the early age of thirteen, his classical attainments were necessarily small, and at that period there was no opportunity on board a ship of war of remedying the defect. Two months, however, after the action of Copenhagen, he joined the Investigator, discovery-ship, commanded by his relative Captain Flinders, and under the training of that able scientific officer, while employed in exploring and mapping the coasts of Australia, he acquired a correctness of astronomical observation and a skill in surveying which proved of eminent utility in his future career. In the prosecution of this service he gained for life the friendship of the celebrated Robert Brown, naturalist to the expedition. In 1803, the Investigator having been condemned at Port Jackson as unfit for the prosecution of the voyage, Captain Flinders determined to return to England to solicit another ship for the completion of the survey, and Franklin embarked with him on board the Porpoise armed store-ship, Lieutenant-Commander Fowler. In the voyage homewards this ship, and the Cato which accompanied her, were wrecked in the night of the 18th of August, on a coral reef, distant from Sandy Cape, on the main coast of Australia, 63 leagues, and the crews, consisting of 94 persons, remained for 50 days on a narrow sand-bank, not more than 150 fathoms long, and rising only four feet above the water, until Captain Flinders, having made a voyage to Port Jackson, of 250 leagues, in an open boat, along a savage coast, returned to their relief with a ship and two schooners.[1] After this misfortune, Captain Flinders, as is well known, went to the Isle of France, where he was unjustly and ungenerously detained a prisoner by General de Caen, the governor. Meanwhile Franklin proceeded with Lieutenant Fowler to Canton, where he obtained a passage to England in the Earl Camden, East Indiaman, commanded by Sir Nathaniel Dance, commodore of the China fleet of 16 sail. On the 15th of February 1804, Captain Dance had the distinguished honour of repulsing a strong French squadron, led by the redoubted Admiral Linois. Lieutenant Fowler assisted the commodore with his professional advice in this action, and Franklin performed the important duty of signal midshipman. On reaching England, Franklin joined the Bellerophon, 74, and in that ship he was again entrusted with the signals, a duty which he executed with his accustomed coolness and intrepidity in the great battle of Trafalgar, while those stationed around him on the poop fell fast, and were all, with only four or five exceptions, either killed or wounded. In the Bedford, his next ship, he attained the rank of lieutenant, and remaining in her for six years, latterly as first lieutenant, served in the blockade of Flushing, on the coast of Portugal, and in other parts of the world, but chiefly on the Brazil station, whither the Bedford had gone as one of the convoy which conducted the royal family of Portugal to Rio de Janeiro in 1808. In the ill-managed and disastrous attack on New Orleans, he commanded the Bedford's boats in an engagement with the enemy's gun-boats, one of which he boarded and captured, receiving a slight wound in the hand-to-hand fight.

On peace being established, Franklin turned his attention once more to the scientific branch of his profession, as affording scope for his talents, and having made his wishes known to Sir Joseph Banks, who was generally consulted by government on such matters, he set himself sedulously to refresh his knowledge of surveying. In 1818, the discovery of a north-west passage became again, after a long interval, a national object, principally through the suggestions and writings of Sir John Barrow, secretary of the Admiralty, and Lieutenant Franklin was appointed to the Trent, as second to Captain Buchan of the Dorothea, hired vessels equipped for penetrating to the north of Spitzbergen, and, if possible, crossing the Polar Sea by that route. During a heavy storm, both ships were forced to seek for safety by boring into the closely packed ice, in which extremely hazardous operation the Dorothea was so much damaged that her reaching England became doubtful, but the Trent having sustained less injury, Franklin requested to be allowed to prosecute the voyage alone, or under Captain Buchan, who had the power of embarking in the Trent if he chose. The latter, however, declined to leave his officers and men at a time when the ship was almost in a sinking condition, and directed Franklin to convoy him to England. Though success did not attend this voyage, it brought Franklin into personal intercourse with the leading scientific men of London, and they were not slow in ascertaining his peculiar fitness for the command of such an enterprise. His calmness in danger, promptness and fertility of resource, and excellent seamanship, as proved under the trying situation which cut short the late voyage, were borne ample testimony to by the official reports of his commanding officer; but to these characteristics of a British seaman, he added other qualities less common, more especially an ardent desire to promote science for its own sake, and not merely for the distinction which eminence in it confers, together with a love of truth that led him to do full justice to the merits of his subordinate officers, without wishing to claim their discoveries as a captain's right. Added to this, he had a cheerful buoyancy of mind, which, sustained by religious principle of a depth known only to his most intimate friends, was not depressed in the most gloomy times. It was, therefore, with full confidence in his ability and exertions that he was, in 1819, placed in command of an expedition appointed to travel through Rupert's Land to the shores of the Arctic Sea; while Lieutenant Parry, who had in like manner risen from second officer under Sir John Ross to a chief command, was despatched with two vessels to Lancaster Sound, a mission attended with a success that spread his fame throughout the world. At this period, the northern coast of America was known at two isolated points only, viz., the mouth of the Coppermine River, discovered by Hearne, but placed erroneously by him four degrees of latitude too much to the north; and the mouth of the Mackenzie, more correctly laid down by the very able traveller by whose name the river is now known. On the side of Behring's Straits, Cook had penetrated only to Icy Cape, and on the eastern coasts Captain (Sir John) Ross, in 1818, had ascertained the correctness of Baffin's survey, which had been questioned, and had looked into Lancaster Sound and reported it to be closed by an impassable mountain barrier. To stimulate enterprise by rewarding discoverers, the legislature established a scale of premiums graduated by the degrees of longitude to which ships should penetrate, but no provision was made for a pecuniary recompense to any one who should trace out the north-west passage in boats or canoes.

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[1] The Bridgewater, another merchantman, was also in company with the Porpoise at the time of the wreck, and narrowly escaped sharing the same fate. The master of her, however, having on the following day seen the shipwrecked vessels from a distance, proceeded on his voyage to Bombay, where, on his arrival, he reported their loss. He did not live to explain his motives to those whom he thus deserted, for the Bridgewater never was heard of again after she left Bombay.

Lieutenant Franklin, accompanied by a surgeon, two midshipmen, and a few Orkneymen, embarked for Hudson's Bay, in June 1819, on board of one of the company's ships, which ran ashore on Cape Resolution during a fog on the voyage out, and was saved from foundering by Franklin's nautical skill. On reaching the anchorage off York Factory, a large hole was found in the ship's bottom, but so far closed by a fragment of rock as considerably to diminish the influx of water. Franklin's instructions left the route he was to pursue much to his own judgment; in fact, so little was then known in England of the country through which he was to travel, even by the best informed members of the government, that no detailed directions could be given, and he was to be guided by the information he might be able to collect at York Factory from the Hudson's Bay Company's servants there assembled. No time could be more unpropitious for a journey through that land. For some years an internecine warfare had been carried on between the North-West Company, operating from Canada, claiming a right to the fur trade from priority of discovery, and holding commissions as justices of peace from the colonial government, and the Hudson's Bay Company, which, in virtue of a charter from King Charles the Second, attempted to maintain an exclusive authority over all the vast territory drained by the rivers that fall into the bay. Arrests by clashing warrants of the contending justices were frequent, might became right when the members of the two companies met, personal violence, seizure of property, and even assassination were too common, and in a recent fight at Red River 22 colonists of the Hudson's Bay Company had lost their lives. Numbers also had perished of famine in the interior owing to the contests that were carried on. When the expedition landed at York Factory, they found some of the leading North-West partners prisoners there, and learnt that both companies were arming to the extent of their means for a decisive contest next summer. Such being the state of the country, a party coming out in a Hudson's Bay ship was looked upon with suspicion by the members of the rival company, and it was mainly through Franklin's prudent conduct and conciliating manners that it was permitted to proceed; but sufficient aid to ensure its safety was not afforded by either of the contending bodies. Wintering the first year on the Saskatchewan, the expedition was fed by the Hudson's Bay Company; the second winter was spent on the "barren grounds," the party subsisting on game and fish procured by their own exertions, or purchased from their native neighbours; and in the following summer the expedition descended the Coppermine River, and surveyed a considerable extent of the sea-coast to the eastward, still depending for food on the casual supplies of the chase, and often faring very scantily, or fasting altogether. The disasters attending the return over the barren grounds, on the premature approach of winter, have been told by Franklin himself in a narrative which excited universal interest and commiseration. The loss of Mr Hood, a young officer of very great promise, and who at the time of his death had been promoted to the rank of lieutenant, was especially deplored. The survivors of this expedition travelled from their outset at York Factory down to their return to it again, by land and water, 5550 miles. While engaged on this service, Franklin was promoted to be a Commander, and after his return to England in 1822, he obtained the post rank of Captain, and was elected to be a fellow of the Royal Society. In the succeeding year he married Eleanor,[1] the youngest daughter of William Porden, Esq., an eminent architect, by whom he had a daughter and only child, now the wife of the Rev. John Philip Gell.

In a second expedition, which left home in 1825, he descended the Mackenzie under more favourable auspices, peace having been established throughout the fur-countries under the exclusive government of the Hudson's Bay Company, which had taken the north-west traders into partnership, and was then in a position to afford him effectual assistance, and speed him on his way in comfort. This time the coast line was traced through 37 degrees of longitude from the mouth of the Coppermine River, where his former survey commenced, to nearly the 150th meridian, and approaching within 160 miles of the most easterly point attained by Captain Beechey, who was co-operating with him from Behring's Straits. His exertions were fully appreciated at home and abroad. He was knighted in 1829, received the honorary degree of Doctor of Civil Law from the University of Oxford, was adjudged the gold medal of the Geographical Society of Paris, and was elected in 1846 Correspondent of the Institute of France in the Academy of Sciences. Though the late surveys executed by himself and by a detachment under command of Sir John Richardson comprised one, and within a few miles of two, of the spaces for which a parliamentary reward was offered, the Board of Longitude declined making the award, but a bill was soon afterwards laid before parliament by the secretary of the Admiralty abrogating the reward altogether, on the ground of the discoveries contemplated having been thus effected.[2] In 1828 he married his second wife, Jane, second daughter of John Griffin, Esq.

Sir John's next official employment was on the Mediterranean station, in command of the Rainbow, and his ship soon became proverbial in the squadron for the happiness and comfort of her officers and crew.[3] As an acknowledgment of the essential service he had rendered off Patras in the "war of liberation," he received the Cross of the Redeemer of Greece from King Otho, and after his return to England he was created Knight Commander of the Guelphic order of Hanover.

In 1836 Lord Glenelg offered Sir John the lieutenant-governorship of Antigua, and afterwards of Van Diemen's Land, or Tasmania, which latter he accepted, with the condition that he might be allowed to resign it, if, on a war breaking out, he were tendered the command of a ship. He preferred rising in his own profession to the emoluments of the civil service. In as far as a man of independent political principles, of strict honour and integrity, conspicuous for the benevolence of his character, without private interests to serve, and of a capacity which had been shown in several important commands, was likely to benefit the colony he was sent to govern, the choice was a judicious one, and did honour to Lord Glenelg's discernment. Dr Arnold, no mean judge of character, rejoicing in the promise the appointment gave of a new era in the annals of colonial management, expressed the delight with which, had circumstances permitted, he would have laboured with such a governor in founding a system of general education and religious instruction in that distant land. Sir John's government, which lasted till the end of 1843, was marked by several events of much interest. One of his most popular measures was the opening of the doors of the legislative council to the public, a practice soon afterwards followed by the older colony of New South Wales. He also originated a college, endowing it largely from his private funds with money and lands, in the hope that it would eventually prove the means of affording to all parties secular and religious instruction of the highest kind. At Sir John's request Dr Arnold selected a favourite pupil, the Rev. John Philip Gell,[1] to take the direction of this institution; but much opposition to the fundamental plan of the college was made by various religious bodies, and after Sir John left the colony the exclusive management of it was vested in the Church of England, with free admission to the members of other persuasions. In his time also the colony of Victoria was founded by settlers from Tasmania; and towards its close, transportation to New South Wales having been abolished, the convicts from every part of the British empire were sent to Tasmania. Up to the period of his quitting the government this concentration had occasioned no material inconvenience, neither was there at that time any organized opposition to it. On an increase to the lieutenant-governor's salary being voted by the colonial legislature, Sir John declined to derive any advantage from it personally, while he secured the augmentation to his successor. In 1838 he founded a scientific society at Hobarton (now called the "Royal Society"). Its papers were printed at his expense, and its meetings were held in Government House. He had also the gratification of erecting in South Australia, with the aid of the governor of that colony, a handsome granite obelisk, dedicated and inscribed to the memory of his former commanding officer, Captain Flinders, to whose discoveries we owe our earliest knowledge of that part of the continent of Australia. It stands on a lofty hill, and serves as a landmark to sailors. A magnetic observatory, founded in 1840, at Hobarton, in connection with the head establishment under Colonel Sabine at Woolwich, was an object of constant personal interest to Sir John; and Tasmania being the appointed refitting station of several expeditions of discovery in the Antarctic regions, he enjoyed frequent opportunities of exercising the hospitality he delighted in, and of showing his ardour in promoting the interests of science whenever it lay in his power to do so. The lamented Dumont d'Urville commanded the French expedition, and Sir James Clark Ross the English one, consisting of the Erebus and Terror. The surveying vessels employed in those seas during that period came also in succession to Hobarton—namely, the Beagle, Captain Wickham; the Pelorus, Captain Harding; the Rattlesnake, Captain Owen Stanley; the Beagle (2d voyage), Captain Stokes; and the Fly, Captain Blackwood; all of whom, with the officers under them, received from the lieutenant-governor a brother sailor's welcome. Thus pleasantly occupied, the years allotted to a colonial governorship drew towards a close, and Sir John contemplated with no common satisfaction the advancing strides of the colony in material prosperity; but he was not destined to be spared one of those deep mortifications to which every one is exposed, however upright he may be in his conduct abroad, who is dependent for support and approval on a chief at home that changes with every party revolution. When Sir John was sent to Tasmania, England had not yet recognised as an established fact that the inhabitants of a colony are better judges of their own interests, and more able to manage their own affairs, than a bureaucracy in Downing Street, with a constantly shifting head, ill informed of the factious oligarchies that infest colonies, and of the ties that connect them with subordinate officials at home. Previous to leaving England Sir John was advised, and indeed instructed, to consult the colonial-secretary of Tasmania in all matters of public concern, as being a man of long experience, thoroughly acquainted with the affairs of the colony; and he found, on taking charge of his government, that this was a correct character of the officer next to himself in authority. Mr Montagu was a man eminently skilful in the management of official matters, but he was also the acknowledged head of a party in the colony bound together by family ties, and possessing great local influence from the important and lucrative situations held by its members, and the extensive operations of a bank of which they had the chief control. Party struggles ran high in the legislative council, and the lieutenant-governor's position was one of great delicacy, while the difficulty of his situation was vastly augmented through the practice of the officials in Downing Street of encouraging private communications on public measures from subordinate officers of the colony, and weighing them with the despatches of the lieutenant-governor. For some years, by Sir John's prudent conduct, the harmony of the colonial executive was not interrupted; but at a later period the colonial secretary, having visited England, returned to Tasmania with greater pretensions, and commenced a course of independent action, ever hostile to his chief, subversive of the harmonious co-operation heretofore existing, and thus injurious to the interests of the colony, so that Sir John was under the necessity of suspending this officer from his functions until the pleasure of Lord Stanley, then secretary of state for the colonies, was known. Mr Montagu immediately proceeded to England to state his own case, and he did it with such effect that Lord Stanley, while admitting that the colonial secretary had acquired a local influence which rendered "his restoration to his office highly inexpedient,"[2] penned a despatch which is not unjustly characterized as a consummate piece of special pleading for Mr Montagu, whom it absolves, while it comments on the lieutenant-governor's proceedings in a style exceedingly offensive to a high-minded officer who had acted, as he conceived, with the strictest regard to the public interests. The extraordinary measure was also resorted to of instantly furnishing Mr Montagu, then in attendance at Downing Street, with a copy of this despatch, so that he was enabled to transmit it to Hobarton, where it was exposed in the Bank to public inspection. At the same time there was circulated privately amongst the officers of the colonial government and others a journal of his transactions with the lieutenant-governor, and of his private communications with members of Franklin's family, which he had kept for years while on terms of close social intercourse with them. This volume having answered in England the purpose for which it was intended, was now exhibited in the colony as containing an account of the subjects on which he stated he had held conversations with Lord Stanley. All this took place before the lieutenant-governor received official intimation of Lord Stanley's decision. The recovery of a document which had lain secluded in an office in the colony enabled Sir John afterwards more fully to substantiate one of the most important charges he had made, nevertheless Lord Stanley refused to modify the terms he had employed, or to make any concession calculated to soothe the wounded feeling of an honourable and zealous officer. The arrival of a new lieutenant-governor, the late Sir John Eardley Wilmot, bringing with him the first notice of his own appointment, and consequently finding Sir John still in the colony, served to show more strongly than could otherwise have been done, the hold the latter had gained on the affections of the colonists, and the verdict pronounced on Lord Stanley's despatch by the people, to whom all the merits of the case were most fully known. Sir John, after three months' longer residence at Hobarton as a private individual, waiting for a passage to England, during which time he received addresses emanating from every district of the colony, was attended to the place of embarkation by the most numerous assemblage of all classes of people which had ever been seen on those shores, the recently consecrated Bishop of Tasmania[1] walking at their head, along with the new colonial secretary, the late Mr Bicheno, who for some months had acted in the greatest harmony with Sir John. A local paper, after describing the scene in much detail, adds—"Thus departed from among us as true and upright a governor as ever the destinies of a British colony were entrusted to." Years afterwards, when the enthusiasm of party feelings could have no share in their proceedings, the colonists showed their remembrance of his virtues in a more substantial manner, as will be mentioned below. Sir John, on receiving the secretary of state's despatch, had tendered his resignation, but his successor was appointed before his letter could reach England, though, as we have just said, his recall-despatch did not come to Tasmania till some days after Sir Eardley's arrival.

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[1] She died in 1825.

[2] Messrs Dease and Simpson of the Hudson's Bay Company, at a later period (1836–1839) completed the survey of 160 miles of coast line, lying between the extreme points of Beechey and Franklin, and navigated the sea eastwards beyond the mouth of Back's Great Fish River, proving the existence of a continuous water-course from Behring's Straits through 73° of longitude, as far eastward as the ninety-fourth meridian.

[3] The sailors, with their usual fondness for epithets, named the ship the "Celestial Rainbow" and "Franklin's Paradise."

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[1] In later years he became Sir John's son-in-law, as mentioned above.

[2] Lord Stanley's despatch, 13th September 1842. Mr Montagu was promoted to be colonial secretary at the Cape of Good Hope.

Owing to the fortunate rendezvous at Hobarton of the scientific expeditions and surveying ships above named, as well as of many of her Majesty's vessels engaged in the ordinary service of those seas, the intrigues of the family faction and their supporters in the colony being matters of common discussion, became known to numbers of Sir John's brother officers, and a true estimate of the treatment he had received from the colonial minister was formed by the profession to which he belonged. He found, therefore, on reaching England, that the confidence of the Admiralty in his integrity and ability was undiminished, and this was speedily shown by his appointment in 1845 to the command of an expedition, consisting of the Erebus and Terror, fitted out for the further discovery of the north-west passage. With an experienced second in command, Captain Crozier, trained under Parry and James Ross from 1821 in the navigation of icy seas, a select body of officers chosen for their talent and energy, and excellent crews, in ships as strong as art could make them, and well furnished, Franklin sailed from England for the last time on the 26th of May 1845. He was last seen by a whaler on the 26th of July in Baffin's Bay, at which time the expedition was proceeding prosperously. Letters written by him a few days previous to that date were couched in language of cheerful anticipation of success, while those received from his officers expressed their admiration of the seamanlike qualities of their commander, and the happiness they had in serving under him. In autumn 1847 public anxiety began to be manifested for the safety of the discoverers, of whom nothing more had been heard; and searching expedition after expedition despatched in quest of them in 1848 and the succeeding years down to 1854, regardless of cost or hazard, redound to the lasting credit of England. In this pious undertaking Sir John's heroic wife took the lead. Her exertions were unwearied, she exhausted her private funds in sending out auxiliary vessels to quarters not comprised in the public search, and by her pathetic appeals she roused the sympathy of the whole civilized world. France sent her Bellot; the United States of America replied to her calls by manning two searching expeditions, the expenses of which were borne by Mr Grinnel, a wealthy private citizen of great humanity and liberality; and the inhabitants of Tasmania subscribed L.1700, which they transmitted to Lady Franklin as their contribution towards the expense of the search. In August 1850 traces of the missing ships were discovered, and it was ascertained that their first winter had been spent behind Beechey Island, where they had remained at least as late as April 1846. Yet in spite of every exertion by the searching parties, no further tidings were obtained until the spring of 1854, when Dr Rae, then conducting an exploring party of the Hudson's Bay Company, learnt from the Eskimos that in 1850 white men, to the number of about forty, had been seen dragging a boat over the ice near the north shore of King William's Island, and that later in the same season, but before the breaking up of the ice, the bodies of the whole party were found by the natives on a point lying at a short distance to the north-west of Back's Great Fish River, where they had perished from the united effects of cold and famine. These unfortunate men were identified as the remnant of the crews of the Erebus and Terror by numerous articles which the Eskimos had picked up at the place where they perished, many of which Dr Rae purchased from that people and brought to England. Point Ogle is supposed by this gentleman to be the spot where the bodies lie; and this summer (1855) Mr Anderson of the Hudson's Bay Company started from Great Slave Lake to examine the locality, pay the last tribute of respect to the dead, and collect any written papers that might remain there or books and journals said to be in the hands of the Eskimos. By considering the direction in which the party that perished were travelling when seen by the natives, and the small district that remains unexplored, we must come to the conclusion that the ships were finally beset between the 70th and 72d parallels of latitude, and near the 100th meridian. Two entrances from the north may exist to this part of the sea, one along the west coast of North Somerset and Boothia, which is an almost certain one; and the other, which is more conjectural, may occupy the short unexplored space between Captain Sherard Osborn's and Lieutenant Wynniatt's extreme points. To approach this last strait, if it actually exists, Cape Walker would be left on the eastern side of the passing ships. It is a singular and most melancholy fact, that the very limited district of the Arctic Sea thus indicated, and which was specially adverted to in the original plan of search, is almost the only spot that has defied the exertions of the skilful and persevering officers who have attempted to explore it. Sir James Ross failed in reaching it; it intervenes between the extremes of the long and laborious journeys made by Captain Sherard Osborn and Lieutenant Wynniatt. Dr Rae's two attempts to enter it were frustrated by the state of the ice and other circumstances, and Captain Collinson was also stopped short on its southern side by the want of fuel. Lady Franklin had sent out the Prince Albert for the express purpose of searching this quarter, but Mr Kennedy unfortunately, instead of adhering to the letter of his instructions, trusted to a distant view of the passage from the north, which seemed to him to be closed, and turning to the west, made his memorable winter journey through a space which, though he was ignorant of the fact at the time, had been previously examined.

With the utmost economy in its use, fuel would soon become precious on board the Erebus and Terror: and it is probable that after three years one of the ships would be broken up to furnish this essential article. Provisions could not last longer without placing the crews on short allowance, and to do so in that climate subjected them to sure and destructive attacks of scurvy. Fish and venison, it is true, might be procured in quantities sufficient to modify these conclusions, but not to a great extent; and, beyond all question, the numbers of the intrepid sailors who left England in such health and spirits in 1845 had waned sadly by the close of the season for operations in 1849. The forty men seen by the natives early in 1850 were doubtless the only survivors at that date. Franklin, had he lived till then, would have been sixty-four years old, but no one of that age was in the number seen by the natives. Had he been then in existence, he would have taken another route on the abandonment of his ship, as no one knew better than he the fatal result of an attempt to cross that wide expanse of barren ground lying between the mouth of the Great Fish River and the far-distant Hudson's Bay post on the south side of Great Slave Lake. Who can conjecture the reason that turned the steps of the weary wanderers in that direction? Perhaps the desire of solving the long-sought problem of a north-west passage even then animated their emaciated frames, and it is certain that they did solve it, though none of them lived to claim the grateful applause of their countrymen. Later in point of time, and in a higher latitude, Sir Robert M'Clure also filled up a narrow gap between previous discoveries, and so traced out the north-west passage by travelling over ice that has in the five several years in which it has been attempted proved to be a barrier to ships. If ever in the pursuit of whales, or for conveyance of minerals, commercial enterprise endeavours to force a north-west passage by steam, the southern route, whose last link was forged by Franklin's party with their lives, will undoubtingly be chosen. And it is to be deeply regretted that the parliamentary committee in recommending the grant of public money to Sir Robert M'Clure, which his courage and enterprise so well deserved, should have omitted to mention the prior discovery made by the crews of the Erebus and Terror.[1]

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[1] The erection of Tasmania into a see was promoted by Sir John's exertions and representations.

This sketch of Sir John Franklin's character and public services has been written by one who served long under his command, who during upwards of twenty-five years of close intimacy had his entire confidence, and in times of great difficulty and distress, when all conventional disguise was out of the question, beheld his calmness and unaffected piety. If it has in some passages assumed the appearance of eulogy, it has done so not for the purpose of unduly exalting its subject, but from a firm conviction of the truth of the statements. On the other hand, the writer has abstained, in the only sentences in which it was necessary to speak of opponents, from saying a single word more of their conduct or motives than strict justice to Franklin's memory demanded. Franklin himself was singularly devoid of any vindictive feeling. While he defended his own honour, he would have delighted in showing any kindness in his power to his bitterest foe; and in emulation of that spirit the preceding pages have been penned. (J. R—N.)

FRANKLIN, *Thomas*, the translator of Sophocles and Lucian, was born in London in 1721. He was educated at Westminster School, and afterwards at Cambridge, where he became a fellow of Trinity College, and in 1750 professor of Greek. After taking orders he obtained various minor church appointments, and was at length made chaplain in ordinary to George III. In the intervals of official duty he found time to turn his classical knowledge to account by translating the Epistles of Phalaris, and the whole works of Sophocles and Lucian. His translation of Lucian (in which, however, some of the dialogues are omitted) is the best English version of that classic that has hitherto appeared; that of Sophocles is far from being equally happy. Franklin also wrote a *Dissertation on Ancient Tragedy*, and an *Enquiry into the Astronomy and Anatomy of the Ancients*, besides a variety of minor works, prose and poetical, possessing small literary interest or value. He died in 1784.

FRASCATI, a town of the Papal States, 12 miles S. by E. of Rome, on the declivity of a hill commanding an extensive prospect. The town itself is not in any way remarkable; but the beauty of the vicinity, interspersed with numerous elegant villas, and the salubrity of the atmosphere, annually attract numerous visitors from Rome and other parts. On the summit of the hill, above the town, are the ruins of the ancient Tusculum, the birthplace of Cato, and the favourite residence of Cicero. Frascati took its rise in the 13th century, after the destruction of Tusculum by the Romans in 1191. Many of the older houses date from the 13th and 14th centuries; and the church of San Rocco, formerly the cathedral of San Sebastian, and still called the *Duomo Vecchio*, was built in 1309. The new cathedral was completed in 1700, and contains a monument to Cardinal York, who was Bishop of Frascati, and another erected by the cardinal to his brother Charles Edward, the young pretender, who died here on 31st January 1788. The villa Rufinella, which formerly belonged to Lucien Bonaparte, has within its precincts a hill called "Parnassus," on the slopes of which the names of celebrated ancient and modern authors are planted in box. One of the most splendid of the villas is the Aldobrandini: its grounds are adorned with numerous fountains and water works. Pop. about 5000.

FRASERBURGH, a small but thriving sea-port town of Scotland, Aberdeenshire, on the S. side of Kinnaird's Head, 42 miles N. of Aberdeen. It takes its name from Sir Alex. Fraser of Philorth, who, in 1613, obtained for it a charter as a burgh of regality, and whose representative. Lord Saltoun, is now superior of the town. The same Sir A. Fraser obtained in 1592 a charter for the institution and endowment of a college and university here; and at the west end of the town is a quadrangular tower of three stories, which formed part of the building designed for this seminary. The intention was subsequently abandoned, probably from want of funds. During the last war a large harbour was constructed here as a refuge for British ships of war, which might suffer from stress of weather in the North Sea. It has an area of upwards of six acres, is easy of access, and affords anchorage for vessels of every size. The town is neatly built, nearly in the form of a square, and most of the streets cross each other at right angles. The cross is a fine structure of a hexagonal form, covering an erea of 500 feet, and surmounted by a stone pillar 12 feet high, ornamented by the British arms and the arms of Fraser of Philorth. The herring fishery is actively prosecuted here. Pop. (1851) 3093.

FRATRICELLI, in *Ecclesiastical History*, an enthusiastic sect of Franciscans which arose in Italy about the year 1294. The word is an Italian diminutive, signifying "little brothers," and was used as a term of derision, as most of the sect were apostate monks, whom the Italians call *fratelli*, or *fratricelli*. For this reason the term, as a nickname, was given to many others, such as the Catharists, the Waldenses, and the like, however different in their opinions or in their conduct. But when applied to the austere part of the Franciscans, the name was considered honourable.

The founders were P. Maurato and P. de Fossombroni, who obtained of Pope Celestin V. permission to live in solitude as hermits, and to observe the rule of St Francis in all its rigour. They were joined by various idle vagabond monks, who, living after their own fashion, and making all perfection to consist in poverty, were soon condemned by Pope Boniface VIII. and his successor.

It is said that no less than 2000 persons were burnt by the Inquisition from 1318 to the time of Innocent VI. for their inflexible attachment to the poverty of St Francis. The severities against them were again revived towards the close of the 15th century, by Pope Nicolas V. and his successors. However, all the persecutions which this sect endured were not sufficient to extirpate it; for it subsisted until the times of the Reformation in Germany, when its remaining votaries embraced the doctrine and discipline of Luther.

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[1] Spars and pieces of rail recognised as having belonged to the Erebus or Terror were picked up by Captain Collinson near his wintering place in Cambridge Bay, and are sufficient evidence of currents setting in that direction, through a passage encumbered doubtless with drift ice.

The very extensive search for this ill-fated expedition has issued in a more complete exploration of those ice-encumbered seas than would otherwise have been instituted; but an account of the operations connected therewith will be given hereafter under the head of "Polar Regions," by one thoroughly acquainted with the whole subject—one who, in the prosecution of daring and successful private enterprise, preceded the modern "arctic voyages" instituted by government, discovered much of the Greenland coast, and gained a higher northern latitude than any former navigator.

FRAUENBURG, a town of Prussia, province of East Prussia, and government of Königsberg, on the Frische Haff. It is only remarkable as having been long the residence of Copernicus, whose tomb is still to be seen in the cathedral, of which he was a canon. The house in which he resided is also shown. Pop. (1849) 2329.

FRAUNHOFER, Joseph von, a distinguished practical optician, was born in 1787 at Straubing in Austria, and died in 1826 at Munich. For a detailed account of his discoveries and mechanical ingenuity, see art. Optics.

FRAUSTADT (Polish *Wschowa*), a town, capital of a cognominal circle in the Prussian government of Posen, 50 miles S.S.W. of the town of that name. It has manufactures of linen and woollen goods, hats, morocco leather, and gloves; and a large trade in corn and cattle. Pop. (1849) 6291.

FREA, or Frigga, or Friga, the wife of Odin, was, next to him, the most revered divinity among the Saxons, Danes, and other northern nations, during the reign of heathenism. As Odin was believed to be the father, Frea was esteemed the mother, of all the other gods. In ancient times, Frea was the same with the goddess Herthus, or Earth, who was so devoutly worshipped by the Angli and other German nations. But when Odin, the conqueror of the north, usurped the honours due only to the true Odin, his wife Frea usurped those which had been formerly paid to mother Earth. She was worshipped as the goddess of love and pleasure, who bestowed on her votaries a variety of delights, particularly happy marriages and easy childbirths. To Frea the sixth day of the week was consecrated, which still bears her name.

FREDERICIA, or Fridericia, a fortified town of Denmark, Jutland, at the northern entrance of the Little Belt. It is named after Frederick III., by whom it was founded in 1615. A toll is collected here on all vessels passing the Little Belt. Pop. (1850) 4326.

FREDERICK, the name of several electors of Brandenburg and kings of Prussia. By far the most remarkable member of the royal family of Prussia is Frederick II., surnamed the Great—the greatest king who in modern times has succeeded by right of birth to a throne. He was the son of Frederick-William I. and Sophia-Dorothea, princess of Hanover, and was born January 24, 1712. His father, Frederick-William, was a man of ill-regulated mind, but possessing considerable administrative ability. He first conceived the idea of gaining for his country, by means of a strong military organization, a place among the great European powers quite out of proportion to its size and internal resources. With this view he maintained, even in times of peace, a force of 60,000 men, whom he trained to a perfection of discipline unknown in Europe since the days of the Roman Republic. He took especial pride in collecting tall soldiers. He had crimps in every capital in Europe to purchase gigantic recruits at prices more than three times the salaries of his best-paid ambassadors. He took equal delight in disciplining them, and indeed seems to have thought that the whole business of life ought to consist in drilling and being drilled. To defray the expenses of this army he was obliged to exercise in the other departments of government a strictness of economy that degenerated into the most sordid avarice. Avarice, however, was one of the most venial of his bad qualities. His nature was essentially bad and coarse, even to brutality. He delighted to make his power felt in the most galling manner, even by the weakest and most harmless of his own subjects. He knew nothing of literature and the fine arts, and utterly despised them both. He banished the celebrated scholar and philosopher Wolf from his dominions, because he ventured to speculate on metaphysics, and almost made up his mind to put an end to the Berlin Academy and the universities. On the other hand, however, he encouraged all the industrial arts, and himself founded some of the richest manufactories, and most famous hospitals and medical colleges, of which Prussia has now to boast. His temper was violent to savageness, and against none was it shown with more ferocious cruelty than the young prince.

The education which the heir-apparent to the throne received from this parent was calculated to make him nothing better than a good drill-serjeant. But he had the good fortune when a boy to be allowed the society of a French lady, whose mother-tongue he speedily picked up; and his first tutor, M. Duhan, succeeded in early imbuing his mind with a love of polite literature. In the society of these persons, and his own mother and sister, Frederick enjoyed a precarious immunity from the tyrannical maltreatment of his father. Reduced at length to despair by the misery of his condition, the young prince determined to fly to England, and seek shelter at the court of his maternal uncle. He communicated his design to the only two friends he ever had, Keith and a young lieutenant by name Katt. The plot was discovered. Keith escaped in safety to Holland. Katt was taken and hung before the eyes of his royal comrade. Frederick himself was only saved from a like fate by the urgent intercession of the emperor of Austria, the kings of Sweden and Poland, and the States of Holland. He was merely confined as a state prisoner in the castle of Custrin, where he was detained till he had nearly completed his twenty-first year. The treatment he had undergone had soured his temper and hardened his heart, but it had also matured his understanding, and made him an adept in the arts of dissimulation. He affected to submit himself in all things to the will of his father; and in 1733, in token of this submission, accepted as a wife at his father's orders the Princess Elizabeth Christina, daughter of Frederick Albrecht, duke of Brunswick Bevern, who was his wife in name only. Till the death of the king in 1740 the favourite residence of the crown-prince was at Rheinsberg, on the frontiers of Mecklenburg. There he surrounded himself with a select literary society, consisting chiefly of Frenchmen, and solaced his leisure hours with his flute, of which he was a perfect master. He also kept up a correspondence with a number of eminent foreign literati, especially with Voltaire, and this correspondence afterwards led to strange results. In his retreat at Rheinsberg Frederick wrote an immense quantity of prose and verse, which he sent to Voltaire to correct and prepare for press. The most notable of these compositions is the *Anti-Machiavel*, a refutation of the *Principe* of the great Florentine diplomatist, in which that policy is condemned with especial severity which the writer pursued from the very day he assumed the Prussian crown. Early in the year 1740 Frederick-William died, and Frederick, who had just entered on his twenty-ninth year, ascended the throne. He found the treasury full, the army in the most perfect discipline, and the commerce and manufactures of the country flourishing and prosperous. The splendid army, which the old king had collected merely for the purpose of looking at, his successor determined to turn to practical account as soon as an opportunity offered. And such a chance was not long of presenting itself. The Pragmatic Sanction had guaranteed Maria Theresa in the peaceful succession to all her father's dominions, and none of the potentates who signed that instrument had been more profuse of his professions to abide by its terms than Frederick. He was now the very first to perjure himself by violating them. Availing himself of the fact that Silesia had originally belonged to the house of Brandenburg, he poured his troops into that province in 1740, and possessed himself of it before his hostile intentions were declared or even suspected. In the following spring the Austrians advanced in force to the relief of such strongholds as still held out. Frederick met them at Mollwitz, and after an obstinate engagement the steadiness and discipline of the Prussian troops carried the day, and the Austrians fled, leaving 8000 men on the field of battle. The victory was not due either to the generalship or personal gallantry of Frederick himself. He had taken command of the cavalry, which had been put to flight early in the action, and, believing that all was lost, had fled with his staff many miles from the scene of action. The victory was really gained by Marshal Schwerin and the Prussian infantry. The success of Frederick tempted the other powers who had had a share in the Pragmatic Sanction to imitate his example, in the hope of profiting like him by the dismemberment of the Austrian empire. The French and Bavarians entered Bohemia, and were joined by the Saxons. Prague was taken; and Frederick, for the second time, inflicted a signal defeat on the Austrian troops at Czaslau, May 17, 1742. By the advice of the English, Maria Theresa resolved to negotiate with Frederick, the most active and dangerous of her enemies. She consented to cede to him Upper and Lower Silesia, and some outlying portions of her wide dominions. Frederick abandoned his allies; Saxony soon followed his example; and the empress-queen, now at liberty to concentrate her forces against the French and Bavarians, speedily drove these invaders across the frontiers. Alarmed, however, at the successes of the Austrians, Frederick once more played the traitor, allied himself with France, and, before his intentions could be guessed, marched through Saxony into Bohemia, took Prague, and threatened Vienna. But he was compelled to retreat as suddenly as he had advanced; but on the 4th of June 1745 he defeated the combined forces of the Austrians and Saxons at Hohenfriedberg in Silesia, and shortly after at Sorr in Bohemia. The result of these victories was to confirm Frederick in the possession of Silesia; while he acknowledged Francis of Lorraine, husband of Maria Theresa, as emperor of Germany. To the second Silesian war, brought to a close by the treaty of Dresden in 1745, succeeded a peace of eleven years. During this interval Frederick was not idle. He reformed and simplified judicial proceedings in all parts of his kingdom, and with the aid of his chancellor Cocceii drew up the Frederician code. He fostered the arts and manufactures as zealously as his own father had done; and though his great military expenditure prevented him from maintaining a navy, yet he secured the right of free navigation for Prussian merchantmen. In the intervals of public business, which he transacted without ministers and with the assistance of only a few clerks, he found time to write a history of the House of Brandenburg, which possesses very considerable literary merit; and a didactic poem on the art of war, which is still highly valued. These, like all his other compositions, are written in French, which language he employed to the utter exclusion of his native tongue. Of German he always spoke with the bitterest contempt, and it has been said that he barely knew enough of that tongue to swear correctly at his grenadiers when they made some false moves on parade. His rigid economy did not prevent him from expending large sums of money in gratifying his taste for architecture; and the splendid palaces of Berlin and Potsdam remain to attest his munificence in this respect. Some of the most splendid buildings in his kingdom were set apart for the accommodation of his troops, which now numbered 160,000 men. This splendid army was not destined to remain long inactive. In the month of August 1756 began the Seven Years' War. The causes that led to it are rather to be sought in the intense aversion and fear with which Frederick was personally regarded by his continental neighbours. Diplomatic skill readily suggested some more specious pretext for deluging Europe with blood. Frederick's agents at the various continental courts made him aware of the storm that was brewing. He saw that he could appeal for help to England alone; and his claims even upon her were none of the strongest. With a prudent temerity he resolved to anticipate his enemies, and strike the first blow. Saxony was overrun with 60,000 Prussian troops; Dresden was taken; Pirna invested; and Marshal Brown, the Austrian commander, who was hastening through Bohemia to its relief, was met by Frederick at Lowositz and utterly defeated. Returning to Pirna, Frederick made himself master of it, and half compelled, half persuaded the Saxon garrison to enlist under his banner. The approach of winter put an end to hostilities; but the advantage of the first campaign lay decidedly with Frederick. Early in 1757 the Prussian troops were marched into Bohemia; and on the 6th May the Austrians under Brown were routed with great slaughter at Prague. Leaving a large force behind him to invest the Bohemian capital, Frederick pushed on to attack the army of Daun, which lay encamped in an almost impregnable position at Kolin. After a protracted and bloody engagement, Frederick was driven back, and compelled to evacuate Bohemia. The position of the Prussian king was at this time desperate. His army had lost its prestige; the members of his own family had begun to lose their confidence in himself; Europe was in arms against him; the English, his only allies, had been defeated by the French at Hastembeck; and his mother, whom he really loved, had just died. His own resolution had nearly given way under these accumulated disasters; and he seriously thought of poison as an escape from his misery. After a short interval, however, his mind recovered its tone, and he was once more steeled against all the reverses of fortune. Collecting his forces once more, he descended like an avalanche upon the combined armies of France and Austria, which he annihilated at Rosbach. Without a moment's delay he flew to Silesia, routed the Austrians, first at Lissa, and still more signally at Leuthen, where he achieved his most glorious victory, recovered Breslau, and expelled the Austrians from Silesia. England marked her sense of Frederick's gallantry by contributing an annual grant of L.700,000 towards the expenses of the war; and this subsidy soon enabled the Prussian king to repair the gaps which his numerous battles made in his ranks. The campaign of 1758 was signalized by a splendid but dearly-bought victory over the Russians at Zorndorf, and by some minor engagements, in which Frederick was less fortunate; and that of the following year by the battle of Kunersdorf, in which, though at first victorious, he was finally defeated with great loss. Berlin next fell into the hands of the enemy, and was only saved from plunder by a heavy ransom. Next spring, however, fortune once more smiled on the Prussian king, who relieved Berlin, and drove the Austrians out of Saxony, after a sanguinary conflict at Torgau. During the winter of that year he repaired his losses as usual, and in spring presented an unbroken front to his many foes. His army, however, was very inferior to what it had been, and his position was hourly becoming more critical. He had actually begun once more to bethink himself of taking poison, when the death of the czarina of Russia, and the accession of Peter III., an enthusiastic admirer of Frederick, completely changed the aspect of affairs. Peace was at once concluded with Russia and Sweden. Being thus freed from his most formidable foes, Frederick was free to concentrate his forces against the Austrians, whom he routed at Buckersdorf, and drove for the last time out of Silesia. Danger now began to menace the house of Hapsburg from another quarter. The Turks had assembled a mighty army on the frontiers of Hungary, and were threatening Vienna; and in February 1763 the peace of Hubertsburg put an end to the Seven Years' War. Frederick yielded nothing. Silesia has ever since his day been an appanage of the Prussian crown.

After an absence of six years, Frederick entered Berlin in triumph. The houses were splendidly illuminated, and the multitude greeted him with acclaim as he rode through the streets. With unremitting energy he set himself to repair the losses and devastation caused by the war. He distributed corn from his own magazines both for seed and food, rebuilt the houses (of which fifteen thousand had been burned to the ground), and apportioned his cavalry and artillery horses among the farmers for the tillage of the soil. Silesia and Pomerania were exempted from all taxes for a certain term of years. The bank of Berlin was instituted, canals were constructed, and manufactories erected with various privileges from the king; and though the true principles of commerce do not seem to have been well understood, he did his best to restore and promote the ruined trade of Prussia.

In 1772 he agreed to the first partition of Poland, and in 1778 incorporated the Franconian principalities, thus making large and valuable accessions to his power. In 1785 he organized the famous "Fürstenbund," which frustrated the attempts of the Austrian emperor to exchange the Low Countries for Bavaria; and in the following year concluded a commercial treaty with the United States of America. Though his career was now drawing to a close, he still bestowed as much time and care on the details of government as he had done in the prime of life, and persisted in this policy till within two days of his death, which happened on the 17th August 1786, after he had entered on the seventy-fifth year of his age, and the forty-seventh of his reign.

Frederick comes before posterity to be judged in the twofold capacity of author and ruler. Even though he had never distinguished himself in the political world, his claims to posthumous renown as a writer would have been entitled to a careful consideration. Some of his compositions we have already alluded to. Though his most elaborate works, they were not such as he prided himself most upon. He believed himself to be a poet, and was as sensitive on the subject of his verses as the humblest poetaster. We have already mentioned Frederick's partiality for everything French. He even adopted the French tongue in preference to his own, and used it as the vehicle of his thoughts in all his works prose and poetical. Like all writers who have written in a tongue of which they have not the full command, Frederick seldom rises above mediocrity in his poetical effusions. Even had he been thorough master of any one form of speech, it is doubtful if he would ever have attained particular distinction as a poet. The "vision and the faculty divine" were not his. He had plenty of wit, chiefly of the satirical kind, and no small abundance of ideas; but he lacked the fancy, the imagination, and the refinement of thought which go to make the real poet. In his prose works he shows to far greater advantage. Besides those formal works which have been already characterized, he wrote a vast number of letters, which have been published among his posthumous writings, and form on the whole the most readable and agreeable of his works. They are always sensible, direct, and concise, and, considering the position of the author, very fair and impartial. Not the least interesting in the collection are those addressed to Voltaire, whom at one time he almost worshipped as a demigod, and at another branded as a knave and rascal. The whole episode, indeed, of Frederick's connection with the patriarch of French literature is one of the most interesting, amusing, and humiliating in the history of letters.

But Frederick the ruler was a very different being from Frederick the author. Except Cromwell, no such governor had appeared in Europe since the days of the old Plantagenets; and in the history of the last two hundred years, no single name stands higher than his, but that of the first Napoleon. Like Napoleon, Frederick in his youth professed himself a warm admirer of constitutional governments, and upheld them as the model of a well-governed state. But he was at heart a tyrant in the old Greek sense of that term, and the single aim of all his policy was to establish a *tyrannis* that should be feared and respected throughout Europe. How successfully he carried out his plan is shown by the results he achieved. The kingdom he received from his father comprised only about 2000 German square miles, and only took rank as a fifth-rate power in Europe. When he died, he bequeathed it to his successor almost doubled in extent, and ranking on equal terms with the oldest and most powerful of the surrounding monarchies. In adapting his means to this end, he was as unscrupulous as a Jesuit. In his proclamations, issued before the Seven Years' War, he paraded, for form's sake, his ancient claims on Silesia; but in his memoirs he coolly describes his real motives when he says, "Ambition, interest, and the desire of making people talk about me carried the day, and I decided for war." The barren glory of military renown was little to his taste unless he saw a fair prospect of securing some solid advantage from the confusion of a general European war; and he always managed to balance his opponents so nicely against each other, that whoever lost he was sure to be a gainer. To say nothing of the strong imprint of his own character which he left upon his nation, the material advantages which his policy secured for it were such as to make Prussia the envy of surrounding nations. Besides the increase of territory already mentioned, Frederick left his successor ten millions sterling in the exchequer, and not a farthing of national debt, an army of 200,000 of the best disciplined troops in the world, and a contented people enjoying wholesome laws and a fairly administered judicial system.

As is often the case with men brought up under the stern rigour of an unreasoning fanaticism, Frederick became in his old age an avowed disbeliever in revelation; and though he was fond of speculating on natural religion, he does not seem to have had any fixed or definite ideas on the subject. His early training had soured his temper as well as blunted his religious sensibilities; and to this must be attributed many of the acts of harshness and cruelty with which he has been taxed, especially in the discipline of his army. The severity of his discipline was such as sometimes led to strange consequences. The royal guard at Potsdam found it so intolerable that they preferred death to life. As, however, by the tenets of their church, suicide was looked upon as an unpardonable sin, they were led to commit what they considered the more venial sin of murder, and always selected as a victim some young and innocent child. They thus gained their object, which was to die without committing suicide. The cases of child-murder by soldiers of the guard became at length so numerous that it was found necessary to devise some means to put a stop to the practice which the punishment had failed to do. The penalty was changed to branding and lashing, and from that day the murders ceased. If, however, Frederick was often guilty of cruelty, the recorded instances of his clemency and generosity are still more numerous and striking.—(*Life of Frederic the Great*, by Lord Dover; *Memoirs of the Court of Prussia*, by Dr Edward Vehse; *Essay on Frederic the Great*, by T. B. Macaulay; &c., &c.)

FREDERICK, a city, capital of a cognominal county in the state of Maryland, North America, stands on the Carroll Creek, a tributary of the Monocacy, 63 miles W.N.W. of Annapolis. It is well and regularly built, and being situated in a rich agricultural district it carries on an extensive trade. It is connected by a branch with the Baltimore and Ohio railway. The public buildings include a courthouse, county jail, market-house, and a college chartered in 1850. Pop. (1850) 6028.

FREDERICKSBORG, a village in the island of Zealand, 20 miles N.N.W. of Copenhagen. It has a castle built in the commencement of the seventeenth century by Christian IV. after a plan of Inigo Jones, and now the usual summer residence of the royal family.

FREDERICKSBURGH, a post-town in the state of Virginia, on the S.W. side of the Rappahannock river, 110 miles above its mouth in Chesapeake Bay, and 60 miles N. of Richmond. The river being thus far navigable, large quantities of tobacco, corn, and flour are exported. Pop. (1850) 4062.

FREDERICKSHALD, or Frederickshall, a maritime town of Norway, stift of Aggerhuus, at the influx of the Tistedaelf into the Idefiord, 57 miles S.S.E. of Christiania. It is noted for its strong castle of Frederickstein, which stands on a perpendicular rock 350 feet high overhanging the sea, and is considered one of the strongest fortresses in Europe. It was at the siege of this fortress that Charles XII., king of Sweden, was killed on 11th December 1718. The town itself is not walled. It was almost totally destroyed by fire in 1759, and has since been rebuilt in a neat and regular manner. Pop. 4000.

FREDERICKTON, the capital of New Brunswick. See New Brunswick.

FREDRO, Maximilian, a celebrated Polish author who died in 1676. He was Palatine of Podolia, and spent his life in the service of his country, in the council as well as in the camp, in both of which he occupied many important posts. His works are written chiefly in Latin, and are full of interesting details both on war and politics; while the vigour and conciseness of his style have procured for him the name of the "Polish Tacitus."

His principal works are—*Proverbs and Counsel, Moral, Political, and Military*, in Polish; *Considerations on the Military Service*, also in Polish; *Vir Consilii Monitis Ethicorum, nec non prudentiæ civilis discendum instructus; Monita Politico-Moralia et Icon ingeniorum; Militarium seu axiomatum belli ad harmoniam togæ accommodatorum libri; Fragmenta Scriptorum togæ et belli.* The first-mentioned work is that upon which chiefly rests the reputation of Fredro, whose thorough knowledge of the world appears in every sentence.

FREE BENCH is that estate which, by the particular custom of the manor, the widow becomes entitled to on the decease of the husband, in his copyhold lands and tenements. Anciently the term was equally applicable to that which the husband becomes entitled to on the decease of the wife; but of later days the estate of the husband has been denominated his *curtesy*, while the term *freebench* has been confined to the widow's estate. (See Watkins on *Copyholds.*)

FREEBOOTERS (Fr. *flibustiers*), a name given to a class of piratical adventurers of all nations, but especially of France and England, who have obtained a place in history by the courage and intrepidity they displayed in executing the most difficult enterprizes. The origin of their history is involved in obscurity, nor has the derivation of their name been precisely determined; but the *flibustiers* of the French historians correspond to the *bucaneers* of our own writers. (See Bucaneers.) The South American islands formed the chief theatre of their exploits; and such was the relentless hostility they exercised against the Spaniards, that during the latter half of the seventeenth century their commerce in those seas was almost utterly ruined. At the commencement of the following century these daring adventurers sustained a series of disasters which sensibly diminished their numbers; and their name, which during a period of fifty years had been so redoubtable and dreaded, ceased to be formidable from that time. The term freebooter has been applied in a general sense to robbers and other plunderers.

FREE CHURCH. See Britain, vol. v., p. 669; and Presbyterianism.

FREEDMAN, a man who has been a slave, and is manumitted. See Libertus, and Slavery.

FREEHOLD, Frank Tenement (*liberum tenementum*), is land or tenement which a man holds in *fee-simple, fee-tail*, or for a term of life. Freehold is of two kinds, in *deed* and in *law*. The first is the real possession of land or tenement in fee, fee-tail, or for life; the other is the right to such land or tenement before entry or seizure.

Freehold is sometimes taken in opposition to villenage. Lambard observes, that land, in the time of the Saxons, was distinguished into *bockland, i.e.* holden by book or writing; and *folkland, i.e.* held without writing: the former was held on far better condition, and by the better sort of tenants, as noblemen and gentlemen, being such as we now call *freehold;* the latter for the most part in possession of peasants, being held by them as *tenants at will.*

FREE IMPERIAL CITIES. This appellation was bestowed, under the German empire, on certain cities which acknowledged no head but the emperor and were governed by their own magistrates. Some of these cities, as Worms and Cologne, acquired various privileges and immunities at an early period, in consequence of the assistance they rendered the emperors in repressing the arrogance of the nobles; and commerce and manufactures gradually contributed to their importance. In this manner the imperial cities originated in the middle of the twelfth century. It would appear, however, that there were free cities in Germany which had existed from the time of the Romans, though possessing little in common with those of later times, and which in the beginning of the sixteenth century lost their most valuable privileges, and even the name of free cities, through the ignorance and carelessness of their magistrates. As to the nature of these privileges it will be sufficient to remark that they were such as to constitute them nothing less than independent republics. The cities of Lombardy, enriched by commerce and encouraged by the popes, often ventured to resist their masters the emperors; and their example was followed by those of Germany. In the middle of the thirteenth century two important confederacies were established for common objects—the Hanseatic League in 1241, and that of the Rhenish cities in 1246. The powerful Hanseatic League lasted nearly 400 years, and its dissolution was effected by several causes in 1630. The remnants of this league, with the former confederacy of cities which had its representatives in the German diet, as well as the free cities of Hamburg, Bremen, and Lubeck were incorporated with the French empire in 1810. As these cities co-operated vigorously in the recovery of German independence, they were acknowledged, together with Francfort, as free cities by the congress of Vienna; and as such they joined the German confederacy, June 8, 1815, and obtained the right of a vote in the diet. (See also Hanse Towns.)

FREEMASONRY. See Masonry, Free.

FREESTONE, sandstone; so called from the facility with which it may be cut or wrought.

FREEWILL Islands, three small islands in the Eastern Seas, discovered by Captain Carteret in 1767, and almost entirely surrounded by a reef, except on the east, where there is a narrow passage that will admit a canoe. Long. 137. 51. E., Lat. 0. 50. S.

FREEZING, and Freezing Mixtures, see Cold, vol. vii., p. 101.

FREIBERG, the mining capital of Saxony, stands on the Münzbach, not far from its confluence with the Mulde, and 19 miles S.W. of Dresden. It is an ancient imperial city, and was long the residence of the Saxon princes, who bestowed upon it many important privileges. The town is well built, paved, and lighted, and is still surrounded by its old walls. It is the seat of the general administration of the mines throughout the kingdom, and owes its rise to the discovery of its silver mines in the twelfth century. Its celebrated academy was founded in 1765, and is frequented by students from all parts of Europe. These are instructed in the practice as well as the theory of mining, and enjoy great facilities for study from the extensive collections of minerals and models, and the library connected with the academy. Among its distinguished scholars it reckons Werner (who was also a professor here), Humboldt, Mohs, and Jameson. The centennial birthday of Werner was celebrated here with great pomp on 25th September 1850. Freiberg has also a high mining school, gymnasium, normal seminary, orphan asylum, theatre, &c. The old castle of *Freudenstein* or *Freistein*, situated in one of its suburbs, is now used as a corn magazine. The cathedral is an elegant Gothic edifice of the fifteenth century—having a richly adorned portal in the Byzantine style, called the *Golden Gate*. It contains numerous monuments, among which is one in memory of Prince Maurice of Saxony, who fell in the battle of Siever-shausen in 1553, and another to Werner, who is interred here. In the Lady Chapel adjoining, are the remains of Henry the Pious and his successors, down to Johann Georg IV. who died in 1694. Freiberg has extensive manufactures of gold and silver lace, woollen cloths, linen and cotton goods, lace, iron, copper, and brass wares, shot, gunpowder, white-lead, &c. It has also several large breweries. In the vicinity are about 130 mines of silver, lead, copper, cobalt, &c., giving employment to upwards of 5000 miners. At Halsbrücke, 3 miles from the town, are extensive smelting works and foundries. Pop. (1849) 14,151.

FREIBURG or FREYBURG, a city in the grand duchy of Baden, capital of the circle of the Upper Rhine, on the Dreisam, and on the Basle and Mannheim railway, 40 miles N. by E. of the former town. The town is generally well-built, having several wide and handsome streets and some squares. Its old fortifications have been replaced by fine public walks and vineyards. It is the seat of an archbishop, and has a Catholic university founded in 1457, with a library of 100,000 volumes, a botanic garden, and a museum of natural history. Among the public buildings are the palaces of the grand duke and the archbishop, the custom-house, exchange, theatre, town-hall, museum, house of correction, &c. The charitable establishments include a foundling hospital, orphan asylum, military hospital, and a blind asylum. The cathedral or minster is considered one of the finest and most perfect specimens of Gothic architecture in Germany, being alike remarkable for the delicate symmetry of its proportions and the good taste of its decorations. It was begun towards the middle of the twelfth century, and was not completed till 160 years afterwards. The tower is 386 feet high, exhibiting a skilful transition from a square base into an octagon, which is surmounted by a pyramidal spire of the most exquisite open-work tracery of stone, of extreme boldness as well as lightness. The edifice is of red sandstone, and contains some stained glass-windows of great beauty, statues of Berchtold V., and other dukes of Zähringen, and paintings by Holbein, Grun, and other artists. In the centre of the square called the fish-market is a fountain surmounted by a statue of Duke Berthold III. of Zähringen, the founder of the city. The manufactures of the town consist of chicory, chemicals, soap, starch, potash, leather, tobacco, and musical instruments. Freiburg was long the capital of the landgraviate of Breisgau. Pop. (1846) 15,380.

FREIBURG, FREYBURG, or FRIBURG, also called Friburg im Uchland, a canton of Switzerland. It is bounded on the N. and E. by the canton of Bern, on the S. and W. by Vaud, and on the N.W. by Lake Neuchâtel. The detached portions are entirely surrounded by the canton of Vaud. Physical features. The canton of Freiburg belongs to the basin of the Aar, and is drained from S. to N. by the river Saane or Sarine, an affluent of the Aar. The southern part of the canton is very mountainous, being covered with offshoots of the Alps which separate the waters falling into the Rhône and Lake Leman from those flowing into the river Aar. The general direction of the surface slope of the canton is towards the N. and N.W. down to the plains skirting the lakes Neuchâtel and Morat, with a small portion declining southwards towards the Lake of Geneva. In the S. or most elevated part of this canton, along the left bank of the Saane, are the Moléson and the Dent de Jaman, on the confines of Vaud, respectively 6710 and 4500 feet above sea-level. On the right bank of the same stream are the Dent de Branleire and Mont Berra, respectively 7740 and 5310 feet high. Rivers. Near the head of the Sanetsch Pass, the most westerly in the Bernese Alps, rises the Saane, which flows N. through the middle of the canton; and on approaching the village of Saanen, turning a few miles W. in Vaud, it resumes its first direction, crosses the canton of Freiburg, flows through the towns of Gruyère and Freiburg, and falls into the Aar below Laupen, after a rapid course of about 72 miles. The valley of Bellegarde expands below Gruyère, where the Charmey joins the Saane as an affluent. Besides the Saane, which drains two-thirds of the canton, there is the Broye, which, flowing northward, and crossing the W. part of the canton, falls into Lake Morat, whence again it issues, and empties itself into Lake Neuchâtel. Climate, soil, &c. From the nature, elevation, and inclination of the surface of Freiburg, as might be expected, the climate is cold in winter, and subject to very sudden changes in spring and autumn. The pasture is excellent, both natural and artificial; and the crops most successfully cultivated are wheat, oats, rye, barley, potatoes, and tobacco in small quantities. Near the lakes of Neuchâtel and Morat, vines and other fruit-trees are cultivated, and forest timber is abundant, and much used as fuel. Animals. The domestic animals are horses, cows, sheep, goats, and pigs, which are not only numerous in proportion to the extent of the canton, but of excellent breeds: the horses and cows are the best breeds in Switzerland. Dairy husbandry is thoroughly understood; and the cheeses made in this canton are the best of their kind. Produce and manufactures. On the banks of the Upper Saane, and in the Charmey valley, are manufactured the cheeses known as Gruyère, of which about 30,000 cwt. are produced every year. Coal is raised in Bellegarde valley, and turf cut on the marshes of Morat. Some small paper-mills, iron-works, and glass-works are in operation; and, besides, there are some inconsiderable manufactures of tobacco, kirschwasser (cherry water), leather, and straw hats. The streams abound with carp, trout, eels, tench, pike, &c.; and of game there are in abundance wild ducks, woodcocks, red partridges, hares, and chamois. Schools. About 200 elementary schools, attended by 8000 pupils, are in active operation, and a normal school for the training of teachers. With the exception of the district of Morat, the Roman Catholic religion is universal over this canton. Since the expulsion of the Jesuits in 1847, there is no reliable information to be had in reference to the college of Freiburg, which was till then under their care, and attended by upwards of 500 students. There is a Protestant college at Morat. Language. The line of demarcation between the French and the German languages passes through this canton, the greater number of the people using the French patois, while the rest speak a very corrupt German dialect. In the upper valley of the Saane the dialect is one of the Romansche language. The educated, however, all speak French.

History. Until the eleventh century the canton of Freiburg formed part of the kingdom of Burgundy; but since that time it was held by the hereditary dukes of Zähringen, one of whom, Berthold IV., built in 1179 the town of Freiburg ("freetown"), on which he conferred a municipal government, thus rendering it independent of the neighbouring feudal lords. After the extinction of the house of Zähringen, this canton passed under the house of Kyburg, and thence to that of Hapsburg, one of whom, Rudolph, the founder of the Austrian dynasty, confirmed and enlarged the liberties of Freiburg in 1274. At that time the territory now called *Alte Landschaft*, "the old country," comprehended the entire canton. In 1450, when Freiburg was assailed by Bern and the other Swiss cantons, the reigning duke, Albrecht of Austria, released the inhabitants from their oath of allegiance, and they remained for some years under the protection of the dukes of Savoy. In 1481, having taken part with the Swiss against Charles the Bold, Freiburg was recompensed by being taken into the confederacy as a sovereign canton or state. By that and the subsequent wars Freiburg has attained its present territorial extent.

Government.

Until December 1830, the government was like that of Bern—a popular municipality. At that date, however, a new constitution was formed, by which all natives of the canton aged 25 years, and being neither servants nor in the service of a foreign state, have the right of voting in the primary assemblies which choose the electors in the proportion of 1 to 100 of the inhabitants. The electors assemble in electoral colleges in the chief town of the district, and elect the members to the great Council of the Canton in the proportion of 1 to 1000 of the inhabitants. The members thus elected are appointed for nine years, and they meet twice a year, in May and November. The Great Council again appoints the Council of State or executive, consisting of 13 members for eight years; and the Court of Appeal, consisting of thirteen judges appointed for life. The president of the Council of State is elected by its members for two years. Freiburg returns five members to the National Council, under the new Swiss constitution, for its federal and general government.

Chief towns.

Besides Freiburg, the capital, the other principal towns are Morat, Bulle, Gruyère, Romont, and Staefs, the inhabitants of which are respectively 1698, 1514, 400, 1400, and 1800. *Morat* (or Murten) on the bank of the Lake of Morat or the Murtenzee, contains a college, a public library, an hospital, an orphan asylum, and a castle built in the thirteenth century. The Lake of Morat is about five miles long by two in breadth, and about 170 feet in depth. *Bulle* is the chief depôt for Gruyère cheese, and stands midway between Freiburg and Vevay, being about nineteen miles from each. *Gruyère* stands at a short distance from Bulle, near the left bank of the Saane or Sarine, and on a hill, of which the top is crowned with a feudal castle, still in good preservation. The area of Freiburg is 566 English square miles, occupied by a population (in 1850) of 99,891, of whom 91,125 were citizens of the canton, 7373 citizens of other cantons, and 1335 foreigners; 87,753 being Roman Catholics, and 12,133 Calvinists inhabiting the district of Morat.

Freiburg, Freyburg, or Friburg, the capital of the canton of Freiburg in Switzerland, is built on several steep hills on both banks of the Sarine, and is thus rendered an extremely striking and picturesque object in the landscape. It lies nearly 16 English miles S.W. of Berne, and 33 N.E. of Lausanne. Intermixed with churches, convents, and other buildings, are green fields, gardens, trees, and naked rocks. The opposite banks of the Sarine are joined by four bridges, of which two are of wood, one of iron, and the fourth an iron suspension-bridge—one of the finest in the world. It is 28 feet wide, 906 long, and 175 feet above the level of the stream. Other remarkable structures are the Lyceum, opened in 1805; the Chancellery, where the Council of State meets and the offices of government are located; the Franciscan Convent, of which Father Girard, promoter of popular education, was an inmate; the town-house, in which the Great Council meets, built in the sixteenth century; the collegiate church of St Nicholas, built in the twelfth century, and famous for its organ and a curious bas-relief of the Last Judgment; the College of St Michael, founded by the Jesuits, by whom several hundred young men are here boarded and educated; and the Ursuline Monastery, which has elementary schools for females. The population of Freiburg is about 9000. Its manufactures are few, the principal being pottery, hardware, leather, tobacco, straw hats, and woollens. There are two printing presses, some dye houses, and sugar refineries. Freiburg has also several libraries, learned societies, a museum, a diocesan school, public baths, a prison, an hospital, and a savings-bank. Saturday is the market-day, and there are five fairs held at stated times throughout the year.

FREIGHT, the hire of a ship, or a part of it, for the conveyance and carriage of goods from one port or place to another; or the sum agreed on between the owner and the merchant for the hire and use of a vessel. It also denotes the cargo itself. See Charter Party.

FREIND, John, a distinguished English physician, was born in 1675 at Croton in Northamptonshire. He made great progress in classical knowledge under Dr Busby at Westminster, and at Christ Church, Oxford, under Dr Aldrich; and while still very young, produced, along with Foulkes, an excellent edition of the speeches of Æschines and Demosthenes on the affair of Ctesiphon. After this he began the study of medicine, and having proved his scientific attainments by various treatises, was appointed professor of chemistry at Oxford in 1704. In the following year he accompanied the English army, under the Earl of Peterborough, into Spain; and on returning home in 1707, wrote an account of the expedition, which attained extraordinary popularity. Two years later he published his *Prelectiones Chimicæ*, which he dedicated to Sir Isaac Newton. In 1722 he entered parliament as member for Launceston in Cornwall, but being suspected of favouring the cause of the exiled Stuarts, he spent half of that year in the Tower. During his imprisonment he conceived the plan of his most important and valuable work, *The History of Physic*, of which the first part appeared in 1725, and the second in the following year. In this latter year he was appointed physician to Queen Caroline, an office which he held till his death in 1728. A complete edition of his Latin works, with a Latin translation of the *History of Physic*, was published in London a few years after his death.

FREINSHEIM, Johann, a distinguished German scholar, was born in 1608 at Ulm in Suabia. He taught rhetoric and belles lettres at Upsal, became librarian to Christina of Sweden, and finally a professor in the university of Heidelberg, where he died in 1660. Freinsheim is best known by his supplement to Livy, which he wrote as a substitute for the lost books of that historian. His imitation of the mere form of Livy's style is very close and sufficiently happy, but as he wanted Livy's other great historical qualities, his "supplement" may rather be regarded as a literary curiosity than a contribution to history. Freinsheim wrote also a supplement to Curtius, and a commentary on that author's works, as also on those of Florus, besides some minor compositions of little value.

FREISING, a town of Bavaria, circle of Isar, on the Isar, 20 miles N.N.E. of Munich. It is a very ancient town, and is said by some to have been founded by the Romans. It was, however, in existence as early as A.D. 444, and was made the seat of a bishop in 724. In 1817 the bishop was transferred to Munich, and raised to an archbishop. Pop. (1845) 5350.

FREJUS, the ancient *Forum Julii*, a town of France, department of Var, about a mile from the Mediterranean, and 15 miles S.E. of Draguinan. It took its name from Julius Cæsar, who is said to have established a Roman colony here. It was improved by Augustus, and in the time of the subsequent emperors it became an important naval station. Among the remains of the ancient town are a triumphal arch, a ruined amphitheatre, traces of two moles which formed the entrance of the port, and portions of a fine aqueduct, which brought the waters of the Saigne into the town from a distance of 20 miles. Traces of its old walls are also visible. The port, which communicated with the sea by means of a canal, has been dried up, and its site is now occupied by gardens. Frejus is the seat of a bishop, and has some handsome modern buildings, among which are the cathedral and the episcopal palace, both of Gothic architecture, and constructed partly of the remains of Roman edifices. At St Raphael, a fishing village about a mile and a half distant, Napoleon disembarked on his return from Egypt in 1799, and re-embarked for Elba in 1814. Pop. about 3000.

FRERE, John Hookham, an accomplished man of letters, and for some years English ambassador in Spain, was author of a light, satirical, and witty poem, the precursor and prototype of Byron's *Beppo* and *Don Juan.* This work, published in 1817, bore the clumsy and unpromising title of "*Prospectus and Specimen of an Intended National Work*, by William and Robert Whistlecraft," &c. The adventures of King Arthur and the knights of the Round Table were the nominal subject of the poem, but its style, formed on that of the Italian poets Pulci and Casti, was its chief attraction. The success of Whistlecraft led to another work in the same vein, *The Monks and the Giants.* In his early days Mr Frere joined his Eton associate Mr Canning in writing for the *Anti-Jacobin* journals. For many years before his death he resided at Malta, in the enjoyment of a handsome diplomatic pension of L.1500 per annum. He died of apoplexy at Malta, January 7, 1846, aged seventy-seven.

FRESCOBALDI, Girolamo, a celebrated Italian organist and musical composer, was a native of Ferrara. The date of his birth is not known. At the age of twenty-three he became organist of St Peter's at Rome. He is regarded as the father of that style now universally employed in all compositions for the organ. Talking of his first work, the *Ricercari e Canzoni Francese fatte sopra diversi obligatis in Partitura*, Dr Burney remarks that it "contains the first compositions we have seen printed in score, and with bars. They are likewise the first regular fugues that we have found upon one subject, or of two subjects carried on at the same time, from the beginning of a movement to the end." Frescobaldi was alive in 1641, but it is not known in what year he died.

FRESCO PAINTING, a method of painting with water-colours on fresh plaster while it is still in a soft state, by which means the colours are incorporated with the plaster, and become as permanent as the material on which they are spread. The Italians, from whom we borrow the term, call it *fresco* (literally *fresh*), either because it is executed upon fresh plaster, or because it is used on walls, alcoves, and other buildings in the open air. Vitruvius (vii. 4) calls it painting *udo tectorio.*

Painting in fresco is a very ancient art. It was practised by the early Greeks, and may be traced even to Egypt. It is generally executed on walls and vaults, the plaster being laid on in successive portions, or so much only at one time as the painter can despatch before it dries. The design is usually drawn previously on paper, to be chalked and transferred to the wall about half-an-hour after the plaster has been laid. From the difficulty of making alterations on the work when the colours are once absorbed, the design should be previously prepared with the greatest accuracy. When an alteration must be made, the part is usually cut entirely away, and relaid with fresh plaster.

The ancients painted on stucco; and we may remark in Vitruvius what infinite care they took in making the incrustation or plastering of their buildings, to render them beautiful and lasting; though the moderns find a plaster of lime and sand preferable for fresco painting, both because it does not dry so hastily, and on account of its subdued and agreeable tint.

The pigments chiefly employed in this kind of painting are earths, because their colours are not liable to be affected by the burning qualities of the lime. White is made of lime slaked some time previously, or of white marble dust; and the other substances used are red and yellow ochre, verditer, lapis-lazuli, black chalk, &c. These only require to be ground and mixed up with water. The brushes and pencils should be long and soft, otherwise they are apt to rake and raise the surface. In order that the work may may come out in all its beauty, the colours must be laid on quickly, while the plaster is still moist; nor should they ever be retouched dry with colours mixed up with the white of egg, size, or gum, as is sometimes done; because such colours grow blackish, and soon tarnish.

FRESHES, in sea language, the increased current of an ebb tide by means of a flood of fresh water flowing out into the sea, by which its waters are often discoloured for a great distance from the coast.

FRESNEL, Augustin-Jean, one of the most eminent philosophers of recent times, distinguished especially by his optical discoveries, was born on the 10th May 1788 at Broglie, in the department of the Eure, and ancient province of Normandy, a portion of France remarkable for the production of able men. His father was an architect, and was in circumstances to give his family a good education. In the case of Augustin Fresnel, who was a younger son, the promise of distinction was, however, at first small. His memory, which never was retentive, refused to be burdened with strange words and grammatical rules. At eight years of age he could scarcely read; yet his peculiar talents were not unjustly appreciated by his young schoolfellows, who used to nickname him "the man of genius;" and his juvenile but systematic experiments on boyish projectiles secured the respect of his companions, while they seemed to indicate the career of an engineer as that adapted to his talents.

At the age of thirteen he entered the "école centrale" of Caen; and at sixteen and a half, the Polytechnic School, where he acquitted himself with distinction, notwithstanding his feeble constitution and already infirm health. From thence he passed to the "Ecole des Ponts et Chaussées," and after the ordinary period of instruction emerged as a civil engineer in the employ of government in the usual manner. The occupations which fall to the care of such young officers in France is not of an elevated or very intellectual character. The selection of road materials, the erection of trivial works, the *surveillance* of subordinates, and the keeping of the public accounts on a small scale; such are their more common duties. Thus Fresnel remained occupied for eight or nine years, during which he exerted his powers in the fulfilment of his daily tasks with that conscientiousness and devotion which distinguished him through life.

On the temporary return of the Bourbons to the throne of France in 1814, he ardently espoused their cause, and exhausted the little physical energy he possessed in military service. The return of Napoleon to power crushed his hopes, and deprived him of his appointments. He was, however, suffered to retire to Paris, where he subsequently received a modest appointment in his own profession at the hands of the reinstated Bourbon government, and where he spent much of his future life.

His first original effort in science was made in 1814. He prepared a paper on the aberration of light, which, though correct, contained nothing new, and it was therefore suppressed. This was a discouragement to him for some time, and indeed his second effort met with a similar repulse. It was on *diffraction*, a class of optical phenomena noticed and discussed a century and a half before by Newton and Grimaldi; and to their writings on the subject the reading of

Fresnel had been confined. The singular and often paradoxical phenomena of shadows, the strange result that when two portions of the same pencil of light fall on the same spot, after passing by an obstacle, they may *interfere*, or produce darkness by their union, was perfectly new to Fresnel, although it had been analyzed and in part explained by Dr Young fifteen or sixteen years before. The principle of "interference" as a peculiar modification of light arising merely from the duplication of lights having the same origin, presented itself to the mind of Fresnel nearly in the form in which it had done to Young, and the result was a paper which, though highly ingenious and original, added little to what was previously known. Not altogether discouraged by this apparent misfortune, he returned to the subject in 1818, and presented to the Institute his celebrated memoir on Diffraction, for which, in the ensuing year, he received the prize of the Academy. This paper was remarkable, in the first place, for having made a real correction on the theory of Young, inasmuch as it explains the forms and colours of shadows and fringes without assuming the very questionable fact of *reflection* from the edges of the diffracting body as having anything to do with the phenomenon of interference. The interference in this case he proved to arise solely from the mixing of the disturbances having their origin at different parts of the front of the wave concerned in producing the final effect; a mode of reasoning which it is the most singular that Dr Young should have overlooked, as it had in some cases been clearly enough anticipated by Huygens.

Fresnel's other great success was in the simultaneous explanation of the connected phenomena of the polarization and double refraction of light *under all circumstances* on the undulatory theory. No doubt he did not reach unaided this great generalization. Dr Young was the first to publish the bold idea of *transverse vibrations*, by which alone it appears possible to account for the transmission with unequal velocities of two impulses through the very same material particles. The date of Young's first written communication of this notion was January 1817. Fresnel states that he had formed the same hypothesis the year before, but, deterred by the difficulty which Arago found in admiting it, did not at that time promulgate his views. It was some years before Fresnel methodically developed the consequences of the unequal elasticity in different directions of vibrating media. In 1821, and the beginning of 1822, he submitted to the Institute a memoir, or succession of memoirs, in which he not only explained the ordinary and extraordinary refraction of Iceland spar, on the supposition that the elasticity of the luminiferous ether is different in a direction parallel to the axis of the crystal, and in a plane at right angles to that direction; but by a geometrical process of great beauty he deduced the consequences of an assumed inequality of elasticity in all three dimensions of the crystal, and showed that the result would be conformable to what had been then but recently discovered respecting crystals with two optical axes. More than this, he gave a remarkable demonstration of the truth of his theory by showing by a direct experiment on topaz, that in this class of crystals neither of the two doubly-refracted rays follows the law of *ordinary* refraction, a conclusion which he had anticipated. The theory, moreover, not only gives an account of the laws of *refraction* of light under these various circumstances, but also of its condition of *polarization*, which again was found to be perfectly conformable to fact.

Owing probably in part to the predominant influence of Laplace in the French Academy (who was entirely devoted to the corpuscular theory of light), these great discoveries were but coldly received in Paris, although warmly supported by all the characteristic energy of Arago. In 1823 Fresnel failed in being elected into the Academy of Sciences. Dulong receiving the vacant place. In his correspondence he expresses himself as mortified by this occurrence, which he attributes to the unpopularity of the undulatory doctrine; but only a few months later (12th May 1823), he was *unanimously* elected an academician, a distinction by no means common. Fresnel's noble memoir on double refraction was not, however, printed in the transactions of the Institute until some years after his death, and the only direct honour which it received was the Rumford Medal of the Royal Society of London, which was delivered to Fresnel very shortly before his decease.

In Dr Peacock's life, and miscellaneous works of Dr Thomas Young, may be found part of the interesting correspondence of that great man with Fresnel during his later years. They throw light on the origin and course of some of Fresnel's discoveries, and bear a pleasing testimony to the honourable frankness which characterized the intercourse of those illustrious rivals.

Of Fresnel's other discoveries connected with the theory of light, we cannot here particularly speak. The most remarkable, perhaps, were the photometrical estimate of the intensity of reflected light, and that on the changes produced in the condition of polarized light by total reflection in glass. It will be seen by the list of papers at the close of this article that the number of optical papers which Fresnel wrote between 1817 and 1823 was very considerable.

We have now to mention a practical application of optics to the useful arts with which the name of Fresnel will ever be honourably associated. At least as early as 1819 it occurred to him that lenses might be substituted for mirrors, for the purpose of directing parallel rays of light from lighthouses, and thus preventing in a great measure the natural weakness, in consequence of its divergence, of light seen at a distance. It farther occurred to him that lenses of large size, and of moderate thickness, might be *built up* of segments of lenses. This last idea was not indeed new, for Buffon had proposed to diminish the weight and thickness of lenses by grinding them into zones which should have a common focus; and Condorcet proposed to construct these zones of separate segments. Sir David Brewster suggested in 1811 a similar construction, unaware, it appears, of what Condorcet had written. But all of these writers described their contrivances as applicable to burning instruments for concentrating the solar rays. Fresnel appears to have been unaware of what his predecessors suggested, but he has the far greater merit of actually applying the suggestion to the important purpose of lighthouse illumination. It was first carried into effect in France, where *polyzonal lenses* were made by M. Soleil, and have gradually been introduced into other countries, first into Holland, and then into Scotland. (See article LIGHTHOUSES.) Not content with this great improvement, Fresnel exerted remarkable ingenuity in contriving farther improvements in the mode of distributing light for the purposes of navigation under almost every conceivable circumstance; and he made copious use of the principle of the total reflection of light in glass, which had never before been applied to such purposes. In 1819 he was nominated upon the lighthouse commission; and in July 1823 the Corduan Lighthouse, at the mouth of the Garonne, was completed upon the new plan.

Of the last days of Fresnel little remains to be said. His constantly feeble frame at last became a prey to consumption. The duty of examiner of the Polytechnic School, which he had unwisely undertaken, gave a fatal turn to his malady. According to Arago, the government of the day refused him, on political grounds, a vacant post more suitable to his enfeebled state. Highly esteemed and admired by a few real friends, his optical discoveries remained under the check of the adverse dominant party of the Academy of Sciences. Some of his best memoirs were not printed in his lifetime. The greatest honour of his life came from

Fresnel.

England; first his election as a foreign member of the Royal Society in 1825, and secondly, the award by the same body of the Rumford Medal in 1827.[1] This last token of worldly praise was conveyed by Arago to the death-bed of Fresnel, at Ville d'Avray, near Paris, who has given this touching account of his sad mission:—"His strength, then almost exhausted, scarcely permitted him to glance at this token, so rarely awarded, of the esteem of the illustrious society. All his thoughts turned upon his approaching end; 'I thank you,' he said in a subdued voice, 'for having accepted this commission; I know the pain it must give you, for you feel, I am sure, that the fairest wreath is but insignificant when we must lay it on the grave of a friend.'"[2]

Fresnel died at Ville d'Avray on the 14th July 1827.

The following is believed to be a complete list of Fresnel's published writings, which has been obligingly communicated to the writer of this article by M. Léonor Fresnel, the brother and nearest surviving relative of Augustin Fresnel. They are enumerated in the order in which they were written, or at least read to the Institute or Philomathic Society.

1. First Memoir on the Diffraction of Light; and Supplement. Read 23d October 1815 and 15th July 1816. *Annales de Chimie*, 2d Series, i. p. 239. 2. Letter to M. Arago on the influence of Heat on the Colours of Crystallized Plates. *Ann. de Ch.*, 2d Series, iv. 298. 3. Memoir on the modifications which Reflection induces in Polarized Light; and Supplement. Read 24th November 1817 and January 1819. *Bulletin de la Société Philomatique*, February and March 1823. 4. Memoir on the Colours developed by homogeneous fluids in Polarized Light. Read 30th March 1818. First published in 1846 in the *Memoirs of the French Academy*; also in *Ann. de Ch.*, 3d Series, xvii. 172. On the rotatory property of Oil of Turpentine, &c., discovered by Seebeck. 5. Letter to M. Arago on the influence of the Earth's motion on some optical phenomena; and additional Note. *Ann. de Ch.*, 2d. Series, ix. 56 and 286. 6. Memoir on the mutual action of the Rays of Polarized Light. Conjoint Memoir with Arago. *Ann. de Ch.*, 2d Series, x. 288. Shows, amongst other things, that oppositely polarized rays do not interfere. 7. Memoir (second) on the Diffraction of Light. Read 29th July 1818. *Mem. Instit.*, vol. v.; *Ann. de Ch.*, 2d Series, xi. 246,—the celebrated Memoir which received the Prize. 8. Memoir on the Reflection of Light. Read 15th November 1819. *Mem. Inst.*, 1846. *Ann. de. Ch.*, 2d Series, xv. 379; and 3d Series, xvii. 316. 9. Note on the attempts to decompose Water by means of a Magnet. *Ann. de Ch.*, 2d Series, xv. 219. 10. Note on the Burners of Lamps with concentric wicks. *Ann. de Ch.*, 2d Series, xvi. 377. In connection with his optical inventions for Lighthouses. 11. On the calculation of the Polarized Tints of Crystallized Plates. *Ann. de Ch.*, 2d Series, xvii. 102. And further notes on the same subject, with answer to M. Biot, pp. 167, 312, 393, of the same volume. 12. Note on the Laws of Refraction in Crystals with one and two axes. *Moniteur* Journal, 12th December 1821. 13. Memoir on Double Refraction. Read 26th November 1821, and 22d January and 1st April 1822. *Mem. Instit.*, vol. vii., Contains the celebrated mechanical theory of Double Refraction in Crystals of one and two axes. Translated in Taylor's *Scientific Memoirs*, vol. v. 14. "On Light;" in the supplement to the French translation of Thomson's Chemistry. Paris, 1822. Contains an excellent elementary view of the Undulatory Theory. 15. Note on the Double Refraction of Compressed Glass. *Ann. de Ch.*, 2d Series, xx. 376. 16. Explanation of Refraction on the Theory of Waves. *Ann. de Ch.*, 2d series, xxi. 225, and *Bull. Philom.*, October 1821. 17. Memoir on a new system of Lighthouses (July 1822). Published by the Board of *Ponts et Chaussées*. 18. On the Ascent of Clouds in the Atmosphere. *Ann. de Ch.*, 2d Series, xxi. 260. 19. Answer to a Letter by M. Poisson. *Ann. de Ch.*, 2d Series, xxiii., 32 and 113. 20. On the Phenomenon of Coloured Rings. *Ann. de Ch.* xxiii. 129. 21. On the Double Refraction of Light passing through Rock Crystal parallel to the axis. Read 9th December 1822. *Ann. de Ch.*, 2d Series, xxviii. 147; and *Bull. Philom.*, December 1822. 22. On the Modifications produced by Reflection on Polarized Light. Read 7th January 1823. *Ann. de Ch.*, 2d Series, xxix. 175 (*extract*), and xlvi. 225. Contains the theory of Circular Polarization after plain Polarized Light has been twice totally reflected within glass. 23. Theoretical considerations on the Polarization of Light. *Bulletin Philomatique*, October 1824. 24. Note on the repulsion exerted by heated bodies upon one another. *Ann de Ch.*, 2d Series, xxix. 57 and 107; and *Bull. Philom.*, June 1825. Fresnel also published some observations "on the principal objections of Newton to the system of luminous vibrations, and on the difficulties presented by his hypothesis of *fits*" in Ferussac's Revue Encyclopedique, February 1823. It is much to be desired that these scattered writings of Fresnel were collected in a uniform manner. Some further account of Fresnel's optical discoveries will be found in the Sixth Dissertation prefixed to this Encyclopædia, chap. v. (J. D. F.)

Fresnoy
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Friars Observant.

FRESNOY, Charles Alphonse du, a French painter and writer on art, was born at Paris in 1611. His father, who was an apothecary, intended him for the medical profession, and educated him with that view. Contrary to the wishes of this parent, Du Fresnoy began the study of art, and having gone to Rome to perfect himself, was reduced to great straits, from being compelled to procure his own subsistence. The arrival of his old fellow-student Mignard at length enabled him to prosecute his studies in peace, and the two artists now spent all their time in copying the great masterpieces of the Farnese gallery. In 1656 Du Fresnoy returned to France, where he remained till his death in 1665. His pictures, which are not very numerous, are more remarkable for correctness of drawing and colour than force or originality of conception, and would never of themselves have preserved Du Fresnoy's name. His poem *De Arte Graphica* is the work by which he is best known. It is written in Latin verse, and has had the good fortune to be translated into most of the European tongues. There are three English versions of it; one in prose by Dryden; the second in verse by Wills, himself an artist; and the third, by Mason, in rhyme. A sort of factitious interest centres in this last version, which was annotated by Sir Joshua Reynolds. The work itself, which is a sort of critical treatise on the practice of painting, is dry, and scarcely relieved by even an occasional gleam of sentiment or fancy.

FRET, or Frette, a kind of architectural ornament, consisting of one or more fillets that meet in vertical and horizontal directions, as in the embattled and lozenge mouldings. Also a knot composed of two lists, or small fillets interlaced, used as an enrichment in empty spaces, chiefly in plastered roofs.

FREUDENSTADT, a town of Würtemberg, circle of the Black Forest, on the right bank of the Murg, 42 miles W.S.W. of Stuttgard. It has manufactures of woollen cloth, nails, white-lead, potash, and Prussian blue; and some trade in corn, cattle, and wood. Pop. 4100.

FREUDENTHAL, a town of Austrian Silesia, circle of Troppau, on the Black Water, 22 miles W. of Troppau. It has a large castle, a Piarist college, orphan asylum, and manufactures of linen and woollen cloths. Pop. 3600.

*FREY, Joachim, an eminent Swiss engraver. See vol. viii., p. 807.

FRIAR (Lat. *frater*; Ital. *fra*; Span. *frayle* or *fray*; Fr. *frère*; Celt. *brair* or *vrair*; *i.e.* brother), an appellation common to monks of every order, but more particularly applied to those of the mendicant orders, of which the principal were the four following; 1. minors, grey friars, or Franciscans; 2. Augustines; 3. Dominicans, or black friars; 4. Carmelites, or white friars. The name is restricted to such monks as are not priests, the latter being usually dignified with the appellation of *father*.

Friars Observant (*fratres observantes*), a branch of the Franciscans who separated from the brethren of their order on the ground of a laxity of discipline, and lived apart in places of their own choosing, simply agreeing among

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[1] Chiefly at the instance of Sir John Herschel, as we learn from Dr Young's correspondence (*Misc. Works*, vol. i., p. 400). Young, speaking of himself, characteristically says, "I was obliged to be silent from being *too much* interested in the subject;" and in another letter to Fresnel himself, "I should also claim some right to participate in the compliment which is tacitly paid to myself in common with you by this adjudication; but considering that more than a quarter of a century is past since my principal experiments were made, I can only feel a sort of anticipation of *posthumous* fame which I have never particularly coveted."

[2] Arago, *Eloge de Fresnel*, Œuvres, tom. i.

Friction
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Friendly
Societies.

themselves to observe the rules of their order more strictly than the conventuals did.

FRICTION, in *Mechanics*, denotes the resistance which a moving body meets with from the surface on which it moves. Friction arises from the roughness or asperity of the surface of the body moved on and that of the body moving; for such surfaces consisting alternately of eminences and cavities, either the eminences of the one must be raised over those of the other, or they must be both broken and worn off; but neither can happen without motion, nor can motion be produced without a force impressed. Hence the force applied to move the body is either wholly or partly spent on this effect; and consequently there arises a resistance or friction, which will be greater, *cæteris paribus*, according as the eminences are the greater and the substance the harder; and as the body, by continual friction, becomes more and more polished, the friction diminishes. See MECHANICS.

FRIDAY, the sixth day of the week, so named from the Scandinavian goddess Frea or Friga, the wife of Odin. By the Romans it was called *dies Veneris*.

FRIDSTOL. Among the immunities granted to churches in ancient times, mention is made of the *fridstol*, *i.e.* "the seat of peace," or sanctuary, where criminals might find safety and protection. Of these there were many in England; the most celebrated of which were that at Beverley, and that in St Peter's church at York, granted by charter of Henry I.

FRIEDLAND, a town in the province of East Prussia, government of Königsberg, and 27 miles S.E. of the town of that name. Here on 14th June 1807 the French defeated the allied forces of Russia and Prussia. There are several other towns in Germany of this name.

FRIENDLY ISLANDS. See POLYNESIA.

FRIENDLY SOCIETIES are associations of persons chiefly in the humbler classes for the purpose of making provision by mutual contribution against those contingencies in human life, the occurrence of which can be calculated by way of average. The principal objects contemplated by such societies are the following:—the insuring of a sum of money to be paid on the birth of a member's child or on the death of a member or any of his family; the maintenance of members in old age and widowhood; the administration of relief to members incapacitated for labour by sickness or accident, and the endowment of members or their nominees. Friendly societies are therefore associations for mutual assurance, but are distinguished from assurance societies, properly so called, by the circumstance that the sums of money which they insure are comparatively small.

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Although the period when such societies originated appears to be unknown, their existence in ancient times is unquestionable. They were numerous in England among the Anglo-Saxons, but from the general want of learning at so early an age, and the difficulty of preserving written documents even of the highest importance relating to a period so remote, it cannot be expected we should now possess any very complete records of their history or proceedings. Writers of credit, however, have mentioned several of these fraternities or "gilds" as existing both before and subsequently to the Norman Conquest, and their rules which are still preserved are highly interesting from their similarity to those of the friendly societies of the present day.[1] "These guilds or social corporations," observes an excellent writer, "seem on the whole to have been friendly associations made for mutual aid and contribution to meet the peculiar exigencies which were perpetually arising from burials, legal exactions, penal mulcts, and other payments and compensations."[2] Some of them had for their objects the bestowal of annual charity, the payment of stipends to poor persons, the entertainment of poor strangers and travellers, and various other works of a like charitable and benevolent character. It is highly probable that, notwithstanding the inconveniences arising from the political and social disturbances so frequent in England during the middle ages, the formation of the institutions in question suffered no permanent interruption.

Friendly
Societies.

No general account of their proceedings, however, is attainable. Their operations were confined to certain localities; they were formed for limited periods, after which they ceased and were reconstructed, and the only records of their labours consisted of their accounts, and perhaps a few scanty and ill-kept minutes, all of which were cast aside as without value on the dissolution of the body to which they referred. Even one of the most ancient friendly societies in London, which is said to have been founded in 1715, and to have continued from that period, possesses no documents from which may be gathered either its own history or that of any kindred institutions.[3]

their importance

to individual members,

It is scarcely possible to overrate the importance of such associations. When founded on correct principles and conducted with prudence, they are in every point of view of the highest value, not only to that class of society for whose welfare they are more immediately designed, but to the community in general, of which that class is a component part. A labouring man with a family to provide for is, as a general rule, unable, even with his utmost industry and frugality, to make a sufficient provision against a time of necessity; but as a member of a friendly society he can with comparative facility accomplish this desirable object, and without subjecting himself or those who are dear to him to any severe privations, he is enabled to look forward to substantial and adequate aid in the event of sickness or other unavoidable evils of a natural kind. But the benefits he secures by this means are of a moral and intellectual, as well as a merely physical character; the allowances which he receives are not accompanied by the painful reflection that they are the fruits either of public or of private charity; they are accepted by him as the legitimate produce of his own labour and foresight. Such considerations cannot but administer great comfort to a sufferer accustomed during an active life to cherish the sentiments of independence and self-reliance. The very self-denial requisite to secure the benefits of a friendly society is not only itself a virtue, but is in its exercise directly instrumental to moral and intellectual advancement. A man who acts on such principles must necessarily be more amiable and more intelligent than those who overlook them: he must be a better husband, a better father, a better servant; and this is amply illustrated by the observations of those who have had most experience of friendly societies, and who affirm that members of these bodies are not only the most intelligent but the most trustworthy of their class. It is scarcely necessary to remark that the influence of friendly societies upon the community in general must be eminently beneficial. By fostering habits of frugality, self-reliance, and independence, they restrain the tendency too common among the labouring classes to rely on parochial relief rather than their own exertions, and thus they counteract one of the most active causes of the moral deterioration of the people, while their direct effect is to diminish the burdens laid upon parishes for the support of the poor.

and to society in general.

It is unnecessary to encumber the present article with the

Principles of computation adopted.

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[1] Some of these institutions among the Saxons are referred to in Hick's *Thesaurus*, and in particular those at Cambridge and Exeter, of which the rules are fully given; other institutions of the same character are referred to as existing after the Conquest, by Dugdale, in his *Monasticon*. The laws of St Catharine's guild at Coventry in the reign of Edward III. are cited by that author at length, as "manifesting the decent government, ceremony, devotion, charity, and amity of those times."

[2] Turner's *History of the Anglo-Saxons*, vol. iii., p. 139.

[3] Ansell's *Treatise on Friendly Societies*, p. 11.

numerous and various tables which from time to time have been constructed to regulate the computations of friendly societies. It will be sufficient to notice, in general terms, the principles on which such computations are based, and in accordance with which those tables are constructed; these principles are derived from the operation of interest and annuities, and from the doctrine of probability. The former, *i. e.* the operation of interest and annuities, affords the means of ascertaining what present or periodical payments would increase to given sums in future specific periods when such sums might be required to have been created or realized; the latter, *i. e.* the doctrine of probability, renders it easy to determine the measure of the expectation of some supposed future event happening or not happening, such as sickness; and if the event must occur at one time or other, such as the event of death, it furnishes the means of determining the time at which, on an average, it may be expected to occur. The tables computed on these principles, it need scarcely be added, are large and numerous, as well as of the utmost practical importance.

Progress of friendly societies.

That the progress of friendly societies in Britain has been extremely great is beyond doubt, and that such progress is in the highest degree honourable to the industrious classes is no less unquestionable. It is however impossible to discover the number of societies which have been in existence. It has been stated that from January 1793 to January 1832, a period of thirty-nine years, there existed in Great Britain and Ireland 19,783 such societies, and that of these 16,596 were in England, 769 in Wales, 2144 in Scotland, and 274 in Ireland. It has further been stated that in the year 1815 the number of members amounted to 925,429.[1] Mr M'Culloch hesitates to admit the accuracy of this statement; and in the report of the House of Commons, dated November 29, 1852, p. 12, it is expressly stated that "there is no authentic account of the number of friendly societies enrolled previous to the 19th June 1828." The same report further declares that "it is almost impossible to ascertain the number of friendly societies which are now in existence;" it furnishes, however, a table prepared from returns sent to the Registrar of Friendly Societies which exhibits the number of those societies certified in England and Wales between the years 1828 and 1847. From this table the following results appear:—

Number of societies certified in England from 1828 to 1847,	9497
Number of members of such societies on 8th July 1847,	740,581
Amount received from members during the year preceding 8th July 1847, . . .	£662,082
Amount paid to or on account of members during the year preceding 8th July 1847, . .	£491,462
Number of societies certified in Wales from 1828 to 1847,	936
Number of members on 8th July 1847, . .	41,141
Amount received from members during the year preceding 8th July 1847, . . .	£31,669
Amount paid to members or on their account for the year preceding 8th July 1847, . .	£27,516

From the view thus given upon unquestionable authority, it appears that the aggregate number of persons who on a given day in 1847 were members of friendly societies in England and Wales alone was 781,722; that the sums contributed by them in one year amounted nearly to L.700,000, and that the amount distributed among them in one year was considerably more than half a million sterling. It must be recollected also that the table from which the above extracts are taken refers only to certified societies, and that there existed, as there still exist, a large number of uncertified societies possessing a very large number of members and a very large amount of revenue. It may be proper further to add, that according to the same authority, the number of societies in England and Wales which have been certified from the 19th June 1829 to the 30th September 1852 amounts to 16,000. These figures must necessarily exhibit to the reader a striking view of the progress of the societies in question, and suggest some idea of the vast amount of good of which they have been the instruments.

Importance of a sound constitution to their success.

Great, however, as the progress of friendly societies has been during the last fifty years, and vast as the benefits are which have resulted to individuals and society from their labours, their beneficial effects have on various occasions been in no small degree counteracted by injurious causes, and in particular by defects and errors of constitution, and by the imprudence or misconduct of those under whose management their pecuniary affairs have been placed. Without entering on minute detail as to the former of the two causes of miscarriage now mentioned, we shall refer only to one illustration of the injurious effects resulting from it, and as evinced by the practice adopted by some societies of making their allowances at the outset of their career on too liberal a scale. This, although a natural error, was in more than one instance productive of the most fatal consequences. It is obvious that an association formed of members in the prime of life and in vigorous health, could not be called upon for any great outlay for some years after its institution, the amount of sickness or incapacity for labour among its members being comparatively small. Under such circumstances there is a rapid accumulation of funds, and the flourishing state of their finances naturally leads the members to presume that they may with perfect safety make very considerable allowances to the few who require relief. The fact is wholly overlooked, that if the society shall continue to exist, a time must arrive when a large majority of its members must necessarily require assistance, and that liberal allowances at the outset are altogether inconsistent with the demand thus to arise. From this fundamental error the most fatal consequences have been produced. Not only have societies, which at their commencement appeared in the most flourishing state, become bankrupt, but aged members, after contributing for a long series of years to the common fund, have found themselves in their old age deprived of that support for which in the season of youth and vigour they had with so much self-denial and frugality sought to provide.

Legislative enactments.

From these remarks as to the importance on the one hand of friendly societies, and on the other as to the dangers to which they are exposed, it must be sufficiently obvious that they possess a strong claim upon the fostering care of government. It was not, however, till the year 1773 that the attention of parliament was awakened to the wisdom of efficiently protecting and encouraging institutions which, under legislative regulations, have since that period conferred so large an amount of benefit on a most important part of the community. In that year a bill was introduced into parliament, the object of which was to empower parishes in England and Wales to grant annuities to persons willing to purchase them at a price set down in tables annexed to the bill, which annuities were, if necessary, to be chargeable upon the poor's-rates, as a collateral security to the purchasers. This bill having passed the Commons was rejected in the Upper House. Another bill was introduced in 1789, which in like manner having been approved of in the Lower House was thrown out in the House of Lords. No legislative interference, therefore, as to friendly societies occurred until 1793, when an act was passed which is known by the name of its author, Mr George Rose. Of the provisions of this bill the following is a brief abstract. The act recited "that the protection and encouragement of friendly societies in this kingdom, for securing by the voluntary subscription of the members thereof separate funds for the mutual relief and maintenance of the said members in sickness, old age,

Act of 1773.

Act of 1789.

Mr Rose's act, 1793.

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[1] *Report of the Select Committee of the House of Commons*, 1825.

riendly ocieties.

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and infirmity, is likely to be attended with very beneficial effects by promoting the happiness of individuals, and at the same time diminishing the public burdens. It then proceeded to enact that it should be lawful to institute such societies for the purposes above mentioned, and for the members of such societies to meet in committee to make rules and regulations for their guidance, to impose fines and forfeitures upon those violating such rules, and to amend those rules from time to time. The act further provided that no society should come within the meaning of the act until its rules should be exhibited to the justices in quarter sessions and approved of by them. These rules were not to be afterwards altered otherwise than by three-fourths of the members present at a general meeting, or by three-fourths of a committee appointed to manage the concerns of the society. The act further provided that, before the enrolment of its rules, each society should declare the intents and purposes for which it was established; and that it should be unlawful to dissolve any such society so long as any of its purposes remained to be carried into effect, and that it should be unlawful for the society to make any use of its funds, other than that declared to be the purpose of its establishment.

rivileges onferred y it.

In addition to those restrictions, the act conferred certain privileges on friendly societies, which may be briefly stated as follows:—1. Any bonds required from the officers of the society were to be given to the clerk of the peace without fee or reward, and were not to be liable to stamp duty. 2. In case of neglect in the treasurer or other officers in rendering their accounts, summary proceedings were made lawful before the supreme judicatories of the country, and that such proceedings should be taken without any expenses charged by such judicatories, and that counsel should be assigned to the society, who should perform his duty in advocating their interests without fee or reward. 3. That the money of the society in the hands of a treasurer should on his decease have a preference over all his other debts. 4. That the officers of the society should be invested with the power of "suing and being sued." 5. That a member, thinking himself aggrieved, should be allowed to take summary proceedings before two justices. 6. That if the rules of a society provided for an arbitrator, there should be no appeal from his decision; and finally, that no member of a friendly society was to be removed from any parish until he should become actually chargeable.

ubsequent tatutes.

Such were the provisions of Mr Rose's act. Since the year in which it was passed, several additional statutes have been enacted for the purpose of securing and promoting the interests of friendly societies. The principal acts in existence up to the present year (1855) are the following seven, viz.:—33d Geo. III., cap. 54; 59th Geo. III., cap. 128; 10th Geo. IV., cap. 56; 4th and 5th Will. IV., cap. 40; 9th and 10th Vict., cap. 27; 13th and 14th Vict., cap. 115, and 15th and 16th Vict., cap. 65. There are a few others relating to minor points, which however it is unnecessary to specify.

Recent enactments.

In the course of the year 1854, a very important bill was introduced into the House of Commons, entitled "A Bill to consolidate and amend the law relating to Friendly Societies." A select committee of the house was appointed, who, after carefully investigating the subject and considering the bill, presented their report. This document pointed out in the clearest manner the necessity of legislation on the subject, and made a variety of important suggestions as to the bill referred to. We shall now present the reader with an outline of the principal provisions of the bill itself, which is entitled "A Bill to consolidate and amend the law relating to Friendly Societies."

Report of elect committee, 1854.

Friendly Societies Bill of 1855,

The preamble sets forth that "it would conduce to the improvement of the law relating to friendly societies, if the several statutes relating thereto were consolidated, and certain additions and alterations were made therein." The first clause repeals all the preceding statutes with certain exceptions as to existing societies, and subsequent clauses provide that societies instituted prior to this act shall continue, and their rules, contracts, bonds, &c., shall remain in force, notwithstanding the repeal of the acts and statutes above referred to. The act then proceeds to the subject of the appointment, salaries, and current expenses of the registrars. It then points out in the following terms the law as to societies hereafter instituted.

Friends, Society of || Friesland.

"It shall be lawful for any number of persons to form and establish a friendly society under the provisions of this act, for the purpose of raising by voluntary subscriptions of the members thereof, with or without the aid of donations, a fund for any of the following objects, viz.:—1. For insuring a sum of money to be paid on the birth of a member's child, or on the death of a member, his wife, or child. 2. For the relief or maintenance of the members, their husbands, wives, children, or kindred, in old age, sickness or widowhood, or the endowment of members or nominees of members at any age. 3. For any purpose which shall be authorised by one of her majesty's principal secretaries of state, or in Scotland by the Lord Advocate, as a purpose to which the powers and facilities of this act ought to be extended; provided that a society established under this act shall not assure the payment of an annuity exceeding L.50 per annum, nor a sum payable on the death of any person, or on any other contingency exceeding L.200. The bill further enacts that no money shall be paid by any society upon the death of a child under ten years of age, "except upon the production of a copy of the entry on the register of births and deaths, signed by the registrar of the district in which the child shall have died," and that the cause of death shall be certified by a qualified medical practitioner; and further, that the sum to be paid shall not exceed L.6 in the case of the death of a child under five years of age, nor L.10 in that of a child between five and ten years of age. The remainder of the bill, which contains forty-nine clauses, refers to matters of detail regarding the appointment of officers, the rules of societies, the receipts and payments by societies, their property and the mode of its investment, the determination of disputes, and the returns made to the commissioners. (R. W. F.)

FRIENDS, Society of. See Quakers.

FRIESLAND, or Vriesland, sometimes by foreigners called *West* Friesland, to distinguish it from *East* Friesland in Hanover, is the most northerly province of Holland. It is bounded on the S.W., W., and N., by the Zuyder Zee and the North Sea; on the E. by the provinces of Groningen and Drenthe; and on the S.E. by that of Overyssel. The area is 1280 square miles English; and the population on 31st December 1853 was 259,508, being on an average 203 persons to the square mile.

So similar and identical in surface and soil is Friesland with the province of North Holland, that no geologist doubts they formed one country antecedently to that convulsion in the thirteenth century, which made an inlet for the Zuyder Zee, now separating them. Many parts of Friesland lie below sea-level, and are protected against inundations of the North Sea by artificial dykes raised and kept in repair at a great expense. The entire surface is flat, and intersected by canals; the only elevations being the *tarpeu* (mounds), on which the ancient inhabitants were accustomed to take refuge from the inundations of the sea. Interspersed with the entire surface there are deep swamps, marshes, and bogs, with sandy and moory tracts, or low miserable woodlands. The Great Canal commences at Haarlingen, a port on the west coast, and passes through Franeker, Leeuwarden, and Dokkum, to Groningen. Mostly all the minor and intersecting canals, many of which are above the surface-level of the country and have the water pumped into them, have enabled the inhabitants to cultivate the soil, which otherwise could not have been drained, as well as to transmit the produce to suitable markets. The Great Canal unites with another which runs southward to Sneek, from which, by several small lakes, the communication is completed to Lemmer, on the Zuyder Zee. The expense of maintaining the dykes is raised by a dyke-tax upon the landowners; and the whole management of the canals, dykes, and sluices, is under the administration of the "Water-Staat," who exercise a watchful superintendence over the whole system of water communication in the province. The more elevated grounds are generally appropriated to the cultivation of grain, while the lower soils, especially near the N.W. coast, are set apart for grazing. Though there is no river of any importance in this province, we may mention the Boorn, in the centre, and the Linda and Kuinder, which join just close to their entrance into the Zuyder Zee, and the Lawer, which falls into the Lawer Zee, a small inlet on the N.E. coast. The Lawer only is navigable for small craft; the other two are short, broad rivulets. The small lakes are very numerous, and well stocked with fish of useful kinds. The people of Friesland are principally occupied in dairy husbandry, digging turf for fuel, and fishing. The stock of cattle is so large, that the annual produce for export amounts to 50,000 cwts. of butter and 10,000 cwts. of cheese. With the exception of the *kanter-kaas*, the cheese, as well as the butter, are much inferior to those of the western provinces of Holland. Sheep are numerous, but of very inferior breeds, and the wool is coarse. Horses are bred in large numbers, and are much sought after as carriage-horses, being tall and strong limbed, but unfortunately soft in the hoof. Pigs are reared in immense numbers, especially for the lard they produce. The honey of Friesland has long been in high repute, having its peculiar flavour from the clover so universally cultivated. Manufactures are few, including little more than the common necessaries of life, with wooden clocks, linen, sail-cloth, woollens, iron-wares, paper, salt, spirits, potato-starch, and tiles.

Friesland is divided into three districts; Heerenveen and Sneek in the south, and Leeuwarden in the north. The chief towns of the province are Leeuwarden, the capital; Bolswaart, Franeker, Haarlingen, Dokkum, Stavoren, Sneek, Workum, and Heerenveen.

The islands Terschelling, Ameland, and Schiermonikoog, off the north coast, belong to Friesland. The largest of these is Terschelling, containing about 26,000 inhabitants engaged in agriculture and fishing.

The ancient inhabitants of Friesland were a branch of the Frisii. In the fourth and fifth centuries they allied themselves with the Saxons, whom they assisted in the conquest of Britain. Pepin, major-domo of the Franks, put their king Radpod to flight, and wrested from them their western lands between the mouths of the Schelde and the Rhine. By Charlemagne the Frisians were subdued and put under dukes appointed by him. See Frisii.

Friesland, East. See Aurich.

FRIEZE, in *Architecture*, that part of the entablature of columns which is between the architrave and cornice. See Glossary to Architecture.

Frieze, or Frize, a kind of coarse woollen cloth, so called as being friezed or napped on one side. See Woollen Manufacture.

FRIGA, or Frea, in *Scandinavian mythology*, the wife of Odin.

FRIGATE (Fr. *frégate* (?); Lat. *aphractus*, a long undecked vessel); a ship of war, usually of two decks, designed for swift sailing. Frigates mount from 20 to 44 guns, and sometimes more. The name was originally applied to a long kind of vessel navigated in the Mediterranean with sails and oars.

FRIGATOON, a Venetian vessel with a square stern and without a foremast, having only a main-mast, mizen-mast, and bow-sprit.

FRIGENTO, or Fricento, a town of Naples, province of Principato Ultra, 17 miles E.N.E. of Avellino. Pop. 3000. In the vicinity is the celebrated lake of Ampsanctus. See Ampsancti Vallis.

FRILAZIN, the name of a class of persons among the Anglo-Saxons, which consisted of those who had once been slaves but had obtained their liberty. Though in reality freemen, they were not considered as of the same rank with those who had been born free, and were still dependent on their former masters, or on some new patron. This custom the Anglo-Saxons derived from their ancestors in Germany, among whom the condition of freedmen was esteemed little above that of slaves.

FRISCHE HAFF (*i.e.*, *Fresh-water Sea*), an extensive lagoon, in the northern part of the Prussian provinces of East and West Prussia. It is 48 miles in length from S.W. to N.E., and from 4 to 10 miles in width. It is separated from the Baltic by a narrow tongue of land 43 miles in length, at the eastern extremity of which it communicates with that sea by a channel called the Gatt.

FRISI, Paul, a profound mathematician and astronomer, was born the 13th of April 1728 at Milan. His family had formerly emigrated from Strasburg, and was established at Milan in an humble station of life.

At the age of fifteen he entered into the convent of the Barnabite friars, or of the congregation of St Paul, where his studies were at first confined to the attainment of some knowledge of geography from the contemplation of the old maps that were pasted on the walls of the galleries; he soon acquired, however, a taste for geometry, and made considerable progress in it without an instructor. He was sent to the university of Pavia to go through a course of divinity, and he did not neglect the opportunity of applying with increased diligence to the mathematics, with the assistance of Professor Olivetano. He was afterwards removed to Lodi, in order to give lectures there on philosophy; and he soon after distinguished himself by writing a most able essay on the *Figure of the Earth*, which, however, he had not the means of printing, as his brethren were unwilling to assist him, until he found a patron for his publication in the Count de Silva, who undertook to bear the expense. The credit which he acquired induced some other members of the society to follow his example, and the convent of the Barnabites at Milan soon began to be converted into a nursery of mathematics. His reputation procured him also, from the king of Sardinia, the appointment of professor of philosophy in the college of Casale. Here, however, he thought the conduct of his superiors unjust and tyrannical, and they were also dissatisfied with him on account of his great intimacy with Radicati, whose opinions were rather more liberal than they thought it prudent to tolerate. This friendship was, however, so far of advantage to Frisi, as it tended to improve his taste in modern literature; but it was the principal cause of his being removed to Novara, where he was obliged to undertake the duties of a preacher. In the mean time he was nominated a corresponding member of the Parisian Academy of Sciences in 1753, and received similar honours from other scientific bodies. Soon after this he was recalled to Milan, and made professor of philosophy in the great Barnabite College of St Alexander in that city. His dissertation on the *Figure of the Earth* was very acrimoniously attacked by a young Jesuit, who accused him of being improperly led away by English and French innovations; but it was easy for him to repel so unfounded a charge. From this time he entertained much ill humour against the Jesuits in general, and had written a work to depreciate the order, but he was advised by his second brother to suppress it

He became, however, more and more connected with the enemies of the Jesuits, and, among them, with D'Alembert, Condorcet, and the other Encyclopédistes. He had before this time declared himself, in his lectures, an enemy to the popular opinions of the Italians respecting magic and witchcraft, though he felt himself in some danger of the animadversions of the Inquisition. He was much in the habit of frequenting the best societies in Milan, and even more than was thought consistent with his religious character; but he was in some measure emancipated from the restraints of his order by his appointment, in 1756, to a professorship in the university of Pisa, for which he was indebted to the Grand Duke Leopold. This situation he retained for eight years, enjoying the highest degree of credit, and receiving marked attention from all travellers of distinction, and saving at the same time a considerable portion of his salary, to which he added the amount of some prizes which he obtained from Berlin and Petersburg in 1756, and from Paris in 1758. Notwithstanding his occupations as a professor of moral philosophy, he had always been in the habit of devoting the greater part of his attention to the mathematical sciences. In 1757 he was made an associate of the Imperial Academy of Petersburg, and a foreign member of the Royal Society of London; in 1758, a member of the Academy of Berlin; in 1766, of that of Stockholm; and in 1770, of the Academies of Copenhagen and of Berne. The Archduke Joseph had sent him, in 1759, a collar with a gold medal, and he received similar marks of distinction from the kings of Prussia and Denmark. He was also liberally rewarded by Pope Clement XIII. for his services in arranging a dispute between the people of Ferrara and of Bologna on the subject of rivers and torrents, which had been referred to him on the occasion of a tour that he made to Naples and to Rome in 1760. The senate of Venice also made him a proper acknowledgment for the assistance he gave to the commissioners whom they had appointed to control the ravages of the Brenta. The Empress Maria Theresa settled on him a pension of 100 sequins, or L.50 a-year. He was recalled to Milan in 1764, as professor of mathematics in the Palatine schools, with appointments equal to those which he had enjoyed at Pisa, and with the additional advantage of living near his family, and being enabled to promote their interests. He was at various times much engaged in the decision of controversies respecting canals and rivers, and obtained much credit for his skill and ingenuity; though the peculiarities of his temper tended somewhat to increase the number of his enemies. Among other controversies, he was engaged in a dispute respecting the propriety of adding a high pinnacle to the dome of the church at Milan, which has since been raised in opposition to his opinion. In 1766 he undertook a journey into France and England, and his celebrity everywhere procured him the most flattering attentions. At Paris a very liberal proposal was made to him to remove to Lisbon, but he preferred returning to his own country. In 1768 he went to Vienna, and he was consulted by the government there upon some important questions of ecclesiastical policy, in which his advice was adopted. He remained but little longer in the college of St Alexander, and Pope Pius VI. liberated him entirely from subjection to the superiors of his order, and allowed him to wear the habit of a secular priest. As one of the censors of the press, he had incautiously been accessory to the publication of the *Lanterna Curiosa*, the work of a coffee-house club in Milan, which gave great offence to the government; and he afterwards still more imprudently undertook to defend it. This circumstance occasioned his removal from Milan for a time, but he was recalled in 1777, and was appointed director of a school of architecture. He was active in introducing the employment of conductors for security against lightning, and had one fixed for an example on the repository of the public archives. He was equally zealous on every other occasion in the dissemination of useful novelties among his countrymen. In 1778 he made a tour into Switzerland, and his observations there gave rise to his speculations on subterraneous rivers. He enjoyed uninterrupted health until the age of forty-eight, when he was attacked by a hæmorrhoidal affection, ending in an abscess, which, eight years afterwards, required the performance of an operation. This was unfortunately succeeded by a fatal mortification, and he died the 22d November 1784, at the moment when he was about to be placed on the list of the eight foreign associates of the Parisian Academy; an honour which had been delayed by the preference of J. A. Euler, on the occasion of a former vacancy, to the no small mortification of his vanity. He had very lately obtained a prize from the Academy of Haerlem, for his memoir on the *Inequality of the Satellites of Jupiter*. He was buried in the church of St Alexander, and a medallion with his portrait was placed over his tomb by his brethren Barnabites. He had four brothers, Antony, a physician, botanist, and chemist; Antony Francis, an ecclesiastic, author of some antiquarian researches of merit; Louis, a canon of St Ambrose, a learned theologian and mechanician; and Philip, a lawyer, author of a dissertation *De Imperio et Jurisdictione.*

The works of Father Paul Frisi are—1. Disquisitio mathematica in causam figuræ terræ, Milan, 1751; demonstrating, more completely than Newton had done, the spheroidal figure of the earth. 2. Estratto della storia litteraria d'Italia, Milan, 1753; an answer to a review. 3. Saggio della morale filosofia, Lugano, 1755. 4. Nova electricitatis theoria, Milan, 1755. Seems to be the same with a dissertation De existentia et motu ætheris, seu de theoria electricitatis, ignis, et lucis, printed with J. A. Euler's Disquisitio de causa physica electricitatis, præmio coronata, 1755, 4to, Petersburg. This dissertation shows some ingenuity, but is by no means established on firm foundations. Among some other fanciful hypotheses, it suggests that light is probably an impulse transmitted by an elastic medium, but not of an undulatory nature. Both these essays seem to have been republished at Lucca, with another by Resaud, under the title of Dissertationes selectæ quæ ad I. P. academiam, anno 1755, missæ sunt, 1757. 5. De motu diurno terræ, Pisa, 1758; a dissertation which obtained a prize from the Academy of Berlin in 1756. 6. Dissertationes variæ, 2 vols. 4to, Lucca, 1759, 1761; the first volume containing a geometrical solution of the problem of Precession and Nutation; a Dissertation on the Atmospheres of the Heavenly Bodies, which obtained the prize at Paris in 1758; an Essay on the Nature and Motion of the Ether: the second, a Treatise on the Inequality of the Motion of the Planets, being an enlargement of a prize dissertation which obtained the second premium at Paris in 1760; a Dissertation on the geometrical method of Fluxions, and some Metaphysical Meditations. 8. Piano de lavori per liberare dalle acque, Lucca, 1761; for the use of the provinces of Bologna, Ferrara, and Ravenna. 9. Del modo di regolare i fiumi e torrenti, Lucca, 1762, 1760; Flor. 1770; French, Paris, 1774; especially of the Bolognan and Roman territories, making great use of Guglielmini's works. At the end there is an Elogio di Gabriello Manfredi. 10. Prælectio habita Mediolani; 1764. 11. Saggio sopra l'architextura Gotica, Leghorn, 1766. 12. Lettre à M. d'Alembert, Par., 1767. 13. Elogio del Galileo, Leghorn and Milan, 1775; French by Floncel, 12mo, Par., 1767; an elegant specimen of biography. 14. On the supposed Inequalities in the Rotation of the Earth and Moon, Inst. Bologn., vol. 5. Op., p. 11 (1787). The same volume contains a prospectus of the work on the Laws of Gravity, p. 514. 15. De gravitate universale libri tres, 4to, Milan, 1768; a work considered as a model of elegance, simplicity, and facility; leaving, however, the fact of the moon's acceleration still unexplained, and even stating doubts of its existence. 16. Della maniera di preservare gli edifizi dal fulmine, Milan, 1768; by conductors. 17. De inequalitate motus planetarum, a dissertation which obtained the second premium at Paris in 1768. 18. Melandri et Frisii de theoria lunæ commentarii, Parma, 1769. 19. Cosmographia physica et mathematica, 2 vols. 4to, Milan, 1774, 1775; this is Frisi's principal work; it contains the substance of the three books on the laws of gravity, with additional matter. It is only superseded by the *Mecanique Céleste* in point of practical utility, but still retains the advantage of more satisfactory geometrical representation, and less unnecessary complication in the modes of reasoning employed. 20. Dell architextura, statica e idraulica, Milan, 1777. 21. A Letter to Melander on the transit of Venus, *Attidi Sienna*, vol. iv., p. 21 (1771); with some illustrations of the lunar perturbations. 22. Geometrical problems, ib.

vol. v., p. 27 (1772); relating to intersections and circles. 23. Elogi di Galileo e di Cavalieri; Milan, 1778; Pisa, 1779. 24. Elogio del Cav. I. Newton, 8vo, Milan, 1778. 25. Elogio del Conte D. Silva, Milan, 1779; anonymous. 26. Elogio di Tito Pomponio Attico, Milan, 1780; a compliment to the Count de Firmian. 27. Opuscoli filosofici, Milan, 1781; denying the fancied influence of the moon on the weather, which Toaldo very unsuccessfully attempted to assert in answer; with dissertations on Conductors, on the effect of Oil on Water, on the Heat of the Earth, and on Subterraneous Rivers. 28. On isoperimetrical maxima and minima, *Atti di Sienna*, vol. vi., p. 121 (1781); intended as a simpler mode of obtaining the results than that of Euler. 29. A Collection of his Works, in 3 volumes, was begun in 1782, and remained unfinished at the time of his death. The first volume contained Algebra and Geometry; the second, Mechanics and Hydraulics; the third, the Cosmography. 30. Elogio di Maria Teresa, Pisa, 1783; anonymous. 31. Lettera intorno agli studj del Sign. T. Perelli, Pisa, 1784. 32. Elogio di D'Alembert, Milan, 1788; posthumous. 33. An Essay on Arches and Domes, *Atti della Società Patriotica di Milano*, vol. i., 1783; correcting some statements of Couplet and Belidor.

He left several unpublished works in the hands of his two brothers: 1. On the mediocrity of the Jesuits. 2. Elements of the Cartesian Algebra. 3. Institutions of Mechanics. 4. Of the restoration of the navigation between Milan and Pavia. 5. Institutiones Hydrometricæ. 6. Elements of Hydrodynamics. 7. Elements of Hydraulics. 8. Memoirs of his travels in France and England. 9. Lectures delivered at Pisa. 10. Prælectiones de malis spiritibus. 11. Several miscellaneous dissertations.

(Verri *Memorie del S. D. P. Frisi*, 4, Milan, 1787; Fabbroni *Elogj d'illustri Italiani*, *Atti di Milano*, vol. ii.; Chalmer's *Biographical Dictionary*, vol. xiv. 8, London, 1814; Aikin's *General Biography*, vol. x. 4, London, 1815; Guillon in *Biographie Universelle*, vol. xvii. 8, Paris, 1816.) (T. Y.)

FRISII, in *Ancient Geography*, a German tribe forming part of the nation of the Ingævones. Their country extended along the sea-coast from the mouth of the Rhine to that of the Amisia or Ems, and extended inland as far as the territory of the Bructeri. They were divided into the Frisii Majores who occupied the district that corresponds with the modern provinces of West Friesland and Groningen, and Frisii Minores, whose territory is represented by the present provinces of Oberyssel, Guelders, Utrecht, and the greater portion of the province of Holland. The Frisii were separated from the Batavi by the Rhine, and by the Amisis from the Chauci. The Frisii were at first firm friends and allies of the Romans, and such they continued till A.D. 28, when, enraged by the tyrannical conduct of the Roman lieutenant Olennius, they rose in arms against them, and compelled them to evacuate the country with great loss. Corbulo, the general of Claudius, reduced them to a kind of sullen obedience in A.D. 47; and Nero compelled them to abandon some conquests they had made on the southern side of the Zuyder Zee. In the fourth and fifth centuries they appear as members of the great Saxon Confederacy, and assisted the Angles and Saxons in their conquest of Britain. In the eighth century, Epin, the father of Charlemagne, wrested from the Frisii the western portion of their territory, and Charlemagne incorporated the Eastern part among his other Saxon conquests.

FRIT, or Fritt, the name given to the ingredients of which glass is made, after they have been fused into a mass, or calcined, in a furnace. See Glass.

FROBENIUS, Joannes, an eminent German printer and scholar of the sixteenth century, was born at Hammelburg in Franconia. After completing his university career with great distinction at Basle, he established a printing office in that city about the year 1491, and was the first German who brought the art to anything like perfection. He superintended everything himself, and would allow nothing to pass through his press which he thought likely to prejudice the cause of letters or religion. Attracted by the high character of Frobenius as a man and as a printer, Erasmus fixed his residence at Basle, and was soon on terms of intimate and cordial friendship with him. A result of this connection was that Erasmus not only had his own works printed by his friend, but superintended editions of St Jerome, St Cyprian, Tertullian, Hilary of Poictiers, and St Ambrose. It was part of Frobenius' plan to have printed also editions of the Greek Fathers. He did not live to carry out this project, which however was very creditably executed by his son Jerome and his son-in-law Bischof or Episcopius. Frobenius died in 1527, in consequence of an accident which had befallen him some years before. An extant letter of Erasmus, written in the year of Frobenius' death, gives an epitome of his life and an estimate of his character, which was so amiable that Erasmus says he began at length to feel ashamed of his grief for the death of his friend, which was far more poignant than that which he had felt for the loss of his own brother. The epistle concludes with an epitaph on Frobenius in Greek and Latin, written by the great scholar himself.

FROBISHER, Sir Martin, a celebrated English navigator of the sixteenth century, was born (in what year is not known) at Doncaster in Yorkshire. He was the first Englishman that sailed in quest of the north-west passage to China and the Indies. "Being thoroughly furnished of the knowledge of the sphere and all other skills pertaining to the art of navigation, and being persuaded of a new and nearer passage to Cataya than by Capo de Buona Sperança, which the Portugals yearly use, and knowing this to be the only thing of the world that was yet left undone, whereby a notable mind might be made famous and fortunate," he applied to various English merchants to assist him in his projected enterprise, but for fifteen years without success. At the end of that period he was enabled, through the assistance of Dudley, Earl of Warwick, and others, persons of rank and fortune, to set out on the expedition. He sailed from Deptford, June 15th, 1576, with three small vessels, two of them, the Gabriel and the Michael, barks of twenty-five tons each, and the third a small pinnace of ten tons. As they passed Greenwich, the queen, who happened to be there with her court, "commended them, and bade them farewell with shaking her hand at them out of the window." After passing the Shetland islands they came in sight of "Freeseland" (July 11th), where they were unable to land on account of the ice, and on the 28th of the same month they reached that part of Greenland which Frobisher named "Meta Incognita." On the 11th August they sailed through a strait which Frobisher called by his own name. Pursuing their way they passed several islands, to which they gave names, and came on the 18th to Burcher's Island, where they lost a boat and part of their crew through the treachery of the natives. After this they turned their prows homewards, and reached England, September 7th. Frobisher had taken possession of the various places he touched at in the name of the queen; and in token of this had ordered his men to put on board ship whatever they first laid hands on. Among other things thus secured was a lump of black stone, which, when Frobisher returned home, was accidentally discovered to contain gold. This discovery was soon noised abroad, and in the following spring Frobisher readily found the means to fit out another expedition, partly scientific and partly with a view to prosecuting the search for gold. The queen lent him from the royal navy a ship of 200 tons, with which, and two smaller barks, he sailed from Harwich, May 31, 1577. On arriving at the scene of their former discoveries they found that little of the gold ore remained, but they opened forthwith communications with the natives for the purposes of traffic. One of these, "a man of large corporature and good proportion," they carried away with them neither in a very just nor handsome manner. They also caught an old woman, "whom they took for a devil or a witch," and stripped off her buskins "to see if she were cloven-footed." After discovering and naming a good many places, and procuring a good deal of ore, he turned his prow southwards, August 23d, and reached home in the end of September. The ore, when smelted, was found to pay the expenses of the voyage and more; and a third expedition was fitted out in 1578, which, however, through stress of weather and other circumstances, had no sooner reached the gold country than it was obliged to return from the lateness of the season. This was the last of Frobisher's polar voyages. It is not known how he was occupied during the next seven years, but in 1585 he accompanied Sir Francis Drake on his expedition to the West Indies, and three years later did such good service against the Spanish armada as to be rewarded with the honour of knighthood on board his own ship by the lord high admiral. In 1594, after various exploits against the Spaniards, he was sent to assist Henri IV. of France against the Spaniards and the members of the League. The enemy had fortified themselves strongly in Croyzon, near Brest; and in an attack on their position Frobisher was mortally wounded. He lived to take his fleet safely home, and shortly after died at Plymouth.—(*Biog. Brit.;* Hakluyt's *Collect. of Voyages;* Stow's *Annales*, &c. &c.)

FROBISHER STRAIT, an arm of the sea, in British North America, between Hudson Strait and Northumberland Inlet. It extends in a westerly direction from the entrance to Davis' Strait.

FRODSHAM, a market-town of Cheshire, near the Weaver and Mersey rivers, 10 miles N.E. of Chester. It has a fine old church, partly Norman, and a free grammar-school, savings-bank, graving dock, and flour mills. Pop. (1851) 2099, chiefly employed in the salt-works and cotton manufacture.

FROISSART, JEAN, the author of the celebrated "Chronicle," was born at Valenciennes about the year 1337. He was the son of Thomas Froissart, a heraldic painter, an honourable employment in those the palmy days of chivalry. At an early age he distinguished himself by his proficiency in all the elegant accomplishments of his day. He had hardly left school when he devoted himself to the study of history, and, at the request "de son cher seigneur et maître, Messire Robert de Namur, chevalier Seigneur de Beaufort," undertook to narrate the wars of his own time, especially those which followed the battle of Poictiers. To dissipate his grief for the marriage of a young person for whom he had conceived a violent passion, he went to England, where he was kindly received by Philippa of Hainault, wife of Edward III. and mother of the Black Prince, who made him her private secretary. In her employment he remained for three or four years, and took advantage of his opportunities to visit Scotland, where he spent six months, travelling on horseback through the country, his only attendant being his greyhound. He was well received by David II. of Scotland and some of the leading nobility, whose exploits he afterwards recorded. After a flying visit to Bordeaux in 1366, he returned once more to England, where however his stay appears to have been brief, as two years later we find him visiting various Italian courts. He particularly describes his visit to that of Savoy, where he was present at the splendid fêtes given by Amadeus, surnamed the Comte Verd, in honour of Lionel duke of Clarence, and does not forget to mention that the guests danced a virelay of his composition. At Milan the same Count Amadeus presented him with a splendid *cotte-pardie* and twenty gold florins. On parting from this munificent patron, Froissart repaired successively to Bologna, Ferrara, and Rome. Instead of the meagre equipage with which he had travelled through Scotland, he had now a handsome steed for himself and a sumpter-horse for his servant and baggage. About this time he lost his protectress, Philippa of England, whose death he deeply deplored, and whose virtues he commemorated in a dirge; and it is even said that he wrote a life of her, but if he did he never published it. On returning to his own country he obtained the living of Lestines, where he indulged himself more than was at all becoming in a churchman. During the short time that he held that cure he says that the tavern-keepers received five hundred francs of his money. After this Froissart attached himself successively to Wenceslaus of Luxembourg, duke of Brabant, for whom he made a collection of his songs and virelays, and to Guy, count of Blois, who made him clerk of his chapel. At the instance of this latter patron Froissart resumed the composition of his history, which had been interrupted, and to amass materials he paid a visit to the court of the famous Gaston de Foix. That prince had fixed his residence at that time at Ortez, and his court was thronged with the noblest chevaliers of Europe. Froissart's description of his sojourn there is one of the most interesting parts of his "Chronicle." On quitting Ortez the historian went to Flanders in quest of materials for his work, and after various pilgrimages made with the same object he at length settled down at Paris to complete it at his leisure. In 1395 he revisited England, where he was hospitably received by Richard II., and presented with a silver goblet containing a hundred nobles; and on returning to France he became canon and treasurer of the church of Chimay. These offices he held till his death, which appears to have happened about the beginning of the fifteenth century. Froissart's poetry, very celebrated in its day, and now almost forgotten, embraces nearly 30,000 verses. His "Chronicle," on the other hand, less appreciated during the author's lifetime, is now regarded as one of the most interesting historical monuments of the middle ages. It contains the history of the fourteenth century from 1326 to 1400. The first edition of it appeared at Paris under the title of *La Chronique de France, d'Angleterre, d'Ecosse, d'Espagne, de Bretagne*, &c., without a date, and was often reprinted. The best of the early editions was that published at Lyons, 1559-61, in 4 vols. fol., by Denis Sauvage. Of recent editions the best is that by J. A. Buchon, in 15 vols. 8vo, forming part of the *Collection des Chroniques Nationales Françaises*, Paris, 1823-26. There are two English translations of Froissart; the first by Bourchier lord Berners, London, 1525-26, reprinted in 1812 by E. V. Utterson, Esq., in 2 vols. 4to.; the second, "which contains additions from many celebrated MSS.," by Thomas Johnes, Esq., issued from the Hafod press, in 4 vols. 4to, 1803-5. (For a more particular account of Froissart's "Chronicle," see CHIVALRY.)

FROME, a parliamentary borough and market-town of Somersetshire, on the small river Frome, an affluent of the Avon, 11 miles S. of Bath. It was formerly designated *Frome Selwood*, from its situation on the borders of the extensive forest of Selwood. The Frome is here crossed by a stone bridge of five arches, and the town is irregularly built upon an acclivity rising from the river. With the exception of the principal street, most of the others are narrow and irregular, although within the last few years considerable improvements have been carried out. The parish church is an elegant edifice in the later Gothic style, with a tower and a fine octagonal spire 120 feet in height. There are two other churches and several dissenting places of worship. Among the educational and charitable institutions are a free grammar-school, a national school, an asylum for the education and maintenance of 25 poor girls, a blue-coat school, a charity school, and almshouses for old men and women. The inhabitants are chiefly employed in the broadcloth and silk trades. This town has been long noted for its ale. The principal market is held on Wednesday, a lesser one on Saturday. The vicinity is fertile and picturesque, and ornamented with numerous fine mansions. Frome, since the passing of the Reform act, returns one member to parliament. Pop. (1851) 10,148.

FROMISTA, a secular town of Spain, in the province and bishopric of Palencia, with 1529 inhabitants. It contains three churches, one convent, and two hospitals, and is situated in a beautiful plain near the river Cieza and the Canal de Campos. There are in and around it numerous relics and indications of its ancient grandeur. The land around it is very rich and fertile, but utterly destitute of trees, on account of the incurable dislike to them manifested by the inhabitants. Fromista was the birthplace of San Telmo and other men of note.

FRONTAL, in *Architecture*, a little pediment over a small door or window.

FRONTINUS, Sextus Julius, a Roman soldier and the author of some interesting works, was born of a patrician family at Rome, in the first century after Christ. Nothing is known of his early life or history till we find him acting as *prætor urbanus* under Vespasian, A.D. 70, an office from which he soon retired to make way for Domitian. Five years later he was sent into Britain to succeed Cerealis as governor of that island. He subdued the Silures, and held the other native tribes in check till 78, when he was superseded by Agricola. In 97 Frontinus was appointed *curator aquarum* at Rome, an office which was never conferred except upon persons of very high standing. He was also a member of the College of Augurs, a dignity he retained till his death, which appears to have happened about A.D. 106. Many works have been attributed to Frontinus, of which only two that are undoubtedly his are now extant. The first of these is a treatise on the art entitled "Strategematicon, libri iv.," which is a miscellaneous collection of the sayings and doings of the most famous soldiers of antiquity, recorded in the form of anecdote. The second is entitled "De Aquæductibus Urbis Romæ, libri ii." It conveys in plain and modest language much valuable information on the manner in which ancient Rome was supplied with water, and other matter of importance in the history of architecture. A number of other treatises have been ascribed on indirect testimony to Frontinus. The two works above mentioned have been translated into all the languages of Europe. The best editions of the "Strategematica" are those of Oudendorp, Leyden, 1731; and Schwebel, Leipzic, 1772. The best edition of the "De Aquæductibus" is that of Polenus, Pavia, 1722.

FRONTISPIECE (*frons* and *specio*), in *Architecture*, the principal face of a building. Hence also an ornamental figure or engraving in the beginning of a book.

FRONTO, Marcus Cornelius, a Roman grammarian and rhetorician, was born of an Italian family at Cirta in Numidia. He came to Rome in the reign of Hadrian, and soon gained such renown as an advocate and orator as to be reckoned inferior only to Cicero. Antoninus Pius, hearing of his fame, appointed him tutor to his adopted sons Marcus Aurelius and Lucius Verus; and Fronto, as appears from his surviving letters, completely gained the confidence and affection of both these pupils. After holding the office for a few months in A.D. 143, he was five years later offered the proconsulate of Asia; but declined that post on the plea of bad health. He preferred to remain at Rome, where by the practice of his profession he amassed a very large fortune, which enabled him to purchase the famous gardens of Mæcenas, besides sumptuous villas in various parts of Italy. In his old age, when confined to his house by the gout, he used to receive the leading literary men, who flocked to hear his unrivalled conversation. This exhibited the same qualities as his more formal orations, which were so much admired that a school of rhetoricians was formed which called itself after his name, and had for its object the restoration to the Latin language of its ancient purity and simplicity. Fronto died at an advanced age, in the reign of Marcus Aurelius, but the exact date of his death is not known.

Till the year 1815 the only thing of Fronto's known to exist was some disjointed fragments of his essay *De Differentia Verborum.* In that year, however, Angelo Mai discovered in the Ambrosian library at Milan a palimpsest manuscript, on which had been originally written some of Fronto's letters to his royal pupils. These Mai decyphered and published with notes. On Mai's removal to Rome he discovered in the Vatican some additional sheets of the same palimpsest, which, like the first, contained letters of Fronto to Aurelius and Verus, with their replies. These palimpsests had originally belonged to the famous convent of St Columba at Bobbio, and had been written over by the monks with the acts of the first council of Chalcedon. In the course of events some sheets of them had been transferred to Milan, while the rest had found their way into the Papal library. All these letters were published by Mai at Rome in 1823, under the title of *M. Cornelii Frontonis et M. Aurelii imperatoris epistolæ; L. Veri et Antonini Pii et Appiani epistolarum reliquiæ; Fragmenta Frontonis et scripta grammatica.* The discovery of these documents excited intense interest among the scholars of Europe, which, however, was speedily dispelled by their publication. The characters of the two emperors, indeed, are displayed in a very favourable light, especially in the affection which they both seem to have retained for their old master. But the subject-matter of most of the letters is of such ephemeral interest, and their style is so vapid and commonplace, as to throw very little additional light on Roman antiquity. Editions of Fronto have been published at Frankfort and Berlin. A French translation of Mai's edition of 1823 was published by Armand Cassan at Paris, in two vols. 8vo, in 1830.

FROSINONE, the ancient *Frusino*, a town of the Papal States, capital of a cognominal delegation, at the foot of a hill near the left bank of the Cosa, 46 miles E.S.E. of Rome. The ancient city stood on the *Via Latina.* It originally belonged to the Volsci, and was subsequently colonized by Roman veterans. Some remains of an amphitheatre are still visible in the plain beneath, but the town itself contains no relics of antiquity. The town is very ill built, but has numerous churches and convents. It is the seat of a bishopric, and of a court of primary jurisdiction. A large annual fair is held here. Being situated near the Neapolitan territory, its neighbourhood is notorious for brigandage. Pop. about 7000.

The delegation of Frosinone is bounded on the N. and N.W. by the Comarca di Roma, S. and S.W. by the Mediterranean, and on the E. and S.E. by the Neapolitan province of Terra di Lavoro. It has an area of 720 square miles, and a population (1850) of 148,378.

FROST. See Climate, Cold, and Meteorology.

Hoar-Frost is atmospheric vapour that has been deposited in the form of dew, and frozen.

FROTH SPIT, or Cuckoo Spit, a name given to a white spume or exudation found on the leaves of certain plants; produced by the larva of the insect *Cicada spumaria.*

FROWDE, Philip, an English littérateur of the eighteenth century. He was educated at Oxford, where he formed the acquaintance and enjoyed the intimate friendship of Addison. Some of his Latin poems were considered worthy of a place in the *Musæ Anglicanæ.* His tragedies of *Philotas* and the *Fall of Saguntum*, dedicated respectively to Lord Chesterfield and Sir Robert Walpole, do not exhibit any high literary merit, and are remembered more from their refinement of tone and the extremely amiable character of their author than from any intrinsic value. Frowde died in 1738.

FROZEN OCEAN. See Polar Seas.

FRUIT-TREES. See Horticulture, and Botany.

FRUMENTACEOUS (*frumentum*, corn), resembling wheat, in respect to leaves, ears, fruit, or the like.

FRUMENTARII, under the Roman empire, were officers who acted as spies in the provinces, and reported to the emperor whatever seemed worthy of note. They appear to have derived this appellation from their gathering news in the same way that the frumentarii or purveyors collected corn.

FRUMENTATIO, in *Roman Antiquity*, a largess of corn bestowed on the people, to quiet them when uneasy or turbulent. The number to whom this largess was to be given was restricted by Augustus to 200,000.

FRUSH, or FROG, in *Farriery*, a sort of tender horn that grows in the middle of the hoof of the horse, dividing into two branches, and extending towards the heel in the form of a fork.

FRUSTUM, in *Geometry*, the part of a solid figure that remains when the top is cut off by a plane; or it is that part of any solid, as a cone, pyramid, sphere, &c., which is comprised between two planes, whether they be parallel or divergent. See GEOMETRY, and CONIC SECTIONS.

FRUTEX (Lat. *a shrub*), denotes a plant whose branches are perennial, and proceed directly from the surface of the earth.

FUCA, JUAN DE, a strait on the west coast of North America, Oregon territory, south of Vancouver island, and leading from the Pacific into the Gulf of Georgia. It forms part of the boundary line between the United States and the British territory.

FUCHSIA, a genus of beautiful flowering shrubs, natives chiefly of the temperate parts of America. A great many different species and varieties are cultivated in this country. Class and order Octandria monogynia, and nat. order Onagraceæ. See BOTANY, v., p. 192.

FŬCI, a family of cryptogamous marine plants, generally known as *sea-weed*. See BOTANY, nat. ord. *Algæ*, p. 217, &c.

FUCINUS LACUS (LAGO FUCINO, or LAGO DI CELANO), in *Ancient Geography*, a lake in the country of the Marsi. Strabo describes it as being like a sea in size; and it was undoubtedly the largest body of fresh water in Central Italy; but its circumference does not exceed thirty miles. It is surrounded on all sides by mountains (one of which, Monte Velino, attains a height of more than 8000 feet), and does not appear to have any natural outlet. Its elevation above the sea-level is 2176 feet. Its eastern and western boundaries are limestone ridges of considerable height; on its north-western side it is separated by a gentle slope from the channel of the Salto, a tributary of the Tiber. Several curious traditions are current regarding the Lake Fucinus. One of these is to the effect that it was traversed by a river called the Pitonius, whose waters did not mix with those of the lake. This story appears to have had its origin in the fact that the surplus waters of the lake were carried off by a subterranean channel, the opening of which, still visible, is now called "La Pedogna," a manifest derivative from Pitonius. As the channel, however, was not wide enough to carry off all the surplus water, especially after the heavy rains, the low grounds round the shores of the lake were frequently flooded. One of these floods is said to have engulfed the town of Archippe, and the neighbouring inhabitants had a tradition that when the waters were low the remains of that town might be traced beneath the waves. To prevent the devastation and loss of life consequent upon these inundations, Julius Cæsar formed the great design of cutting a subterranean canal from the lake to the valley of the Liris or Garigliano. Death frustrated this design, which none of his successors had leisure or inclination to carry out before Claudius. That emperor cut a gallery of 15,600 English feet through Mount Salviano; a work of great labour, from the hardness of the limestone rock, and which is said to have occupied 30,000 workmen for eleven consecutive years. This gallery, which is reckoned by Pliny one of the most memorable proofs of Roman greatness, was allowed to fall into decay, and it was gradually choked up with stones and rubbish falling from above. All the efforts that have been made to clear it since the middle of the thirteenth century have not hitherto been wholly successful. Much of the best land in the Abruzzo has consequently been swallowed up. In 1830, however, the king of the Two Sicilies caused some important repairs to be executed on it, which have had the effect of obviating the risk of future inundations. A company was formed at Naples in 1852 to drain the entire lake, which according to a recent official survey covers 36,315 acres. This company does not yet appear to have commenced operations.

FUCUS (φῦκος), a general term among the ancient Greeks and Romans for dyes and paints, more particularly those employed as cosmetics. The custom of painting the face was derived from the oriental nations, among whom it had existed from the earliest times. In order to give a rosy hue to the complexion, the dye commonly used was that obtained from the root of *Anchusa tinctoria* (alkanet plant). To whiten the neck and arms they employed *cerussa* (white-lead), which must soon have injured the fine texture of the skin. The eyebrows and the edges of the eyelids were darkened with a powder called *stimmi* or *stibium* (sesqui-sulphuret of antimony), a substance that is used at the present day by the Turkish ladies for the same purpose; and, according to St Jerome, was the cosmetic used by *the painted Jezebel* of the Scriptures. Soot likewise appears to have been sometimes so employed. The more effeminate of the men, both among the Greeks and the Romans, sometimes used such cosmetics. Various other substances were employed for improving the complexion, more especially among the Roman ladies, who were adepts in this art, even heightening the blue colour of the veins, especially on the temples. The still more objectionable custom of wearing patches (*splenia*), once so prevalent in England, was not unknown to the Romans. (See SMITH'S *Dict. of Greek and Roman Antiquities*.)

FUEL (from the French *feu*, fire, akin to the Latin *focus*, a hearth or fireplace), a word applied to certain substances which are used in the generation of heat, such as wood, peat, coal, &c., and also sometimes applied to the substances employed in generating light, such as oil, spirits of wine, naphtha, &c. In the present article the former application will alone be considered; for information respecting the latter, see GAS-LIGHTING, LAMP, &c.

The abundance and consequent cheapness of fuel has a great influence on the prosperity, habits, and manners of a nation. Where fuel is scarce, factories languish, and commerce declines. In cold climates scarcity of fuel is individually a great calamity, for it abridges the hours of labour, causing persons to spend those hours in sleep which under other circumstances would have been turned to profitable account; it also causes persons to crowd together for the sake of warmth in a way that is injurious to health and morals. Abundance of fuel, on the contrary, with good roads and a system of inland navigation for its distribution, forms the basis of national prosperity, not only ministering to the useful arts, but enabling the occupier of every house to create an artificial climate suited to his wants and wishes.

The most common and widely distributed description of fuel is *wood*, a term applied to the trunk, roots, and larger branches of trees. Recently felled wood consists chiefly of woody fibre, sap, and water. The woody fibre is a compound of carbon, hydrogen, and oxygen, and forms the chief bulk of plants; both it and the sap are combustible—that is, are capable at a high temperature of combining rapidly with the oxygen of the atmosphere and forming gaseous compounds. It is in the act of this formation that heat is generated. The sap, which forms only a small proportion of the bulk of wood, varies in different kinds of trees: the sap of the pine tribe contains resin; that of the oak, tannin; that of the beech and birch, extractive. The quantity of water in wood varies greatly with the kind of tree, and with the time of year when it is felled, it being least in winter. As the water is not combustible but must be got rid of at the expense of the heat generated by the parts which are so, it is obviously desirable to store the wood in a dry and airy situation before using it as fuel. By this means 100 lb. weight of wood have been known to lose 20 lb. weight in ten or twelve months. Wood, as commonly used for fuel, contains about one-third of its weight of water. Wood also contains earthy and alkaline salts in the proportion of $\frac{1}{30}$th to $\frac{1}{70}$th, and these remain as an incombustible ash.

Wood is distinguished from all other fuel by the valuable property of reproduction, and also by the fact that it often passes through various stages of beauty and utility to man before it becomes converted into fuel.

The heating power of wood is considerable, in consequence of its excess of hydrogen, which, in burning and forming water, requires for equal weights three times as much oxygen as the carbon does in forming carbonic acid; and it gives out in burning nearly four times more heat than the carbon. The lighter woods contain more hydrogen than the heavier, so that they burn with flame longer than they incandesce as charcoal; they also burn more easily and give out their heat more quickly than the hard woods.

During the combustion of wood its volatile parts undergo some complicated chemical changes. When wood is burnt out of contact with the air, the carbon is preserved in the form of charcoal (see CHARCOAL), which is a very useful fuel when an incandescent heat free from flame and smoke is required; but when some of the volatile products are to be collected, the wood is placed in iron retorts which are gradually raised to a red heat; the volatile products form carburetted hydrogen, carbonic acid, carbonic oxide, and other gases, and also certain vapours which condense into liquid or solid products; some of the liquids are soluble in water, such as pyroxylic spirit, pyroligneous acid, &c.; the insoluble products form tar and certain oily substances.

In most countries deposits of *peat* occur of greater or less extent. In Holland, the north of Germany, Ireland, &c., peat deposits are of immense extent. The origin of peat has been accounted for in those districts where clay occurs near the surface by supposing muddy pools to have formed, round the edges of which aquatic plants have taken root and gradually extended themselves into the centre, thus forming a bed where mosses accumulate, and new plants take growth, while the old are decaying and becoming compressed into a solid mass below. This process goes on until the pools are filled up with vegetable matter, and the surplus water is discharged over the neighbouring lands, where the process is repeated until a peat bog is formed. Even in mountain districts, where the soil is impervious, clouds and mists may supply moisture, and a bog be formed by the growth of one generation of vegetable matter on the ruins of its predecessor. As the plants which form the peat are in different stages of decomposition at various depths, the character of the peat varies greatly. Near the surface it is light-coloured, spongy, and the vegetable character but little changed; lower down it is brown and dense; while at the base of some bogs, which may be as much as forty feet in depth, the peat is black, almost as dense as coal, and resembling coal in chemical composition.

On the banks of the Rhine peat is cut by means of a spade into blocks, and exposed to the air to dry, the upper layer being first separated from the lower and denser portion. In Holland the peat is scooped out by means of spades; or if a considerable quantity of water be present, an instrument is used consisting of a sharp iron ring attached to a handle, a net or cloth being fastened to the ring for draining off the water. The muddy peat thus collected is trodden out by the feet of men, raked, and the stones picked out; it is then thrown into shallow wooden boxes, strewed with hay to prevent the peat from adhering, and the remaining water is allowed to drain off. In the course of a few days when the mass has attained a certain consistence, women with flat boards strapped to their feet stamp down the peat until it has attained such a consistency as not to take an impression from a common tread. It is next stamped with beaters; and the cake, which is eight or nine inches thick, is divided by means of long laths into squares of about four inches, which are removed a few at a time from each box. The cakes are then dried by placing the first taken out transversely on the second, the third upon the fourth, reversing the order when the pieces are piled up in store.

The value of peat depends greatly upon its dryness, density, and firmness; if porous and brittle it crumbles during carriage or after it is stacked and thus becomes nearly worthless. In many cases the value of peat depends on its capability of being alternated with the substances to be heated. Porous and almost valueless peat has been rendered valuable by being passed through a press, in which case a lump of peat may lose as much as one-fourth of its weight of water. Peat may be nearly valueless as a fuel from the quantity of ash which it affords, consisting of vegetable salts and the earthy matter of peat, and amounting in some cases to one-third of the weight of the peat. When this large quantity of ash occurs in peat it renders the fuel very dusty, and in smelting processes it is objectionable on account of its chemical action. It is remarkable that the carbonates of the alkalies are not found in this ash, but phosphates, sulphates, &c.

In some large towns, peat, or *turf* as it is also called, is imitated by employing the refuse bark of the tan-yard, which is made into flat cakes, and chiefly used as fuel by the poor.

In the sandy plains of the East, camels' dung is dried and used as fuel;[1] it was from the use of such fuel in Egypt that sal ammoniac originated, the salt subliming during combustion. Other descriptions of excrement are also used as fuel. The Chinese have long been accustomed to mix cow dung and other refuse vegetable matter with soft clay and the dust of coal to form balls which when dried in the sun become a cheap and useful fuel, burning with very little smoke. These balls are largely manufactured in the coal districts of China, and are distributed over the empire by means of the canals. It is a curious fact that Sir Hugh Platt,[2] in 1594, indicated a method of making coal balls with loam, and that Ray, in 1663, observed this kind of fuel at Liège (*Journey through the Low Countries*, &c., 1673, page 58), where they were called *hot shots*, serving to slake the heat of a fire and keep the coals from burning out too fast. We are informed that in some parts of Wales stone-coal culm is made into balls with clay, and is a common form of fuel in Pembrokeshire. The combustion is slow, and a long steady heat is kept up well adapted for lime burning. In 1853 a patent was taken out in England by M. Ducayla of Bordeaux for the manufacture of fireballs of such materials as cinders or ashes, wood or lignite, anthracite coal, pit coal, animal black, calcareous earth or clay, mould, &c.

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[1] Hakluyt, in his *Voyages*, vol. i., p. 348, says, "we were forced to vse for fewell the dung of horses and camels, which we bought deare of the pasturing people." A substance in the form of long sticks, said to be made of camel's dung, is sometimes imported from the east under the name of *Chutnee*, and is occasionally used instead of the ordinary match for lighting pipes and cigars. It burns slowly without flame, and gives out an odour not unlike that of the burning cuttings of trees and shrubs.

[2] Sir Hugh gives an engraving representing a fire of fire-balls, without publishing a description of the method of making them; and he seems to have thought this so valuable that he offered to disclose it for a pecuniary consideration. His book is a curious exponent of the science of his day. It is entitled *The Jewell House of Arte and Nature*, and was published in 1594. The engraving referred to is contained in an appendix to the work, entitled *Divers Chimical Conclusions*, p. 69.

The fuel in every respect the most interesting to the British Islands, and one of the chief sources of their wealth and prosperity, is *coal*. The very abundance of this article causes it to be used in so lavish and extravagant a manner, that any general attempts to economise it and to fix its value as a fuel scarcely interest the public. There are, however, particular cases in which it is desirable to economise coal as far as possible, as in the case of a steam-ship of a thousand horse power, a single journey of which may require upwards of 2000 tons of coal, or more than 80,000 cubic feet. Hence it is obvious from the details given of the various descriptions of coal in the article COLLIERY, that some varieties of coal are better fitted for the purposes of steam navigation than others. A few years ago, when the government was establishing a steam navy, Sir H. de la Beche and Dr Lyon Playfair were requested to examine and report on the coal suited to the steam navy. The inquiry was conducted with great ability, and has resulted in two reports published in 1848 and 1849, which the reader interested in the subject will do well to consult. We will however state a few of the chief points elicited by this inquiry.

Bearing in mind the object of the inquiry, the commissioners considered that the chief test of the value of any coal submitted to their examination was its power of converting water into steam, so that if a given weight of coal in a certain time converted a larger proportion of water into steam than the same weight of another coal in the same time, the evaporative power of the one would be greater than that of the other. It was found, however, that the coal best adapted to steam-ships of war should also combine other qualities: for example, the fuel should burn quickly, so that steam may be raised in a short time; it should not be bituminous lest its smoke should betray the position of the ship when it might be desirable to conceal it; it should have such a cohesive power as not to be broken into fragments by the rolling motion of the vessel; it should have such a density and structure as to bear stowing away in a comparatively small space (a condition which in coals of equal evaporative value was found to involve a difference of more than 20 per cent.); lastly, the coal should not contain a large proportion of sulphur, nor be subject to rapid decay, or it might in either case lead to spontaneous combustion. But it was not found possible to unite all these conditions in the same coal. Anthracite, for example, has high evaporative power, but not igniting easily its action is not quick; it is not easily broken by the motion of the ship, but not being a caking coal, it would not cohere in the furnace, and would escape through the grate-bars during the rolling of the ship in a gale; it gives off no smoke, but from the intensity of its combustion it causes the iron of the grate-bars and of the boiler to oxidize rapidly; hence, with many advantages, anthracite has a few defects sufficiently prominent to preclude its use under ordinary circumstances. It was thought that a patent fuel might be formed with some of the anthracites of Wales, which should combine the advantages and elude the defects above referred to; but it was found that the cementing tar of the patent fuel burnt so much more rapidly in the furnace than the anthracite that the latter accumulated on the bars and obstructed the draught, or escaped through the grate unburnt.

In conducting this important inquiry, circulars were sent to the different collieries of Great Britain, explaining the object of the inquiry, and requesting the proprietors to forward two tons of coals for experiments; and in nearly all cases the application was favourably responded to. Each sample of coal was accompanied by a certificate from the owner, and in the report are given various particulars respecting the mine, the geological position of the coal, the method of working it, the nearest port, the extent of the trade in that coal, the physical character of the coal, together with the result of the experiments made upon it in a tabulated form.

One of the first experiments[1] on each coal was to test its cohesive power. This was done by enclosing a portion of coal in a wooden cylinder 3 feet in diameter, and about 4 feet in length, with a bearing or gudgeon at each end; within the cylinder were three shelves each 6 inches wide, tending towards the axis, for the purpose of forming a lodgment for the coals, and carrying them up towards the top of the cylinder during its revolution; thus ensuring a certain amount of fall. The coals to be tested were broken to the size used in the subsequent experiments on their evaporating power, and then thrown on a sieve with one-inch square meshes. 100 lb. of the coal left on the sieve were put into the cylinder which was made to revolve a certain number of times. The coals were afterwards sifted on the same sieve, and the weight remaining gave the percentage of large coals. The mean of two trials with each coal was taken, with fifty revolutions of the cylinder for each.

The coal was next heated under different arrangements of draught so as to ascertain when the gases escaping from the coal were most economically consumed. It was found that experiments made with highly bituminous coal, under different areas for the admission of air, varied much more considerably than the less bituminous coals of South Wales.

In testing the evaporative power of the coal a cylindrical boiler was used 12 feet in length and 4 feet in diameter, with flat ends, and an internal flue 2 feet 6 inches in diameter, in one end of which the grate was placed. The flues were on the split, or bridle draught plan, and the column of heated air after leaving the fire was made to pass through the internal flue to the rear of the boiler, where it divided, and returned along the outside of the boiler on both sides to the front; the two branches, each 2 feet 6 inches deep, then turned down at right angles to their former course, and united under the boiler in the bottom flue, traversed its whole length again and entered the base of the chimney, after exposing, during a course of about 36 feet, an area of 197·6 square feet of boiler surface to the heating action. The height of the chimney was 35 feet 6 inches, its internal dimensions being 182¼ square inches; it was furnished with dampers and with apertures for the purpose of making observations on the temperatures of the currents, and of obtaining samples of the gases for analysis, also for drawing up the soot. The furnace was closed with Sylvester's fire-doors, and a variety of ingenious arrangements were made for estimating temperature, pressure, &c. The method of conducting the experiments was as follows:—Supposing the water in the boiler to be cold, and to stand about one inch below the normal level, the fire was lighted, and the steam got up in the afternoon of the day preceding the commencement of the experiments. The fire was then allowed to burn out, when the fire and ash-pit doors and the damper were all closed. The next morning the first thing done was to open the safety-valve to equalize the external and internal pressures, and then sufficient water was let down from the tanks to raise that in the boiler to the normal level. The depth of the water in the tanks was then gauged, and the first observation of its temperature made. The ashes, cinders, and soot were next cleared out, and after noting the temperature of the water in the boiler, the fire was lighted with a weighed portion of wood, and the exact time was then observed. The coals were then gradually added till the fire was of the proper size and form. The form of fire was slightly varied according to the kind of coal employed, the object being to burn the coal to the best advantage with as little smoke as possible at the chimney. The observations of the temperatures of the two side and escape flues, and of the water in the tanks, then succeeded each other at regular intervals of about one hour each. When the steam raised the safety-valve the time was observed, and entered under the heading *steam up.* The damper was adjusted as soon as the fire was sufficiently established, and was not disturbed during the day, except under peculiar circumstances. When by evaporation the water had sunk about one inch below the normal level, the deficiency was supplied from the tanks above; or by the plan afterwards adopted, the water was allowed to flow in continuously, so as to maintain the water in the boiler at a constant level. The fire was supplied with coals, in pieces not exceeding 1 lb. weight each, and not more than one or two shovels full at a time, and were usually spread evenly over the fire; but in the case of anthracite, it was found that the sudden application of heat caused the pieces to split and fall through the bars. They were therefore gradually heated on the dead plate before being put on. With the bituminous coals a preparatory process of partial coking on the dead plate prevented them from coking in the fire (which would have impeded the passage of air through the grate), besides giving better opportunity for burning the smoke and gases by passing them over a large surface of ignited fuel. The duration of the experiment was reckoned from the time the steam was up to about that of the last application of fuel, after which the fire was allowed gradually to burn out, when the damper and furnace and ash-pit doors were closed. During the day ashes were thrown up in small quantities from time to time when the fire was burning clear and well. The weight of coals consumed was then ascertained, by deducting the weight left from the gross weight provided for the day's trial, when the experiment terminated. The next morning when the level of the water in the boiler was adjusted, by turning down a supply from the tanks, their depth was gauged, and the quantity evaporated the previous day was thus ascertained. The coke and cinders were then removed, the clinkers, if any, were separated, and the weight of each was taken. The soot was cleared out at the end of the last day's experiment, and the total weight recorded, which divided by the number of trials, gave the average weight. Samples of the ashes, cinders, and soot, were then put aside in bottles for the purpose of ascertaining the per-centage of combustible matter present in the residue. The barometer was observed at about 11 o'clock in the day, being generally about two hours after the steam was up. The quantity of combustible matter in the residue was estimated by heating the powdered substance in a stream of oxygen gas, by which the organic matter was got rid of chiefly in the form of carbonic acid and water, and the loss was estimated as combustible matter.[1]

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[1] The experiments were conducted at the college for Civil Engineers at Putney by Professor John Wilson and Mr J. Arthur Phillips, assisted by other gentlemen.

The commissioners found that the qualities which distinguish particular kinds of fuel are very varied, so that it is difficult to deduce general results. But the data furnished by their experiments enable us to contrast the actual value of a particular coal with its theoretical value, supposing its combustion to be attended with no loss of heat. The actual duty obtained by 1 lb. of coal from the boiler employed may be expressed by the number of pounds raised to the height of one foot, a result which may be obtained by the formula $W\eta \times 965{\cdot}7 \times 782 = x$, in which W represents water, of which η pounds are evaporated by one pound of coal. This formula is deduced from the fact that η pounds of coal multiplied by 965·7, or the co-efficient for the latent heat of steam at 212°, indicates the number of pounds of water which would be raised 1° Fahr.; and the number 782 arises from experiment on the mechanical force denoted by the elevation of 1 lb. of water 1° Fahr.; that force being equal to 782 lb. raised to the height of one foot, according to the experiments of Mr Joule. The best Cornish engines are said to be capable of raising 1,000,000 lb. to the height of one foot for every pound of coal consumed, but this is only about $\frac{1}{8}$th of the actual force generated, and only $\frac{1}{11}$th or $\frac{1}{12}$th of the theoretical force. Experiments on the evaporative power of coal made by different observers give very dissimilar results. Smeaton in 1772 evaporated 7·88 lb. of water from 212° with 1 lb. of Newcastle coal; Wall in 1788 evaporated 8·62 lb; Wicksteed in 1840 evaporated 9·493 lb. of water from 80° with 1 lb. of Merthyr coal, which is equal to 10·746 lb. from 212°. In some experiments made at the united mines in Cornwall, it was found, after a trial of six months, that every pound of coal evaporated 10·29 lb. of water from 212°; and according to some experiments made in Cornwall, at the request of the commissioners, it was found that 11·42 lb. of water were evaporated by every pound of Welsh coal of similar chemical composition to that of Mynydd Newydd.

At ordinary temperatures coal undergoes a slow combustion under the action of the oxygen of the atmosphere, evolving carbonic acid, nitrogen, and inflammable gases, and in some cases leading to dangerous explosions. This slow combustion is facilitated by the higher temperature of hot climates, and by the presence of moisture. If the coal contain much sulphur or iron pyrites the chemical action may become so intense as to ignite the coals. In stowing coals it is therefore important that they should be as dry as possible, and such a variety should be selected as is least liable to this progressive decomposition. When coal is kept in iron bunkers, and is liable to be wetted with sea water, the iron rapidly corrodes from the carbon or coal forming a voltaic circuit with the iron, and thus promoting oxidation.

In the Great Exhibition of 1851, Messrs Berard and Co. in the French department, No. 51, exhibited "small purified coals, and residue of the same, the produce of a system for purifying coals, patented in France, England, Belgium, and Germany." This plan appears to be well adapted to the purification of sulphurous coal, or coal containing much iron pyrites; also where the coal deposits are in numerous small seams, and cannot be got out without being mixed with slaty and stony matter. The coal used on the Chemin de Fer du Nord was so sulphurous as to injure the locomotives; but by using the purified coal, the evil was for the most part remedied; the quantity of ash was also greatly reduced. The apparatus employed for purifying the coal is similar in principle to the jigging machine used in dressing ores, which, after being stamped in order to separate stony matter, are agitated in water and allowed to rest, when the various portions become arranged in layers, according to their specific gravities. This purified coal yields a very pure coke.

Mr Crace Calvert of Manchester has taken out a patent for purifying coke from sulphur. It consists in mixing the coal before coking with from 1½ to 2½ per cent. of common salt, the proportion varying with the quantity of sulphur. The coking is then conducted as usual. By this contrivance, coal, which was formerly unserviceable in smelting operations, can now be used with effect.

We cannot conclude this article without a brief notice of some of the earlier attempts to ascertain the heating value of fuel. The economy of manufactures, our domestic arrangements, health and comfort, depend so much on the judicious application and regulation of fuel, that any information tending to its better expenditure ought to command attention. Our expenditure of coal is of so prodigal a nature, and is every day so increasing, that we look forward to the time when the supply may fail. The calculations made many years ago by geologists on the probable duration of our fossil fuel were not only based on incorrect data, but on a comparatively small consumption. The ten-yard coal of Dudley is nearly exhausted, and other districts are becoming more scanty in their supplies, or more difficult to work.

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[1] *Report*, p. 21, 22, slightly abridged.

As various kinds of fuel afford different amounts of heat, and as heat cannot be measured or weighed, and its quantity ascertained by direct experiment, the relative values of fuels are ascertained by comparing them with each other under similar circumstances. The heating power of a fuel is the quantity of effect produced by it in a certain time, and this in conjunction with its market price gives its value as a fuel. One fuel may produce a certain greater or less effect than another fuel, and thus its relative superiority or inferiority may be accurately ascertained, although the actual amount of heat furnished by it may be entirely unknown. Lavoisier and Laplace fixed these values by making the substance under examination act on ice, and the quantity of ice melted gave the value in each case. Count Rumford measured the value of fuel by the increased temperature which it produced in a given quantity of water. Now, as the same quantity of heat which melts one pound of ice at 0° Cent. is sufficient to raise the temperature of as much water 79° Cent., or 0·79 lb. of water 100° Cent., so also an equal weight of aqueous vapour of any given temperature and elasticity is always formed from the same amount of heat, and always contains the same quantity of heat, and the quantity of heat which water at 100° Cent. renders latent in order to become steam is 5·5 times sufficient to heat the same weight of water from 0° to 100° Cent., hence the water converted into vapour by the heat required to melt one pound of ice is the 5·5th part of the same pound, that is, it can convert into vapour 0·154 lb. of water.

It was found by Despretz and Welter that the quantities of fuel which require equal amounts of oxygen for combustion, give out equal quantities of heat, thus, 1 lb. of oxygen in combining respectively with hydrogen, charcoal, alcohol, &c., raised 29 lb. of water from 32° to 212°. A given weight of the different combustibles has its heating power represented by the number of pounds of water raised in temperature, as in the following table:—

		lb. of water.		
1 lb. of	pure charcoal raised...	78	from 32°	to 212°.
...	common wood charcoal	75	...	...
...	baked wood...............	36	...	...
...	wood holding 20 per cent. of water.........	27	...	...
...	bituminous coal.........	60	...	...
...	turf........................	25 to 30	...	...
...	alcohol....................	68	...	...
...	oil, wax..................	90	...	...
...	ether......................	80	...	...
...	hydrogen..................	236	...	...

More recent researches have, however, cast considerable doubt upon the law that any given quantity of oxygen evolves the same quantity of heat with whatever combustible body it may combine. From a series of tabulated results given in Gmelin's *Hand-Book of Chemistry*, vol. i., page 292 (Cavendish Society's translation), it would rather appear that oxygen developes a larger quantity of heat the stronger its affinity for the combustible substance

Such experiments as the above tend to confirm the modern view of combustion which regards oxygen as a combustible as much as the fuel with which it combines (see CHEMISTRY, vol. v., page 456); so that when oxygen burns by means of any fuel, the heat evolved increases with the quantity of oxygen consumed. It was on this view that Berthier based his process for detecting the quantity of oxygen required for combustion, and the heating power of the combustible in one experiment. His plan is to heat to redness a known quantity of the combustible with a considerable excess of pure litharge until the combustible is entirely consumed by the oxygen of the oxide of lead. On weighing the lead reduced by this process the amount of oxygen consumed is ascertained, and also the heating power of the fuel under examination. In calculations of this kind it will be remembered that 6 parts, or 1 equivalent of carbon, require 16 parts, or 2 equivalents of oxygen, for combustion; that one part of hydrogen requires 8 parts of oxygen; that by subtracting from the hydrogen a quantity corresponding to the oxygen in the coal, the calculation can be made for the carbon only. Now, 1 part of pure carbon requires for combustion 2·666 of oxygen, and is capable, according to Despretz, of heating 78·15 parts of water from freezing to boiling. By multiplying each part of lead obtained by 2·265, the weight of water is obtained which is capable of being heated between these temperatures by a unit of the coal used in reducing the litharge.

The heating power of a particular fuel is the same, however that fuel may be burnt. It is true, that the power may be more or less economically applied; the power may be expended with greater or less rapidity, greater, for example, in a furnace than in an open grate, but as the fuel during combustion combines with equivalent portions of oxygen, the same amount of heat is liberated whether the combination be rapid or slow. The rapidity of combustion depends not only upon the mode of arranging the draught or supply of air to the fuel, but also on the state of division of the fuel itself. A given weight of wood in the state of shavings will, from the large extent of surface exposed, burn rapidly, and produce its full heating effect in a few minutes, while the same weight of wood, in the form of a log, may keep up a moderate temperature for some hours. The division of a fuel may, however, be carried so far that the air necessary for its combustion cannot penetrate it. Such is the case with saw-dust, powdered charcoal, or peat, slack coal, &c. If the powdered coal be of caking quality it may be burnt into compact coke, and thus be more useful than a fuel which in its first form is compact but which falls to powder on being heated in the furnace. Small fuel may sometimes be advantageously applied by covering the furnace-bars with pieces of sand-stone or lime-stone for the purpose of preventing the fuel from falling through, and for distributing the supply of air among it. In the roasting of copper ores in South Wales a flaming coal is necessary in the reverberatory furnace where the operation is carried on. But as the flameless anthracite is much more abundant in this district than the bituminous coal, it is turned to account in an ingenious manner. When burnt under ordinary circumstances it crumbles to powder, as already noticed, and either slips through the bars of the grate, or chokes them up. But when anthracite is raised to a very high temperature it forms a vitreous scoria or clinker, which in the ordinary furnace combines with the iron of the bars and chokes up the grate. In the Welsh furnaces the clinkers themselves are ingeniously arranged, so as to perform the office of grate bars, namely, to support the fuel, and to limit the supply of air from below. The clinkers are supported on iron bars placed at a considerable distance apart, and are arranged in a layer twelve or sixteen inches in depth. Above this layer the fuel of the furnace is in full combustion: this fuel consists of anthracite mixed with about one-fourth of its weight of small bituminous coal, and also forms a layer of a depth about equal to that of the clinkers; it is in this the hottest part of the fire that fresh clinkers are being continually formed, and while forming they cake with the numerous fragments of bituminous coal heaped up above them. As fresh portions of the fuel come into operation the clinkers descend towards the bottom of the grate, where meeting with the numerous jets of air which stream up through the bottom the vitrified mass splits and cracks in all directions, forming new channels for the ascent of the draught, but not large enough to allow the small coal to escape. As the calciner-man heaps up fresh fuel above, he hooks out a few clinkers from the bottom to make way for the descent of others. Under this arrangement the oxygen of the air traversing the multitude of channels formed by the cracks in the clinkers, combines with a portion of the fuel and forms carbonic acid, which is uninflammable, but before reaching the vault of the furnace it is deprived of a portion of its oxygen, and becomes converted into carbonic oxide, which is inflammable. But in order that this gas may undergo combustion, air is admitted through apertures in the sides of the furnace just above the ore, and in this way the whole surface of the ore, occupying an area of nearly 23 feet square, is played upon by a thin sheet of flame, produced from fuel which gives scarcely any flame at all.

Common coal gas is sometimes used as fuel, in which case it is calculated that 1 lb. or 24 cubic feet thereof in burning will raise 76 lb. of water from the temperature of freezing to that of boiling. Extending this comparison to the other forms of fuel, it is stated that 1 lb. of dry wood will similarly heat 35 lb. of water, but only 26 lb. if the wood be not dry, or contain moisture to the extent of from 20 to 25 per cent. One lb. of good dry charcoal will similarly heat 73 lb. of water, but if exposed to the air it absorbs at least 10 per cent. of moisture, and in burning gives a flame of carburetted hydrogen (or rather, probably, a mixture of carbonic oxide and hydrogen), arising from the decomposition of the moisture. One lb. of good pit coal is said to raise 60 lb. of water from freezing to boiling, 1 lb. of coke 65 lb., and 1 lb. of turf or peat from 25 to 30 lb. (C. T.)

FUENCALIENTE, a town of Spain, in the province of La Mancha, and archbishopric of Toledo. It is 50 miles from Ciudad-Real, contains 1799 inhabitants, and is situated in the middle of the Sierra Morena, to the S. of Madrona and Quintana, its two principal summits. The baths of Fuencaliente (" hot spring") are very much frequented by those afflicted with paralytic and rheumatic complaints. The mountains abound with excellent pasture for goats, with numerous fountains and mountain torrents of wholesome water; its forests abound with oaks, arbutuses, wild rose-trees, and heath, and with numerous olive and fruit trees.

FUENCARRAL, a royal town of Spain, in the province of Madrid and archbishopric of Toledo, and containing 1890 inhabitants. It is situated about 5 miles N. of Madrid, and contains one convent of Dominicans, situated without the walls, and called Valverde, founded in 1598 A.D., on the site of an ancient hermitage. Fuencarral is the birthplace of Ramon Montero, bishop of Heliopolis. It produces grain, oil, grapes, red wine, and abundance of garden stuffs for the Madrid market. Its principal manufactures are oil, soap, and some wool.

FUENLABRADA (DE LOS MONTES), a secular town of Spain, in the province of Estremadura, and 120 miles from the capital. It has a population of 2027, and is situated on a hill planted with evergreen oaks, rock-roses, sweet mastiches, and arbutuses. The climate is very delightful and healthful, and the water excellent. The principal productions are game, honey, wax, corn, vetches, oil, herbs, flax, excellent wine, and all kinds of cattle and sheep. The principal manufacture is linen, but only for domestic use.

FUENLABRADA, a royal residence of Spain, in the province of Madrid and archbishopric of Toledo. It is governed by an alcalde; contains 1725 inhabitants; and is situated in an extensive open plain, about 10 miles from Madrid. The chief products are grain and wine; and the industry is mostly confined to the rearing of cattle and grinding of corn for sale. It is the native place of Felix Herrero Valverde, bishop of Oribuela.

FUENMAYOR, a royal city of Spain, in the province of Soria. It has a population of 2285, and is situated in a vast plain a short distance from the Ebro, on a small river which divides the town into two equal parts and falls into the Ebro. This stream has no name, and except in winter contains scarcely any water; but the springs are good and abundant. The principal products at Fuenmayor are wine, grain, and garden produce of every variety; but that which commands most attention is its excellent capsicums, so much sought after over all the peninsula, as well for their flavour as for their large size, some of them weighing 1½ lb.; the average size, however, is about the half of this. The average annual sowing produces about 1,500,000 plants. Besides these, every kind of fruit abounds around Fuenmayor, and large quantities of oil are manufactured.

FUENSALIDA, a secular town of Spain, in the province and archbishopric of Toledo. It is 40 miles from Madrid, and contains 2739 inhabitants. The situation is on an elevated plain, agreeable, and very beautiful; the temperature mild and equable; and the water abundant and wholesome. Around Fuensalida are produced wheat, barley, beans, kidney beans, vetches, tares, apples, grapes, and some olives. The principal manufacture is soap, the people around being mostly engaged as labourers and carriers.

FUENSANTA, a royal town of Spain, in the province and bishopric of Cuenca. It contains 1831 inhabitants, and is situated in a valley on the bank of the Jucar, which flows from N. to S. The soil around the town is sandy and gravelly, and well adapted for vines and olives, which are very abundant here, but so badly cultivated that the produce is very small. The same may be said of the orchards. Yet saffron, truffles, and some garden stuffs, are produced in abundance. The only manufacture is bass-matting.

FUENTE-ALAMO, a royal town of Spain, in the province of Murcia. It contains 2653 inhabitants, and is distant 30 miles from Murcia.

FUENTE-CANTOS, a royal city of Spain, in the province of Estremadura. It contains 5000 inhabitants, and is 48 miles S.E. of Badajoz. It stands at the foot of a chain of mountains, and is beautifully situated on an extensive and elevated plain, from which there extends a magnificent prospect in all directions. All kinds of fruit, grain, and vegetables abound around Fuente-Cantos; and the wine and water are of the best quality. The principal and almost the only manufacture is frieze.

FUENTE-DE-LEON, a town of Spain, in Estremadura. It contains 4000 inhabitants, and is 50 miles S. from Badajoz. There is a silver mine of some importance in its vicinity.

FUENTE-DEL-MAESTRE, a town of Spain, in the province of Estremadura. It is distant 40 miles from Madrid, contains 1580 inhabitants, and is situated between Almendralejo and Zafra on the main road from Madrid to Sevilla, by Merida on the skirt of the Sierra de San Jorge. From it spreads out an extensive open plain planted with groves of olives, which yield abundance of oil, without in any way injuring the corn and the vine crops, and abundant pastures for every species of flock and herd.

FUENTE-DEL-SAUCO, a town of Spain, in the province of Zamora. It is 24 miles S.E. of Zamora, in a fertile valley, and contains 2557 inhabitants. The streets are straight and wide; and it contains a custom-house, two churches, two hospitals, two public squares, and has several distilleries of brandy.

FUENTE-EL-FRESNO, a town of Spain, in the province of La Mancha and archbishopric of Toledo. It is situated on elevated ground at the foot of a low chain of hills on the royal road from Madrid to Ciudad-Real, from the latter of which it is distant 24 miles N.N.E., and contains 2315 inhabitants. Near this town is the cave Montesinos, into which Cervantes makes Don Quixote descend.

FUENTE-LA-HIGUERA, a secular city of Spain, in the province and archbishopric of Valencia. It contains 2659 inhabitants, and is situated 44 miles N.W. of Alicante, on a rock at the foot of a calcareous mountain, and at the entrance of a beautiful valley, over which it looks. This valley is interspersed with orchards, forming an uninterrupted series of landscapes, terminated by the declivities of the mountains which surround it, and are cultivated to the very summits. The chief produce is wheat, barley, wine, and timber. At Fuente-la-Higuera Jourdan, Soult, and Suchet, after the rout of Salamanca, met with their retreating forces, and held a council how best to get back into France, when Ballesteros, by refusing to obey Wellington's orders, opened the way for them to Madrid, in October 1812.

FUENTE-OBEJUNA (Fons Mellaria), a royal town of Spain, in the province and bishopric of Córdoba. It is 50 miles N.W. of the city of Córdova, contains 5500 inhabitants, and stands on the crest of a hill, with the Colegiata on the apex, like an acropolis. The "Honey Fountain" is at the bottom of the hill to the W., and coal seams occur here which extend to Villaharta. Fuente-Obejuna stands in the immediate neighbourhood of the Sierra Grana, and had its ancient name, *Fons Mellaria*, from the abundance and superior quality of the honey produced here by the bees so well supplied by the heath of the surrounding hills. The three rivers, Guadiato, Suja, and Bembezar, which flow along its boundaries, abound in fish of excellent quality. The neighbouring pastures are rich and abundant, while the wine, though very good, is small in quantity. Fruits and vegetables are plentiful; and every kind of game, from the wild boar to the rabbit, is very abundant. Herds and flocks abound also, as well as honey, wax, wheat, barley, and most other cereals. There are in the vicinity mines of various kinds of metal, and also of talc and coal. Its industry consists principally in the manufacture of linen fabrics and hides, frieze and baize; besides the distillation of various kinds of spirits. The arms of Fuente-Obejuna consist of a fountain with four spouts surmounted with a swarm of bees, and in the lower part of the escutcheon a castle, with its towers and armoury, from which rises a red banner with a cross, and in the sinister two lions in the attitude of springing upon a sheep (*obeja*, or *oveja*).

FUENTEPELAYO, a secular town of Spain, in the province and bishopric of Segovia. It stands 19 miles N. of Segovia, and contains 1640 inhabitants. It is situated on an elevated and beautiful plain, which produces in abundance wheat, barley, rye, tares, vetches, and some wine of inferior quality, and scarcely sufficient for local consumption. The principal industrial products are,—coarse sacking, grogram, with some other coarse materials for local wear. Considerable quantities of sheep and wool, of various kinds, are produced and sold in the neighbouring large towns.

FUENTERABIA (generally, but erroneously, written Fuenterrabia), a very ancient city of Spain, in the province of Guipúzcoa, and bishopric of Pamplona, and 12 miles E.N.E. of San Sebastian. It stands on the W. bank of the Bidasoa, on the slope of a hill which has the form of an amphitheatre. It is still fortified, and has a population of only 2134. The greater part of the city, however, is little else than a collection of ruined mansions, with ornamented roofs projecting over dilapidated balconies, ivy-covered battlements and broken walls, gateways, and towers. The circuit of the wall of Fuenterabia is nearly two English miles, and it is encircled from the N. by the W. and S., with a broad ditch, and defended on the E. by the river Bidasoa and its estuary. The wall and its defences are now in a much dilapidated state. The four quarterings of the arms of Fuenterabia bear an angel holding a key, a whale, two syrens, and a castle between two stars, which were bestowed by Philip IV. in 1638, when the Prince of Condé was here repulsed by the Admiral of Castile. In 1794 the French completely dismantled the place; and the inhabitants, during the winter, begrudged even lodging to the English sick soldiers, from whom the authorities of the city wished to take away even the hard boards on which the disabled were stretched; "and these," said Wellington, "are the people to whom we have given medicines . . . whose wounded and sick we have taken into our hospitals, and to whom we have rendered every service in our power, after having recovered their country from the enemy" (Nov. 27, 1813). Fuenterabia is the native place of Cristobal de Rojas y Sandoval, chaplain to Charles V., and bishop of Oviedo, of Badajos y Córdova, and archbishop of Sevilla, who assisted at the council of Trent.

FUENTES-DE-DON-BERMUDO, a town of Spain, in the province of Valencia, and 12 miles W.N.W. of the city Palencia. It is situated in a plain on the N.W. bank of lake Nava, and contains a population of nearly 3000. The country around produces immense quantities of grain and excellent wine, which is one-third more valuable than that produced in the neighbouring districts. Immense flocks and herds are kept in the vicinity of Fuentes-de-don-Bermudo; and the industry consists principally of the manufacture of bolting cloth, to the annual amount of 24,000 pieces of 80 yards each, which is sent chiefly to Asturias. Large quantities of cheese are also produced for exportation.

FUENTES-DE-EBRO, a secular town of Spain, province of Aragon, and archbishopric of Zaragoza. It is on the right bank of the Ebro, and contains a population of nearly 2000. It contains a saline mineral spring, which has not yet been analysed. The principal branch of industry is the manufacture of serge of various coarse kinds. Its arms are five silver castles on a field of red.

FUENTES-DE-LA-CAMPANA, a secular town of Spain, in the province and archbishopric of Sevilla. It contains 9000 inhabitants, and is situated on a hill about 4 miles from the road, which is between Ecija and Carmona. The town is very ancient, and contains many Roman and Saracenic antiquities. It has a custom-house, an hospital, a church, and two convents. The situation is exposed to winds from all directions, and the temperature is dry and cold.

FUENTES-DE-LEON, a town of Spain, in the province of Estremadura. It is 5 miles from Segura-de-Leon, and contains 2920 inhabitants. It is situated in a territory so rugged, that to a distance of 20 miles there is no road for wheeled vehicles. In the vicinity great numbers of pigs are reared, and pork is exported in large quantities. The annual produce of oil is about 20 tons, of wheat 4000 bushels, and of rye 1000. The principal industry of the inhabitants is in the tending of the herds and flocks of the Sierra de Aracena. There is one silver mine in the neighbourhood.

FUENTES-DE-ONORA, a town of Spain, province of Salamanca, in a mountainous district, 16 miles W. of Ciudad-Rodrigo, and near the left bank of the Rio das Casas, on the frontier of Portugal. In 1811, this was the scene of several battles between the English and the French; but especially on March 5, between Wellington and Massena.

FUEROS are certain immunities constituting what may be termed the Magna Charta of that part of Spain known as the Basque Provinces, namely Guipúzcoa, Alava, Biscaya, and Navarra. The term is probably derived from the Spanish *fuera*, outside, indicating that these provinces are without the pale of the ordinary administration of the Spanish monarchy.

The *fueros* differ as to their details in the different provinces; but the main features are the same in all, the form of government being essentially republican, and the royal authority only nominal. Taking the province of Biscay as an example, we find that the only prerogative of the crown is that of nominating the corregidor, or highest officer of the state; and that even this nomination is subject to the approval of certain members of the junta or states, in which is vested the chief management of public affairs. The junta is the most popularly constituted representative body existing in modern times, excepting the American congress. The right of voting in the election of its members belongs to every man who is master of a dwelling within the lordship, and its functions include the general administration of the affairs of the commonweath, the collection of taxes, the protection and defence of the territory, and the nomination of all the officers of government, except the corregidor. The inhabitants of the province are exempt from all imposts except the self-imposed ones of their own locality, and from all duties on imported merchandise. They claim the privileges of Spanish nobility on merely proving their descent from pure Biscayan blood. They are not obliged to appear before any tribunal beyond the bounds of their own lordship, or to tolerate any royal intendant or comptroller within the province, or to allow any royal monopoly as in the rest of Spain, or have any royal establishment except the post-office, or admit royal troops within the territory, or furnish recruits for the royal army. But they are privileged to defend their territory with their own means and their own blood; and moreover to visit with summary punishment whoever may attempt even to interfere with these their constitutional rights.

The history of the *fueros* is lost in their profound antiquity; but they are believed to date from the brave Cantabrians who were never completely subjugated to the Roman yoke, and who, even when partially conquered, maintained their own laws and customs inviolate. Whether this was the origin of the fueros, or not, it is certain that from time immemorial the Basque provinces have enjoyed certain privileges unknown throughout the rest of the Spanish dominions. They existed only in the traditions of the country, and seem nevertheless to have been well understood and observed till the year 1235, when, in consequence of the accession of a French prince to the throne, some misunderstanding arose, and it was deemed necessary to embody these privileges in a written code. The charter thus framed was enlarged under the sanction of Charles V., and was recognised as the Magna Charta of the Basque provinces till the revolution of 1833, when its maintenance became the occasion for a series of sanguinary hostilities which devastated Spain for several years. These struggles terminated only when the Spanish government and the Cortes entered into a formal recognition of the rights, privileges, and ancient customs of the Basque provinces.

FUGALIA, in *Roman Antiquity*. See REGIFUGIUM.

FUGLEMAN (Germ. *flügel*, a wing), a non-commissioned officer who is placed in front of a regiment at drill to guide the soldiers in the movements.

FUGUE, in *Music*. See MUSIC.

FULCRUM, in *Mechanics*, the prop or support by which a lever is sustained. See MECHANICS.

FULDA, one of the four provinces of the electorate of Hesse-Cassel, comprising the greater part of the ancient independent bishopric of Fulda, and the isolated circle of Schmalkalden. The bishopric of Fulda originated in an abbey founded by St Bonifacius in 744. It subsequently received various privileges, and in 1752 was raised to the rank of an independent bishopric. In 1803 it was secularized and ceded as a principality to the Prince of Nassau-Orange; and in 1810 it was incorporated by Napoleon with the grand-duchy of Frankfort. In 1814 it was divided, a district containing 27,000 inhabitants being given to Saxe-Weimar, and the rest to Prussia. Prussia afterwards ceded her portion to Hesse-Cassel, and it now forms one of the provinces of that electorate. It has an area of 720 square miles, and in 1846 contained 140,713 inhabitants.

FULDA, the capital of the above province, is situated on the river of the same name, 54 miles S. of Cassel. The Fulda rises in the Rhön-Gebirge, and after a northward course of about 90 miles, unites with the Werra below Munden to form the Weser. Fulda is a walled town, pleasantly situated and generally well built It is the seat of a superior court of justice and of a Roman Catholic bishop, whose jurisdiction extends over the whole electorate. The cathedral, containing the tomb of St Boniface, and the bishop's palace, with its extensive garden, are the chief of its fine buildings. The university founded here in 1734 has been converted into a lyceum. Fulda has also several monasteries, hospitals, asylums, and seminaries, a public library, and manufactures of linens, woollens, tobacco, leather, &c. The river is here crossed by a handsome stone bridge. Pop. (1845) 9570.

FULHAM, a village or suburb of London, on the left bank of the Thames, here crossed by a wooden bridge, 5½ miles S.W. of St Paul's. It contains numerous handsome houses and villas, and the vicinity is chiefly laid out in market gardens. The bishop of London has a palace here. Pop. of parish (1751) 11,816.

FULLER, REV. ANDREW, a distinguished preacner and theological writer of the Baptist denomination, born Feb. 6, 1754, at Wicken, a village in Cambridgeshire, about seven miles from Newmarket. He received the rudiments of his education at the free school of Soham. His father was a small farmer, whom he assisted as soon as he was able, till he was twenty years old. In childhood and youth he indulged in profane language and in lying, but was remarkably free from the vices of licentiousness. He had, however, strong "compunctious visitings" which never left him (some brief intervals excepted), till he was completely brought under the influence of Christian principle. He has left on record an interesting account of the commencement and progress of his spiritual life, which was greatly impeded by the contracted views of the religious people among whom he was brought up. His moral and intellectual nature was, however, composed of strong elements, and worked its way through formidable obstacles; no doubt, much of the strength and vigour it afterwards displayed was owing to the struggles and conflicts of his early manhood, or as he called them, "the gall and wormwood of his youth." In his seventeenth year he became a member of the Baptist church at Soham, and in the course of four years, after giving proofs of his abilities for public speaking, he was chosen to the pastoral office, which he filled for more than seven years, receiving from three different sources a stipend of only L.21 *per annum*, which he endeavoured to eke out, first by a small shop and afterwards by a school, in order to maintain himself with a wife and four children. In 1782 he removed to Kettering, in Northamptonshire, after a protracted deliberation of not only months but years, from a scrupulous dread of forsaking the path of duty, though with the prospect of absolute poverty if he remained. His conduct on this occasion (it has been justly said), "exhibits the rare spectacle of a man capable of making any sacrifice of selfish interest to his sense of duty to God and to his fellow-mortals." In his new position he was brought into frequent intercourse with several eminent ministers of his own denomination (among whom were Robert Hall and his venerable father), some of whom had enjoyed greater advantages of education than himself—who, though of characters in many points strikingly diverse, were men of deep piety, and addicted to theological inquiries. At that time the Calvinism prevalent in the Baptist denomination was mingled and overlaid with many crudities which the Genevan reformer would have disowned as foreign to his system. The writings of the great transatlantic divine Jonathan Edwards had just been introduced into Britain principally through the medium of Dr Erskine of Edinburgh; these were studied with avidity by Mr Fuller and his associates, and contributed largely to the correction and enlargement of their religious views. Before leaving Soham, Mr Fuller, then in his twenty-sixth year, had written a treatise entitled, *The Gospel worthy of all Acceptation*, which was designed to counteract those Hyper-Calvinistic notions which had perplexed his own mind. This he sent to the press soon after his settlement at Kettering, and was involved by it in a controversy with writers who differed as much from one another as from himself. But the works on which his reputation as a theologian mainly rest are two; the first published in 1793, *The Calvinistic and Socinian Systems Examined and Compared as to their Moral Tendency*, which was attacked by Dr Toulmin and Mr Kentish, to whom Fuller replied in a pamphlet entitled, *Socinianism Indefensible on the Ground of its Moral Tendency*. His second important work appeared in 1800, *The Gospel its own Witness; or the Holy and Divine Harmony of the Christian Religion contrasted with the Immorality and Absurdity of Deism*. These two treatises have lately been reprinted, with a memoir by the author's son, and form a volume of Bohn's Standard Library. Fuller also published *Expository Lectures on Genesis*, and prepared a similar volume (though not of equal interest), on the Revelation, which was published after his death. His *Memoir of the Rev. Samuel Pearce of Birmingham* will always hold a high rank among religious biographies. The greater number of his works are small in bulk, being chiefly single sermons or pamphlets, but in their last collected form fill 1000 pages royal 8vo. They all bear the stamp of a masculine, acute, and logical intellect; they are the productions of a man who thought for himself; who was deeply impressed with the majesty and worth of religious truth, and who when, after earnest search, he believed himself to possess it, held the conclusions he had reached with an unflinching tenacity. But the productions of his pen constitute only a portion of the labours of his life: he was not less a man of action than of meditation. In the year 1792 the Baptist Missionary Society was formed at Kettering by thirteen individuals, of whom Fuller was one. He was appointed secretary, and some of the brightest and palmiest days of the Society were under his administration, adding one more to the innumerable instances of the advantages (with some drawbacks) resulting from a scheme of operations being placed under the direction of one master-mind. "Friends talk to me" (he once remarked to a confidential friend), "about coadjutors and assistants, but I know not how it is, *I find a difficulty*. Our undertaking to India really appeared to me on its commencement to be somewhat like a few men who were deliberating about the importance of penetrating into a deep mine which had never before been explored. We had no one to guide us, and while we were thus deliberating, Carey, as it were, said, 'Well, I will go down, if *you* will hold the rope.' But, before he went down, he, as it seemed to me, took an oath from each of us that while *we* lived *we* should never let go the rope. You understand me, there was great responsibility attached to us who began the business, and *so I find a difficulty*." The correspondence he maintained; the journeys he undertook (among which were five to Scotland, and one to Ireland); the pamphlets he wrote in its defence, and the discourses he preached on its behalf, a frame less robust, physically and mentally, than his could not have sustained, and *his* frame at last sank under these complicated and unremitting toils. He died May 7, 1815, in his sixty-second year.

In private life, Fuller's character was marked by unbending integrity; and notwithstanding a certain uncouthness and sternness of manner, he had a heart capable of ardent and self-denying friendship, and of the tenderest affection in the domestic circle. His judgments of other men might often lean to the side of severity, but it must be recollected that he never spared himself. By one who knew him well and revered his character (the late Robert Hall), he was thought to attach too much importance to a speculative accuracy of sentiment, and to be too prone to infer the character of men from their creed; yet, in extenuation, it may be alleged that *his* creed was no mere formula of articles of faith, it was the perennial feeder of his moral and religious life; what wonder then that he attached a similar importance to the avowed belief of others?

It is a proof of the estimation in which Fuller's writings are held, that there have been three collected editions of them, besides American reprints. The first in ten 8vo vols.; the second in five; and the last in one royal 8vo. A memoir, principally compiled from his own papers, was published about a year after his decease by his most intimate friend and coadjutor in the affairs of the Baptist mission, the late Dr Ryland of Bristol; a second edition, with corrections and additions, appeared in 1818. A second biography, with a critical notice of his writings, was written by the Rev. J. W. Morris; and a third was prefixed by his son, the Rev. A. G. Fuller, to the second and third editions of his works. With some additional matter, it appears to be based on Dr Ryland's memoir. In the second volume of Coleridge's *Notes on English Divines* (London 1853), are a few marginalia on the "Calvinistic and Socinian Systems compared," pp. 238–243. (J. E. R.)

FULLER, Thomas, one of the wittiest and most original divines of the English Church, was born in 1608 at Aldwincle in Northamptonshire. His father, who was minister of St Peter's Church in that village, conducted his education personally, and so well that Fuller was admitted of Queen's College, Cambridge, in his thirteenth year. In 1624 he took his degree of B.A., and four years later that of M.A. Shortly after taking orders, he was chosen minister of St Bennet's, Cambridge, where he attained great popularity as a preacher. In 1631 he was chosen fellow of Sidney College, and made a prebendary of Salisbury. This year is also memorable in his life as that which witnessed his maiden publication. It was a poem—now extremely scarce—entitled *David's Heinous Sin, Hearty Repentance, and Heavy Punishment*. Shortly after this he was presented to the rectory of Broad Windsor in Dorsetshire, where, as one of his biographers remarks, "he began to complete several works he had planned at Cambridge." To complete his happiness he married about this time, but had the misfortune, in 1641, to lose his wife after she had given birth to a son. Wearied with the monotonous routine of rural life, and anxious to be near the principal scene of public affairs, Fuller repaired to London, where his fame as a pulpit orator secured for him the lectureship of the Savoy. In 1640 he published his deservedly celebrated *History of the Holy War*, which brought him in both money and a great increase of repute. He was a member of the Westminster Convocation of 1640, and has left an interesting account of its proceedings in his *Church History*. In 1642 he preached a sermon in Westminster Abbey which gave great offence to the Parliamentarians. The day happened to be the anniversary of the king's inauguration, and the preacher chose for his text the words, "Yea, let him take all, so that my lord the king return in peace." The sermon, which was in the same loyal spirit as the text, involved the preacher in no little odium with the Puritan party. In the same year Fuller published his most popular and in some respects his best work, entitled *The Holy and Profane State*. Declining, on grounds of conscience, to take the oath to Parliament, he now left London and joined the king at Oxford. His majesty was desirous to hear him preach, and Fuller immediately obeyed the royal order, but so little in the spirit of a partizan that the king was disgusted and the royalist party indignant at his calm moderation. His neutral policy was singularly ill-adapted for these troublous times, and he was soon to feel in a manner to him exquisitely galling the rancour of party spirit. Sequestration was pronounced against him, and embittered by the loss of all his books and manuscripts. Two royalist noblemen, Lord Beauchamp and Cranfield Earl of Middlesex, generously repaired this misfortune by making over to Fuller such remains of their private libraries as had escaped the ravages of the civil war. Induced to identify himself with the royal cause, and anxious to clear himself of the charge of lukewarmness, he sought and obtained, through Sir Ralph Hopton, a chaplaincy in the king's army. This office put at his disposal a good deal of time, which he turned to account by collecting materials for his *Worthies of England.* His numerous marches and countermarches through the country enabled him to amass many valuable details which might otherwise have been lost. Having espoused the royal cause, he threw himself into it with vigour, and gave a memorable proof of his zeal in the defence of Basinghouse, when he was besieged there with a small party of royalists. For he animated his little garrison to so vigorous a defence that the parliamentary commander, Sir William Waller, was obliged to retire from the place with loss. When the royal forces were afterwards driven into Cornwall, Fuller took refuge in Exeter, where he preached regularly to the citizens. About this time he was appointed chaplain to the infant princess, Henrietta Maria, and presented to the living of Dorchester. During his stay at Exeter he is said to have written his work entitled *Good Thoughts in Bad Times.* When at length the town surrendered to the Parliament, Fuller repaired to London, where he found his Savoy lectureship occupied by another, but readily obtained in its room that of St Clement's, and subsequently of St Bride's. His appointment to these offices, however, was merely nominal, as he was "forbidden (to use his own language) till further order the exercise of his public preaching." This rigour, however, did not prevent the Earl of Carlisle from offering him in 1648 the rectory of Waltham Abbey in Essex. In this same year he published at Cambridge his *Holy State*, and two years later at London his *Pisgah-sight of Palestine and the Confines thereof, with the History of the Old and New Testaments, acted thereon.* His literary history of the next two or three years exhibits nothing beyond a few tracts and sermons of temporary interest, which have been long forgotten. In 1654 he married a lady of noble family, the sister of Viscount Baltinglass, and in the following year made himself notorious by persisting in the discharge of his ministerial functions, "notwithstanding Cromwell's prohibition of all persons from preaching or teaching schools who had been adherents of the late king." In this year also he published his *Church History of Britain from the Birth of Jesus Christ until the year MDCXLVIII.*, to which was appended the *History of the University of Cambridge*, and the *History of Waltham Abbey.* The *Church History* called forth some strictures from Heylyn in his *Examen Historicum*, to which Fuller replied in a tract entitled *Appeal of Injured Innocence.* In 1658 Lord Berkely made him his chaplain, and presented him to the rectory of Cranford in Middlesex. It is also said that this nobleman took him over to the Hague, and introduced him to Charles II. there. Certain it is, that after the Restoration Fuller regained his lectureship at the Savoy, and was reinstated in his prebend of Salisbury. He was also appointed chaplain extraordinary to the king, made a doctor of divinity by *Mandamus*, and was within sight of a bishopric when a rather sudden death brought his earthly prospects to a close, 15th August 1661. He was buried in his church at Cranford, in the chancel of which a monument was erected to his memory.

The principal attribute of Fuller's genius is unquestionably wit; though, as Coleridge has well observed, "this very circumstance has defrauded him of his due praise for the practical wisdom—for the beauty and variety of the truths into which he shaped the stuff." His wit shows itself in the strangest forms, and whatever be the subject under discussion, it is sure to be presented in the wittiest guise. Sometimes it shows itself in a torrent of sarcasms so good-natured that the very person at whom they are levelled could not but join in the laugh against himself. At other times it exhausts itself in facetious stories, humorous illusions and illustrations and puns, more frequent and preposterous than those of Shakspeare himself. Even where a "lamentable accident" falls to be recorded, it is so mirthfully described that we feel ourselves more moved with laughter at the event than sympathy with the sufferers. A distressing catastrophe that befel a congregation of Catholics at Blackfriars is thus described—"The sermon began to incline to the middle, the day to the end thereof, when on a sudden the floor fell down whereon they were assembled. It gave no charitable warning groan beforehand, but cracked, broke, and fell all in an instant. Many were killed, more bruised, all frighted. Sad sight to behold the flesh and blood of different persons mingled together, and the brains of one on the head of another. One lacked a leg, another an arm, a third whole and entire, wanting nothing but breath, stifled in the ruins." In Fuller's treatment of serious or sacred subjects, however, whatever may be the appearance of profane or indecorous levity, there is never anything of the reality of it. It would, perhaps, have been safer, had he employed a less jocose phraseology when discussing grave subjects; but the whole tenor both of his life and writings proves him to have been a man of genuine religious sensibilities, not one of those who talk lightly on divine things because they feel lightly. But though one of the wittiest of men, Fuller was not merely witty. His fancy was only less characteristic and fertile than his wit, and was brilliant enough to have made the reputation of any inferior writer. But his indulgence of the dominant faculty of his mind has defrauded both his fancy and his wisdom of the admiration fairly due to them. Another faculty which Fuller possessed in rare perfection, that of memory, must not be here omitted. It is said that he could repeat five hundred strange words after once hearing them, and could make use of a sermon *verbatim* under the like circumstances. Another still more memorable instance of this power is recorded elsewhere. It is said that he undertook, after passing once from Temple Bar to the end of Cheapside, to tell at his return every sign as it stood in order on both sides of the way, and that he succeeded perfectly. Neither of these instances must necessarily be taken as strictly true (though far more wonderful ones are on record); but they both point to the fact that Fuller's memory was an uncommonly powerful one. As a writer, Fuller possesses many excellent qualities. Though a man of extensive erudition, he was absolutely free from all the forms of learned pedantry. His style is far more idiomatic than that of his illustrious contemporaries, Donne, Jeremy Taylor, Browne, and Burton; and he seems to have studiously avoided the Latinisms which form so large an element in their style. His sentences are simpler and shorter than theirs, and the majority of the words that compose them are of Saxon origin. This homely simplicity is to be accounted for by the fact that he used to collect the materials for his historical works, not by poring over dusty tomes in libraries, but by gossiping with the common people and listening for hours to their prolix accounts of local traditions and family legends. Though they do not display any great vigour of reasoning or wide command of principles, they are yet highly valuable as collections of admirably-told stories, reflecting quite as successfully as the most elaborate history the social spirit of that age. But though from their arrangements they are not immediately available as histories, they are a mine of wealth to more systematic and less eccentric writers. The moral spirit of Fuller's writings is admirable. His calmness and impartiality in discussing various delicate points of English ecclesiastical history contrast very favourably with the spirit of fierce partizanship displayed alike by most churchmen and dissenters of that age. It was in reference to this that Coleridge pronounced him "incomparably the most sensible, the least prejudiced great man of an age that boasted a galaxy of great men." He was a firm friend of the Established Church, and sometimes testified his attachment to it by flattering its chief dignitaries in terms unnecessarily fulsome. But it was with the deepest sorrow that he beheld the indignities practised against the Puritans, and wherever he could do so he did his best to screen and aid them.

In addition to the works already mentioned, Fuller wrote some others of less importance. These are—*Andronicus, or the Unfortunate Politician*, 12mo, Lond. 1646; *Good Thoughts in Worse Times*, 16mo, Lond. 1647; *Mixt Contemplations in Better Times*, 12mo, Lond. 1660; *The Speech of Birds, also of Flowers, partly moral and partly mystical*, 8vo, 1660. The most of Fuller's works have been several times reprinted.

FULLER'S EARTH, a species of clay much used in scouring woollen cloth and other stuffs. It occurs greenish, yellowish-gray, and bluish-gray, and sometimes it has a spotted appearance. It is dull, but assumes a fatty lustre when pressed with the fingers, is very soft, feels unctuous to the touch, and it melts into a brown spongy scoria before the blowpipe. In England it occurs in beds; the best is found in Buckinghamshire and Surrey. When good it has a greenish-white or greenish-gray colour, falls into powder when put into water, communicates a milky hue to water, and deposits very little sand when mixed with boiling water. It is used by fullers in taking grease out of cloth before the soap is applied. Its constituents are 53·0 silica, 10·0 alumina, 9·75 red oxide of iron, 1·25 magnesia, 0·5 lime, 24 water, with a slight trace of potash.

FULLING, the art of cleansing, scouring, and pressing cloths, stuffs, and stockings, to render them stronger, closer, and firmer. It is otherwise called *milling*. Pliny (vii. 56) relates that one Nicias, the son of Hermias, was the first inventor of the art of fulling; and it appears by an inscription, quoted by Sir G. Wheeler in his *Travels through Greece*, that this same Nicias was a governor in Greece in the time of the Romans.

The asperities upon the surface of wool render the spinning of it and the making it into cloth difficult operations. In order to spin wool, and afterwards convert it into cloth, its fibres must be covered with a coating of oil, which, filling the cavities, renders the asperities less sensible; in the same way that oil rubbed on the surface of a very fine file renders it less rough. When the piece of cloth is finished, it is carried to the fulling-mill, where it is beaten with heavy stampers in a trough full of water in which some fuller's earth has been mixed, for the purpose of cleansing it from the oil. The clay combines with the oil, which it separates from the cloth, and both are washed away together by the fresh water which is brought to it by the machine.

But the scouring of the cloth is not the only object in view in fulling it. The alternate pressure given by the stampers to the piece of cloth occasions (especially when the scouring is pretty far advanced), an effect analogous to that which is produced upon felt by the hands of the hatter. The fibres of wool which compose one of the threads, whether of the warp or the woof, assume a progressive movement, introduce themselves among those of the threads nearest to them, then into those which follow; and thus, by degrees, all the threads, both of the warp and the woof, become felted together. The cloth, after having by this means become shortened in all its dimensions, partakes both of the nature of cloth and of that of felt, and may be cut without being subject to ravel. Lastly, the cloth has acquired a greater degree of thickness, and forms a warmer clothing. Knit worsted also may thus be rendered less apt to run in case a stitch happen to drop.

The fulling of cloths and other stuffs is performed by a kind of water-mill, thence called a *fulling* or *scouring mill.* These mills, excepting in what relates to the mill-stones and hopper, are much the same with corn-mills; and there are even some which serve indifferently for both purposes. The principal parts of the fulling-mill are the wheel, with its trundle, which gives motion to the tree or spindle, whose teeth communicate it to the stampers, which are thereby raised and made to fall alternately, as its teeth catch or quit a kind of latch in the middle of each stamper. The stampers and troughs are commonly of wood; but sometimes the stampers are made of polished iron, and the cloth is exposed during the process to the action of steam; by which means the appearance of the cloth, when finished, is said to be greatly improved. These improvements formed the subject of a patent in 1825. In the course of the operation the fuller sometimes makes use of urine, sometimes of fuller's earth, and sometimes of soap. To prepare the stuffs to receive the first impressions of the stamper, they are usually laid in urine, then in fuller's earth and water, and lastly in soap dissolved in hot water. Soap alone would do very well, but it is expensive, and fuller's earth is scarcely inferior to it; but then it must be well cleared of all gritty particles, else it is apt to make holes in the stuff.

Method of fulling cloths and woollen stuffs with soap.—A coloured cloth of about 45 ells is to be laid in the usual manner in the trough of a fulling-mill, without first soaking it in water, as is commonly practised in many places. To full this trough of cloth, 15 pounds of soap are required, one-half of which is to be melted in two pails of river or spring water made as hot as the hand can well bear it. This solution is to be poured by degrees upon the cloth, as it is laid in the trough; and thus it is to be fulled for at least two hours, after which it is to be taken out and stretched. This done, the cloth is immediately returned into the same trough, without any new soap, and there fulled two hours more. It is then taken out and well wrung, to express all the grease and dirt. After the second fulling, the remainder of the soap is dissolved as in the former, and cast four different times on the cloth, which is taken out every two hours to stretch it, and undo the plaits and wrinkles it has acquired in the trough. When it is perceived to be sufficiently fulled, it is well scoured in hot water. With regard to white cloths, these full more easily and in less time than coloured ones, and thus require only a third part of the soap.

FULMINATING Compounds. Fulminates are of several kinds, being detonating compounds of the fulminic acid with various bases. Such are the fulminates of gold, mercury, silver, &c. The old fulminating powder is a mixture of nitre, sulphur, and potash. The fulminate of mercury is largely used as a priming to the percussion-caps for guns. See Chemistry, vi. p. 474.

FULMINATION (*fulmen*, thunder), in the Romish Church, a denunciation of censure or threats, as by papal authority.

FULTA, a large village of Hindustan, province of Bengal, on the east bank of the Hooghly, 20 miles S.S.W. in a straight line from Calcutta, but much more by the windings of the river. It has safe anchorage for ships, where they are protected from the swell of the sea, and where the anchors hold fast, the bottom being stiff clay. Lat. 22. 18., Long. 88. 10.

FULTON, Robert, a distinguished American engineer and mechanician, among the first who successfully applied steam to the propulsion of vessels, was born in 1765 at Little Britain in Pennsylvania. At a very early age he gave decided indications of mechanical genius. While still a mere youth he began life in Philadelphia as a portrait and landscape painter; and in his twenty-second year, with a view to improving himself in art, he visited England, where he remained for several years under the roof of his countryman West. He states that in 1793 he had conceived the design of propelling vessels by steam, but his numerous engagements prevented him from carrying it into effect at that time. His time was completely engrossed in devising a plane of double incline that should supersede the locks on canals, for which he obtained a patent from the British government in 1794. In the same year he obtained patents for flax-spinning and rope-twisting machines, and various other mechanical inventions, bearing chiefly upon the construction of canals, on which latter subject he published a treatise. In 1797 he removed to Paris, and remained for seven years in the house of Joel Barlow, the American minister at the court of Napoleon I., prosecuting his scientific studies. During that period he projected the first panorama ever exhibited in Paris, and made important experiments on submarine explosives. It was also at this time that he first succeeded, after repeated trials, in propelling a boat through the water by the aid of steam. In 1806 he returned to America, and repeated the experiment on a larger scale and with more decided success. In 1809 he took out his first patent, and seemed to be on the high way to wealth and prosperity, when his rights were disputed, and he became involved in legal proceedings, which embittered the remainder of his existence, and prevented him from reaping the rich harvest to which his industry and genius fairly entitled him. Fulton died Feb. 24, 1815. A minute account of his life and inventions is given in his biography by Cadwallader D. Colden. See STEAM NAVIGATION.

FULNEK, a town in the circle of Prerau, Austrian province of Moravia, 28 miles N.E. of Prerau. It has manufactures of linen and woollen goods, and about 3500 inhabitants.

FULNEK, the village in Yorkshire, 6 miles S.W. of Leeds, takes its name from this town, a colony of Moravians having settled there about 1723. Most of the inhabitants are still of that sect.

FUMIGATION, the employment of fumes or vapours for the purpose of purifying infected chambers, articles of apparel, &c. The most efficacious substance for this purpose is chlorine (see CHEMISTRY); next to it the vapour of nitric acid; and lastly that of muriatic acid. The fumes of heated vinegar, of sulphur, and the smoke of exploded gunpowder are of very little value as antiloimics.

FUNAMBULUS, among the Romans, a rope-dancer: called σχοινοβάτης, by the Greeks. The art of dancing on the tight-rope was carried to a wonderful degree of perfection among the Romans. In the *Ludi Florales* held under Galba, there were funambulatory *elephants*, as we are informed by Suetonius. Nero also gave similar entertainments in honour of his mother Agrippina: and Vopiscus relates the same of the time of Carinus and Numerianus.

FUNCHAL, the capital of Madeira. See MADEIRA.

FUNCTION, in *Analysis*, denotes an algebraical expression in any way compounded of a certain letter or quantity with other quantities or numbers; and the expression is said to be a function of that letter or quantity. Thus

$$a - 4x, \text{ or } ax + 3x^2, \text{ or } 2x - a\sqrt{a^2 - x^2}, \text{ or } x^c, \text{ or } e^x, \text{ is}$$

each of them a function of the quantity x.

FUND, in general, signifies a sum of money appropriated as the foundation of some commercial or other operation. Thus, that part of the national revenue which is set apart for the payment of the national debt is called the *sinking fund*. But, when we speak of *the funds*, we generally mean the large sums which have been lent to government and constitute the national debt; and for which the lenders, or their assignees, receive interest from revenues allotted for that purpose. The term *stock* is used in the same sense; and is also applied to the sums which form the capital of the Bank of England, the East India and the South Sea Companies; the proprietors of which are entitled to a share of the profits of the respective companies.

FUNDAMENTAL BASS. See MUSIC.

FUNDI, an ancient city of Latium. See FONDI.

FUNDING SYSTEM.

UNDER this head we propose, first, to give an account of the rise, progress, and modifications of the SINKING FUND, accompanied with some observations as to the probability of its accomplishing the object for which it was instituted; and, next, briefly to consider the best mode of providing for our annual expenditure both in war and peace,—an inquiry necessarily involving the policy of that SYSTEM OF FUNDING of which the sinking fund was long considered as one of the principal recommendations and props.

I. On the subject of the sinking fund, we shall have frequent occasion to refer to the statements of Professor Hamilton, in his very valuable publication entitled *An Inquiry concerning the Rise and Progress, the Redemption, and Present State of the National Debt of Great Britain.* "The first plan for the discharge of the national debt, formed on a regular system, and conducted with a considerable degree of firmness," says this able writer, "was that of the sinking fund, established in 1716. The author of this plan was the Earl of Stanhope; but as it was adopted under the administration of Sir Robert Walpole, it is commonly denominated from him. The taxes which had before been laid on for limited periods, being rendered perpetual, and distributed among the *South Sea*, *Aggregate*, and *General Funds*, and the produce of these funds being greater than the charges upon them, the surpluses, together with such further surpluses as might afterwards accrue, were united under the name of the *Sinking Fund*, being appropriated for the discharge of the national debt, and expressly ordained to be applicable to no other purpose whatever. The legal interest had been reduced from six to five per cent. about two years before; and as that reduction was unfavourable to the commercial state of the country, government was now able to obtain the same reduction on the interest of the public debt, and apply the savings in aid of the sinking fund. In 1727 a further reduction of the interest of the public debt, from five to four per cent. was obtained, by which nearly L.400,000 was added to the sinking fund. And, in the year 1749, the interest of part of the debt was again reduced to three and a half per cent. for seven years, and to three per cent. thereafter; and, in 1750, the interest of the remainder was reduced to three and a half per cent. for five years, and to three per cent. thereafter, by which a further saving of about L.600,000 was added to the sinking fund."

This sinking fund was for some time regularly applied to the discharge of debt. The sums applied from 1716 to 1728 amounted to L.6,648,000, being nearly equal to the additional debt contracted in that time. From 1728 to 1733, L.5,000,000 more were paid. The interest of seve-

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[1] The article on the Funding System, by the late David Ricardo, Esq., has always been reputed so excellent that it has been considered advisable to retain it entire, and the supplement to it by his son will bring down the information on the subject to the present time.—ED.

ral loans, contracted between 1727 and 1732, was charged upon surplus duties, which, according to the original plan, ought to have been appropriated to the sinking fund.

"Soon after, the principle of preserving the sinking fund inviolable was abandoned. In 1733, L.500,000 was taken from that fund, and applied to the services of the year." "In 1734, L.1,200,000 was taken from the sinking fund for current services; and in 1735 it was anticipated and mortgaged." The produce of the sinking fund, at its commencement in 1717, was L.323,437. In 1776, it was at its highest amount, being then L.3,166,517; in 1780, it had sunk to L.2,403,017.

"The sinking fund would have risen higher, had it not been depressed, especially in the latter period, by various encroachments. It was charged with the interest of several loans, for which no provision was made; and, in 1772, it was charged with an annuity of L.100,000, granted in addition to the civil list. During the three wars which were waged while it subsisted, the whole of its produce was applied to the expense of the war; and even in time of peace, large sums were abstracted from it for current services. According to Dr Price, the amount of public debt paid off by the sinking fund, since its first alienation in 1733, was only three millions, paid off in 1736 and 1737; three millions in the peace between 1748 and 1756; two millions and a half in the peace between 1763 and 1775; in all, eight millions and a half.

"The additional debt discharged during these periods of peace was effected, not by the sinking fund, but from other sources.

"On the whole, this fund did little in time of peace, and nothing in time of war, to the discharge of the national debt. The purpose of its inviolable application was abandoned, and the hopes entertained of its powerful efficacy entirely disappointed. At this time, the nation had no other free revenue, except the land and malt-tax granted annually; and as the land-tax during peace was then granted at a low rate, their produce was inadequate to the expense of a peace establishment, on the most moderate scale. This gave occasion to encroachments on the sinking fund. Had the land-tax been always continued at 4s. in the pound, it would have gone far to keep the sinking fund, during peace, inviolate."

This fund terminated in 1786, when Mr Pitt's sinking fund was established.

To constitute this new fund, one million per annum was appropriated to it by parliament, the capital stock of the national debt then amounting to L.238,231,248.

This million was to be allowed to accumulate at compound interest, by the addition of the dividends on the stock which it purchased, till it amounted to four millions, from which time it was not further to increase. The four millions were then annually to be invested in the public funds as before, but the dividends arising from the stock purchased were no longer to be added to the sinking fund for the purpose of being invested in stock; they were to be applied to the diminution of taxes, or to any other object that parliament might direct.

A further addition to this fund was proposed by Mr Pitt, and readily adopted, in 1792, consisting of a grant of L.400,000 arising from the surplus of the revenue, and a further annual grant of L.200,000; but it was expressly stipulated that no relief from taxation should be given to the public, as far as this fund was concerned, till the original million, with its accumulations, amounted to four millions. The addition made to the fund, by the grant of L.400,000, and of L.200,000 per annum, together with the interest on the stock these sums might purchase, were not to be taken or considered as forming any part of the four millions. At the same time (in 1792), a sinking fund of a new character was constituted. It was enacted, that besides a provision for the interest of any loan which should thenceforward be contracted, taxes should also be imposed for a one per cent. sinking fund on the capital stock created by it, which should be exclusively employed in the liquidation of such particular loan; and that no relief should be afforded to the public from the taxes which constituted the one per cent. sinking fund, until a sum of capital stock, equal in amount to that created by the loan, had been purchased by it. That being accomplished, both the interest and sinking fund were to be applicable to the public service. It was calculated, that, under the most unfavourable circumstances, each loan would be redeemed in forty-five years from the period of contracting for it. If made in the three per cent., and the price of that stock should continue uniformly at 60, the redemption would be effected in twenty-nine years.

In the years 1798, 1799, and 1800, a deviation was made from Mr Pitt's plan of providing a sinking fund of one per cent. on the capital stock created by every loan; for the loans of those years had no sinking fund attached to them. The interest was charged on the war-taxes; and, in lieu of a one per cent. sinking fund, it was provided that the war-taxes should continue during peace, to be then employed in their redemption, till they were all redeemed.

In 1802, Lord Sidmouth, then Mr Addington, was chancellor of the exchequer. He being desirous of liberating the war-taxes from the charges with which they were encumbered, proposed to raise new annual permanent taxes for the interest of the loans of which we have just spoken, as well as for that which he was under the necessity of raising for the service of the year 1802; but he wished to avoid loading the public with additional taxes for a one per cent. sinking fund on the capitals created by those loans, and which capitals together amounted to L.86,796,375. To reconcile the stockholder to this arrangement, he proposed to rescind the provision which limited the fund of 1786 to four millions, and to consolidate the old and the new sinking funds, *i. e.* that which arose from the original million per annum, with the addition made to it of L.200,000 per annum subsequently granted, and that which arose from the one per cent. on the capital of every loan that had been contracted since 1792. These combined funds he proposed should from that time be applied to the redemption of the whole debt without distinction; that the dividends arising from the stock purchased by the commissioners for the reduction of the national debt should be applied in the same manner; and that this arrangement should not be interfered with till the redemption of the whole debt was effected.

In February 1803 the debt amounted to L.480,572,470, and the produce of the joint sinking fund to L.6,311,626. In 1786 the proportion of the sinking fund to the debt was as 1 to 238, in 1792 as 1 to 160, and in 1803 as 1 to 77.

This was the first deviation of importance from Mr Pitt's plan; and this alteration made by Lord Sidmouth was not, perhaps, on the whole, injurious to the stockholder. He lost, indeed, the immediate advantage of an additional sinking fund of L.867,963, the amount of one per cent. on the capitals created by the loans of 1798, 1799, 1800, and 1802; "but in lieu," says Mr Huskisson, "of this sinking fund, a reversionary sinking fund was created, to commence, indeed, in about twelve to fifteen years from that time, but to be of such efficacy when it should commence, and to be so greatly accelerated by subsequent additions in its progress, as, under the most unfavourable supposition, to be certain of reducing the whole of this debt within forty-five years. This reversionary sinking fund was to arise in the following manner; by continuing the *old* sinking fund at *compound* interest, *after* it should have reached its *maximum* of four millions; and by continuing also the *new* sinking fund or aggregate of the one per cents of the loans since 1792, after such one per cents should have liquidated the several loans in respect of which they are originally issued. There is nothing, therefore, in the act of 1802 which is a departure from the spirit of the act of 1792."[1]

The next alteration that was proposed to be made in the sinking fund was in 1807, by Lord Henry Petty, then chancellor of the exchequer. His plan was extremely complicated, and had for its object, that which ministers are too much disposed at all times to view with complacency, namely, to lessen the burden of taxation at the present, with the certainty of aggravating its pressure at a future day.

It was estimated by Lord Henry Petty, that the expenses of the country during war would exceed its permanent annual revenue by thirty-two millions. For twenty-one millions of this deficiency, provision was made by the war-taxes; the property-tax amounting to L.11,500,000, and the other war-taxes to L.9,500,000. The object then was to provide eleven millions per annum. If this sum had been raised by a loan in the three per cents, when their price was 60, provision must have been made by taxes for the interest and sinking fund, so that each year we should have required additional taxes to the amount of L.733,333. But government wished to raise the money without imposing these additional taxes, or by the imposition of as few as circumstances would permit. For this purpose they proposed to raise the money required, by loan, in the usual way, but to provide, out of the war-taxes, for the interest and redemption of the stock created. They proposed to increase the sinking fund of every such loan, by taking from the war-taxes ten per cent. on its amount for interest and sinking fund, so that if the interest and management absorbed only five per cent., the sinking fund would also amount to five per cent.; if the interest amounted to four per cent., the sinking fund would be six per cent. The sums proposed to be borrowed in this manner were twelve millions for the first three years, fourteen millions for the fourth, and sixteen millions for each succeeding year; making together, in fourteen years, 210 millions, for which, at the rate of ten per cent., the whole of the war-taxes would be mortgaged. It was calculated, that, by the operation of the sinking fund, each loan would be paid off in fourteen years from the time of contracting for it; and, therefore, the L.1,200,000 set apart for the interest and sinking fund of the first loan would be liberated and available for the loan of the fifteenth year. At the end of fifteen years a like sum would be set free, and so on each succeeding year; and thus loans might be continued, on this system, without any limitation of time.

But these successive sums could not be withdrawn from the war-taxes, for interest and sinking fund on loans, and be at the same time applied to expenditure; and, therefore, the deficiency of eleven millions, for which provision was to be made, would, from year to year, increase as the war-taxes became absorbed; and at the end of fourteen years, when the whole twenty-one millions of the war-taxes would be absorbed, instead of eleven millions, the deficiency would be thirty-two millions.

To provide for this growing deficiency, it was proposed to raise supplementary loans, increasing in amount from year to year; and for the interest and sinking fund on such loans, provision was to be made in the usual way by annual permanent taxes; on these loans the sinking fund was not to be more than one per cent.

By the plan proposed, in fifteen years from its commencement, on the supposition of the war continuing so long, the regular loan would have been twelve millions, and the supplementary loan twenty millions.

If the expenses of the war should *have exceeded* the estimate then made, provision for such excess was to *have been* made by other means.

The ministry who proposed this plan not continuing in office, it was acted upon only for one year. "In comparing the merit of different systems," says Dr Hamilton, "the only points necessary to be attended to are the amount of the loans contracted—the part of these loans redeemed—the interest incurred—and the sums raised by taxes. The arrangements of the loan under different branches, and the appropriation of particular funds for payment of their respective interests, are matters of official regulation; and the state of the public finance is neither the better nor the worse, whether they be conducted one way or other. A complicated system may perplex and mislead, but it can never ameliorate." Accordingly, Dr Hamilton has shown, that the whole amount of taxes that would have been paid in twenty years, for an annual loan of eleven millions on the old plan of a sinking fund of one per cent., would be 154 millions. On Lord Henry Petty's plan, these taxes would, in the same time, have been ninety-three millions,—a difference in favour of Lord Henry Petty's plan, of fifty-one millions; but to obtain this exemption we should have been encumbered with an additional debt of L.119,489,788 of money capital, which, if raised in a three per cent. stock at 60, would be equal to a nominal capital of L.199,149,646.

The sinking fund was established with a view to diminish the national debt during peace, and to prevent its rapid increase during war. The only wise and good object of war-taxes is also to prevent the accumulation of debt. A sinking fund and war-taxes are only useful while they are strictly applied to the objects for which they are raised; they become instruments of mischief and delusion when they are made use of for the purpose of providing the interest on a new debt.

In 1809, Mr Perceval, who was then chancellor of the exchequer, mortgaged L.1,040,000 of the war-taxes for the interest and sinking fund of the stock he funded in that year.

By taking more than a million from the war-taxes, not for the annual expenditure, but for the interest of a loan, Mr Perceval rendered it necessary to add one million to the loan of the next and all following years; so that the real effect of this measure differed in no respect from one which should have taken the same sum annually from the sinking fund.

In 1813, the next and most important alteration was made in the sinking fund. Mr Vansittart was then chancellor of the exchequer. It has been already observed, that the national debt amounted to L.238,231,248 in 1786, when Mr Pitt established his sinking fund of one million. By the act of 1786, as soon as the sum of one million amounted, by the aid of the dividends on the stock which was to be purchased by it, to four millions, its accumulation was to cease, and the dividends on the stock purchased were to be available for the public service. If the three per cents were at sixty when this million had accumulated to four millions, the public would have had a disposable fund of L.20,000 per annum; if at eighty, of L.15,000 per annum; and no other relief was to be given to the public till the four millions had purchased the whole sum of 238 millions, the then amount of the debt. In 1792, Mr Pitt added L.200,000 per annum to the sinking fund, and accompanied it by the following observations: "When the sum of four millions was originally fixed as the limit for the sinking fund, it was not in contemplation to issue more annually from the surplus revenue than one million; consequently, the fund would not rise to four millions till a proportion of debt was paid off, the interest of which, together with the annuities which might fall in in the interval, should amount to three millions. But as, on the present supposition, additional sums beyond the original million are to be annually issued from the revenue, and applied to the aid of the sinking fund, the consequence would be, that if that fund, with these additions carried to it, were still to be limited to four millions, it would reach that amount, and cease to accumulate, before as great a portion of the debt is reduced as was originally in contemplation." "In order to avoid this consequence, which would, as far as it went, be a relaxation in our system, I should propose, that whatever may be the additional annual sums applied to the reduction of debt, the fund should not cease to accumulate till the interest of the capital discharged, and the amount of the expired annuities, should, together with the annual million only, and exclusive of any additional sums, amount to four millions."[1]

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[1] Mr Huskisson's *Speech on the State of the Finance and Sinking Fund*, 25th March 1813.

It will be recollected, that in 1792 a provision was made for attaching a sinking fund of one per cent. to each loan separately, which was to be exclusively employed in the discharge of the debt contracted by that loan; but no part of these one per cents were to be employed in the reduction of the original debt of L.238,000,000. The act of 1802 consolidated all these sinking funds, and the public were not to be exempted from the payment of the sinking fund itself, nor of the dividends on the stock to be purchased by the commissioners, till the whole debt existing in 1802 was paid off. Mr Vansittart proposed to repeal the act of 1802, and to restore the spirit of Mr Pitt's act of 1792. He acknowledged that it would be a breach of faith to the national creditor, if the fair construction of that act, the act of 1792, were not adhered to. It was, in Mr Vansittart's opinion, no breach of faith to do away the conditions of the act of 1802. Supposing, however, that the act of 1802 had been really more favourable to the stockholder than that of 1792, it is not easy to comprehend by what arguments it can be proved not to be a breach of faith to repeal the one and enact the other. Were not all the loans from 1802 to 1813 negotiated on the faith of that act? Were not all bargains made between the buyer and seller of stock made on the same understanding? Government had no more right to repeal the act of 1802, and substitute another less favourable to the stockholder, and acknowledged to be so by the minister himself, than it would have had to get rid of the sinking fund altogether. But what we are at present to inquire into is, whether Mr Vansittart did as he professed to do? Did he restore the stockholder to all the advantages of the act of 1792? In the first place, it was declared by the new act, that as the sinking fund consolidated in 1802, had redeemed L.238,350,143. 18s. 1d. exceeding the amount of the debt in 1786 by L.118,895. 12s. 10½d., a sum of capital stock equal to the total capital of the public debt existing on the 5th January 1786, viz. L.238,231,248. 5s. 2¾d. had been satisfied and discharged; "and that in like manner an amount of public debt equal to the capital and charge of every loan contracted since the said 5th January 1786, shall successively, and in its proper order, be deemed and declared to be wholly satisfied and discharged, when and as soon as a further amount of capital stock, not less than the capital of such loan, and producing an interest equal to the dividends thereupon, shall be so redeemed or transferred."

It was also resolved, "that after such declaration as aforesaid, the capital stock purchased by the commissioners for the reduction of the national debt shall from time to time be cancelled; at such times, and in such proportions, as shall be directed by any act of parliament to be passed for such purpose, in order to make provision for the charge of any loan or loans thereafter to be contracted."

It was further resolved, that in order to carry into effect the provisions of the acts of the 32d and 42d of the king, for redeeming every part of the national debt within the period of forty-five years from the time of its creation, it is expedient that in future, whenever the amount of the sum to be raised by loan, or by any other addition to the public funded debt, shall in any year exceed the sum estimated to be applicable in the same year to the reduction of the public debt, an annual sum equal to one half of the interest of the excess of the said loan, or other addition, beyond the sum so estimated to be applicable, shall be set apart out of the monies composing the consolidated fund of Great Britain, and shall be issued at the receipt of the exchequer to the governor and company of the Bank of England, to be by them placed to the account of the commissioners for the reduction of the national debt;[2] and upon the remainder of such loan or other addition, the annual sum of one per cent. on the capital thereof, according to the provisions of the said act.

A provision was also made, for the first time, for one per cent. sinking fund on the unfunded debt then existing, or which might thereafter be contracted.

In 1802, it has been already observed, it was deemed expedient that no provision should be made for a sinking fund of one per cent. on a capital of L.86,796,300; and as it was considered by the proposer of the new regulation in 1813, that he was reverting to the principle of Mr Pitt's act of 1792, he provided that L.867,963 should be added to the sinking fund for the one per cent. on the capital stock created, and which was omitted to be provided for in 1802.[3]

This was the substance of Mr Vansittart's new plan, and which, he contended, was not injurious to the stockholder, as it strictly conformed to the spirit of Mr Pitt's act of 1792.

1*st*, By Mr Pitt's act, no relief could be afforded to the public from the burdens of taxation, till the stock redeemed by the original sinking fund of one million amounted to such a sum as that the dividends on the capital stock redeemed should amount to three millions, making the whole sinking fund four millions; from thenceforth the four millions were to discharge debt as before, but the interest of

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[1] Mr Pitt's Speech, 17th February 1792.

[2] The effect of this clause was to give a sinking fund of one and a half instead of one per cent. on such excess of loan above the sinking fund if the loan were raised in a three per cent. stock, and of two and a half per cent. if raised in a five per cent. stock.

[3]

Mr Vansittart's plan has added to the sinking fund one per cent. on a capital of L.86,796,300	L.867,936
On fifty-six millions of exchequer bills outstanding 5th January 1818, one per cent	560,000
By attaching a sinking fund of one half the interest, instead of one per cent. on a part of the capital created by loans, *he has added to the sinking fund*	793,343
Total added	L.2,221,311
From stock cancelled and available for public service	7,632,969
Total deduction from sinking fund on 5th January 1819	L.5,411,658

On the 3d of February 1819 the commissioners certified that there had been transferred to them L.378,519,969. 5s. 3¾d. capital stock, the interest on which was L.11,448,564. 10s. 6¼d., and that the debt created prior to and by the 37th Geo. III. amounted to L.348,684,197. 1s. 5¾d., with a yearly interest of L 11,446,736. 3s. 4¾d.; and consequently the excess redeemed was L.29,835,772. 3s. 9¼d., with a yearly interest of L.1828. 7s. 1¼d.

debt so discharged was to be available for the public service, and the public was not to be relieved from the charge on the remainder of the debt of 238 millions till the four millions at simple interest, and the further sinking fund which might arise from the falling in of terminable annuities, together with the additional sum of L.200,000 per annum, voted in 1792, with their accumulations, had redeemed the capital of 238 millions. The sinking fund arising from the one per cent. on each loan was directed, by the act of 1792, to be applied to each separate loan for which it was raised. Mr Vansittart thought himself justified, and free from any breach of faith to the stockholder, in taking for the public service, not the interest of four millions, which is all that Mr Pitt's bill would allow him to take, but the interest on 238 millions; and on what plea? because the whole consolidated sinking funds, comprising the one per cent. on every loan raised since 1793, had purchased 238 millions of stock. On Mr Pitt's plan he might have taken L.20,000 per annum from the sinking fund; on his own construction of that act, he took from it more than seven millions per annum.

2dly, Mr Vansittart acknowledged that the stockholder, in 1802, was deprived of the advantage of one per cent. sinking fund on a capital of L.86,796,300; and therefore, to be very just, he gives in 1813 one per cent. on that capital; but should he not have added the accumulation which would have been made in the eleven years from 1802 to 1813, on L.867,963, at compound interest, and which would have given a further addition to the sinking fund of more than L.360,000 per annum?

3dly, On Mr Pitt's plan, every loan was to be redeemed by its sinking fund, under the most unfavourable circumstances, in forty-five years. If the loan was raised in a three per cent. fund at sixty, and the stock was uniformly to continue at that price, a one per cent. sinking fund would redeem the loan to which it was attached in twenty-nine years; but then no relief would be given to the public from taxation till the end of twenty-nine years; and if there had been loans of ten millions every year for that period, when the first loan was paid off, the second would require only one year for its final liquidation; the third two years, and so on. On Mr Vansittart's plan, under the same circumstances, the sinking fund of each and every loan was to be applied, in the first instance, to the redemption of the first loan; and when that was redeemed and cancelled, the whole of the sinking funds were to be applied to the payment of the second, and so on successively. The first loan of ten millions would be cancelled in less than thirteen years, the second in less than six years after the first, the third in a less time, and so on. At the end of the thirteenth year, the public would be relieved from the interest on the first loan, or, which is the same thing, from the necessity of finding fresh taxes for a new loan at the end of thirteen years, for two new loans at the end of nineteen years; but what would be the state of its debt at either of these periods, or at the end of twenty-nine years? Could this advantage be obtained without a corresponding disadvantage? No; the excess of debt on Mr Vansittart's plan would be exactly equal to these various sums, thus prematurely released by cancelled stock, accumulated at compound interest. How could it be otherwise? Is it possible that we could obtain a present relief from the charge of debt without either directly or indirectly borrowing the fund necessary to provide that relief at compound interest? " By this means," says Mr Vansittart, " the loan first contracted would be discharged at an earlier period, and the funds charged with the payment of its interest would become applicable to the public service. Thus, in the event of a long war, a considerable resource might accrue during the course of the war itself, as every successive loan would contribute to accelerate the redemption of those previously existing; and the total amount of charge to be borne by the public, in respect of the public debt, would be reduced to a narrower compass than in the other mode, in which a greater number of loans would be co-existing. At the same time the ultimate discharge of the whole debt would be rather accelerated than retarded."—" It is now only necessary to declare that an amount of stock equal to the whole of the debt existing in 1786 has been redeemed; and that, in like manner, whenever an amount of stock equal to the capital and charge of any loan raised since 1792 shall be redeemed, in its proper order of succession, such loan shall be deemed and taken to be redeemed and satisfied. Every part of the system will then fall at once into its proper place; and we shall proceed with the future redemption with all the advantages which would have been derived from the original adoption of the mode of successive instead of simultaneous redemption. Instead of waiting till the purchase of the whole of the debt consolidated in 1802 shall be completed, that part of it which existed previously to 1792 will be considered as already redeemed, and the subsequent loans will follow in succession, whenever equal portions of stock shall have been purchased. It is satisfactory to observe, that by a gradual and equal progress, we shall have the power of effecting the complete repayment of the debt more speedily than by the present course." Is it possible that Mr Vansittart could so deceive himself as to believe that, by taking five millions from the sinking fund, which would not have been taken by the provisions of the act of 1802, which would not have been taken by the act of 1792, and other sums successively, in shorter times than could have been effected by the provisions of those two acts, he would be enabled to complete the repayment of the debt more speedily? Is it possible that he could believe that, by diminishing the sinking fund, that is, the amount of revenue as compared with expenditure, he would effect the payment of our debt more speedily? It is impossible to believe this. How then are his words to be accounted for? In one way he might have a meaning. It might be this,—I know we shall be more in debt in ten, twenty, and thirty years, on my plan, than we should have been on that of Lord Sidmouth or on that of Mr Pitt; but we shall have effected a greater payment in that time of *the stock now existing*, as the sinking funds attached to future loans will be employed in paying our present debt. On Mr Pitt's plan, those sinking funds would be used for the payment of the new debt to be created; that is to say, of the loans to which they are respectively attached. We shall be more in debt at every subsequent period, it is true; but as our debt may be divided into old stock and new stock, I am correct when I say that we shall have the power of completing the repayment of the debt, meaning by the debt the stock now existing, sooner than by the present course.

This plan of Mr Vansittart was opposed with great ability, both by Mr Huskisson and Mr Tierney. The former gentleman said, " The very foundation of the assumption that the old debt has been paid off, is laid in the circumstance of our having incurred a new debt of a much larger amount; and even allowing that assumption, Mr Vansittart would not have been able to erect his present scheme upon it, if the credit of the country had not been, for the last twenty years, materially impaired by the pressure of that new debt. On the one hand, had the sinking fund been operating at three per cent. during that period, he would not have touched it, even under his own construction of the act of 1792. On the other hand, had the price of the stocks been still lower than it has been, he would have taken from that sinking fund still more largely than he is now, according to his own rule, enabled to take. This then is the new doctrine of the sinking fund;—that, having been originally established ' to prevent the inconvenient and dangerous accumulation of debt hereafter' (to borrow the very words of the act), and for the support and improvement of public credit, it is in the accumulation of new debt that Mr Vansittart found at once the means and the pretence for invading that sinking fund; and the degree of depression of public credit was, with him, the measure of the extent to which that invasion might be carried. And this is the system of which it is gravely predicated, that it is no departure from the letter, and no violation of the spirit, of the act of 1792; and of which we are desired seriously to believe, that it is only the following up and improving upon the original measure of Mr Pitt!—of which measure the clear and governing intention was, that every future loan should, from *the moment of its creation*, carry with it the seeds of its destruction; and that the course of its reimbursement should *that moment* be placed beyond the discretion and control of parliament." (Mr Huskisson's *Speech*, 25th March 1813.)

This is the last alteration that has taken place in the *machinery* of the sinking fund. Inroads more fatal than this which we have just recorded have been made on the fund itself; but they have been made silently and indirectly, while the machinery has been left unaltered.

It has been shown by Dr Hamilton, that no fund can be efficient for the reduction of debt but such as arises from an excess of revenue above expenditure.

Suppose a country at peace, and its expenditure, including the interest of its debt, to be forty millions, its revenue to be forty-one millions, it would possess one million of sinking fund. This million would accumulate at compound interest; for stock would be purchased with it in the market, and placed in the names of the commissioners for paying off the debt. These commissioners would be entitled to the dividends before received by private stockholders, which would be added to the capital of the sinking fund. The fund thus increased would make additional purchases the following year, and would be entitled to a larger amount of dividends, and thus would go on accumulating, till in time the whole debt would be discharged.

Suppose such a country to increase its expenditure one million, without adding to its taxes, and to keep up the machinery of the sinking fund; it is evident that it would make no progress in the reduction of its debt; for though it would accumulate a fund in the same manner as before in the hands of the commissioners, it would, by means of adding to its funded or unfunded debt, and by constantly borrowing, in the same way, the sum necessary to pay the interest on such loans, accumulate its million of debt annually at compound interest, in the same manner as it accumulated its million annually of sinking fund.

But suppose that it continued its operations of investing the sinking fund in the purchase of stock, and made a loan for the million which it was deficient in its expenditure, and that, in order to defray the interest and sinking fund of such loan, it imposed new taxes on the people to the amount of L.60,000, the real and efficient sinking fund would, in that case, be L.60,000 per annum, and no more; for there would be L.1,060,000, and no more, to invest in the purchase of stock, while one million was raised by the sale of stock, or, in other words, the revenue would exceed the expenditure by L.60,000.

Suppose a war to take place, and the expenditure to be increased to sixty millions, while its revenue continued, as before, forty-one millions, still keeping on the operation of the commissioners with respect to the investment of one million. If it were to raise war-taxes for the payment of the twenty millions additional expense, the million of sinking fund would operate to the reduction of the national debt at compound interest as it did before. If it raised twenty millions by loan in the stocks or in exchequer bills, and did not provide for the interest by new taxes, but obtained it by an addition to the loan of the following year, it would be accumulating a debt of twenty millions at compound interest; and while the war lasted, and the same expenditure continued, it would not only be accumulating a debt of twenty millions at compound interest, but a debt of twenty millions per annum; and consequently the real increase of its debt, after allowing for the operation of the million of sinking fund, would be at the rate of nineteen millions per annum at compound interest. But if it provided by new taxes five per cent. interest for this annual loan of twenty millions, it would on the one hand simply increase the debt twenty millions per annum; on the other it would diminish it by one million per annum, with its compound interest. If we suppose that, in addition to the five per cent. interest, it raised also by annual taxes L.200,000 per annum as a sinking fund for each loan of twenty millions, it would, the first year of the war, add L.200,000 to the sinking fund, the second year L.400,000, the third year L.600,000, and so on, L.200,000 for every loan of twenty millions. Every year it would add, by means of the additional taxes, to its annual revenue, without increasing its expenditure. Every year, too, that part of this revenue which was devoted to the purpose of purchasing debt, would increase by the amount of the dividends on the stock purchased; and thus would its revenue still further increase, till at last the revenue would overtake the expenditure, and then once again it would have an efficient sinking fund for the reduction of debt.

It is evident that the result of these operations would be the same, the rate of interest being supposed to be always at five per cent. or any other rate, if, during the excess of expenditure above revenue, the operation of the commissioners in the purchase of stock were to cease. The real increase of the national debt must depend upon the excess of expenditure above revenue, and that would be noways altered by a different arrangement. Suppose that, instead of raising twenty millions the first year, and paying off one million, only nineteen millions had been raised by loan, and the same taxes had been raised, namely, L.1,200,000. As five per cent. would be paid on nineteen millions only, instead of on twenty millions, or L.950,000 for interest instead of one million, there would remain, in addition to the original million, L.250,000 towards the loan of the following year, consequently the loan of the second year would be only for L.18,750,000; but as L.1,200,000 would be again raised by additional taxes, or L.2,400,000 in the whole the second year, besides the original million, there would be a surplus, after paying the interest of both loans, of L.1,512,500, and therefore the loan of the third year would be for L.18,487,500. The progress during five years is shown in the following table:—

	Loan each Year.	Amount of Loans.	Amount of Interest.	Amount of Taxes.	Surplus.
1st year.........	L.19,000,000	L.19,000,000	L.950,000	L.2,200,000	L.1,250,000
2d year..........	18,750,000	37,750,000	1,887,500	3,400,000	1,512,500
3d year..........	18,487,500	56,237,500	2,811,875	4,600,000	1,788,125
4th year.........	18,211,875	74,449,375	3,722,469	5,800,000	2,077,531
5th year.........	17,922,469	92,371,844	4,618,592	7,000,000	2,381,408

If, instead of thus diminishing the loan each year, the same amount of taxes precisely had been raised, and the sinking fund had been applied in the usual manner, the amount of debt would have been exactly the same at any one of these periods. In the third column of the above table it will be seen, that in the fifth year the debt had increased to L.92,371,844. On the supposition that L.200,000 per annum had each year been added to the sinking fund, and invested in stock by the commissioners, the amount of unredeemed debt would have been the same sum of L.92,371,844, as will be seen by the last column of the following table :—

	Loan each Year.	Amount of Loans.	Debt redeemed each Year.	Amount Debt Redeemed.	Interest on Debt Redeemed.	Debt remaining Unredeemed.
1st year.........	L.20,000,000	L.20,000,000	L.1,000,000	L.1,000,000	L.50,000	L.19,000,000
2d year..........	20,000,000	40,000,000	1,250,000	2,250,000	112,500	37,750,000
3d year..........	20,000,000	60,000,000	1,512,500	3,762,500	188,125	56,237,500
4th year.........	20,000,000	80,000,000	1,788,125	5,550,625	277,531	74,449,375
5th year.........	20,000,000	100,000,000	2,077,531	7,628,156	381,408	92,371,844

A full consideration of this subject in all its details has led Dr Hamilton to the conclusion that this first mode of raising the supplies during war, viz. by diminishing the amount of the annual loans, and stopping the purchases of the commissioners in the market, would be more economical, and that it ought therefore to be adopted. In the first place, all the expenses of agency would be saved; in the second, the premium usually obtained by the contractor for the loan would be saved on that part of it which is repurchased by the commissioners in the open market. It is true that the stocks may fall as well as rise between the time of contracting for the loan and the time of the purchases made by the commissioners; and therefore, in some cases, the public may gain by the present arrangement; but as these chances are equal, and a certain advantage is given to the loan contractor to induce him to advance his money, independently of all contingency of future price, the public now give this advantage on the larger sum instead of on the smaller. On an average of years, this cannot fail to amount to a very considerable sum. But both these objections would be obviated, if the clause in the original sinking fund bill, authorizing the commissioners to subscribe to any loan for the public service, to the amount of the annual fund which they have to invest, were uniformly complied with. This is the mode which was for several years strongly urged by Mr Grenfell; and it is far preferable to that which Dr Hamilton recommends. Dr Hamilton and Mr Grenfell both agree, that in time of war, when the expenditure exceeds the revenue, and when therefore we are annually increasing our debt, it is a useless operation to buy a comparatively small quantity of stock in the market, while we are at the same time under the necessity of making large sales: but Dr Hamilton would not keep the sinking fund as a separate fund; Mr Grenfell would, and would have it increased with our debt by some known and fixed rules. We agree with Mr Grenfell. If a loan of twenty millions is to be raised annually, while there is in the hands of the commissioners ten millions which they annually receive, the obvious and simple operation should be really to raise only ten millions by loan; but there is a convenience in calling it twenty millions, and allowing the commissioners to subscribe ten millions. All the objections of Dr Hamilton are by these means removed; there will be no expense for agency; there will be no loss on account of any difference of price at which the public sell and buy. By calling the loan twenty millions, the public will be induced more easily to bear the taxes which are necessary for the interest and sinking fund of twenty millions. Call the loan only ten millions, abolish during the war the very name of the sinking fund in all your public accounts, and it would be difficult to show to the people the expediency of providing L.1,200,000 per annum by additional taxation for the interest of a loan of ten millions. The sinking fund is therefore useful as an engine of taxation; and if the country could depend on ministers that it would be faithfully devoted to the purposes for which it was established, namely, to afford at the termination of war a clear additional surplus revenue beyond expenditure, in proportion to the addition made to the debt, it would be wise and expedient to keep it as a separate fund, subject to fixed rules and regulations.

We shall presently inquire whether there can be any such dependence; and therefore whether the sinking fund is not an instrument of mischief and delusion, and really tending rather to increase our debt and burdens than to diminish them.

It is objected both to Dr Hamilton's and Mr Grenfell's projects, that the disadvantages which they mention are trifling in degree, and are more than compensated by the steadiness which is given to the market by the daily purchases of the commissioners; that the money which those purchases throw into the market is a resource on which bankers and others, who may suddenly want money, with certainty rely.

Those who make this objection forget, that if, by the adoption of this plan, a daily purchaser is withdrawn from the market, so also is a daily seller. The minister gives now to one party ten millions of money to invest in stock, and to another party as much stock as ten millions costs to sell; and as the instalments on the loan are paid monthly, it may fairly be said that the supply is as regular as the demand. It cannot be doubted too, that a loan of twenty millions is negotiated on worse terms than one of ten. It is true that no more stock will remain in the market at the end of the year, whether the one or the other sum be raised by loan; but for a time the contractor must make a large purchase, and he must wait before he can make his sale of ten millions to the commissioners. He is induced then to sell much more largely before the contract, which cannot fail to affect the market price; and it must be recollected, that it is the market price on the day of bidding for the loan which governs the terms on which the loan is negotiated. It is looked to both by the minister who sells and the contractor who purchases. The experiment on Mr Grenfell's suggestion was tried for the first time in 1819; the sum required by government was twenty-four millions, to which the commissioners subscribed twelve millions. In lieu of a loan of twenty-four millions from the contractor, there was one only of twelve millions; and as soon as this arrangement was known, previous to the contract, the stocks rose to four or five per cent., and influenced the terms of the loan in that degree. The reason was, that a preparation had been made for twenty-four or thirty millions loan; and as soon as it was known that it would be for twelve millions only, a part of the stock sold was repurchased. Another advantage attending the smaller loan is, that eight hundred per million, which is paid to the bank for management of the loan, is saved on the sum subscribed by the commissioners.

Dr Hamilton, in another part of his work, observes, " If the sinking fund could be conducted without loss to the public, or even if it were attended with a moderate loss, it would not be wise to propose an alteration of a system which has gained the confidence of the public, and which points out a rule of taxation that has the advantage at least of being steady. If that rule be laid aside, our measures of taxation might become entirely loose."

"The means, and the only means, of restraining the progress of national debt, are saving of expenditure and increase of revenue. Neither of these has a necessary connection with a sinking fund. But if they have an eventual connection, and if the nation, impressed with a conviction of the importance of a system established by a popular minister, has, in order to adhere to it, adopted measures, either of frugality in expenditure, or exertion in raising taxes, which it would not otherwise have done, the sinking fund ought not to be considered as inefficient, and its effects may be of great importance."

It will not, we think, admit of a doubt, that if Mr Pitt's sinking fund, as established in 1792, had been always fairly acted upon,—if, for every loan, in addition to the war-taxes, the interest, and a one per cent. sinking fund, had been invariably supplied by annual taxes,—we should have made rapid progress in the extinction of debt. The alteration in principle which was made in the sinking fund by the act of 1802, was, in our opinion, a judicious one: it provided that no part of the sinking fund, neither that which arose from the original million, with its addition of L.200,000 per annum, nor that which arose from the one per cent. raised for the loans since 1792, should be applicable to the public service, till the whole of the debt then existing was redeemed. We should have been disposed to extend this principle further, and to make a provision, that no part of the sinking fund should be applicable to the public service until the whole of the debt then existing, *and subsequently to be created*, should be redeemed. We do not think that there is much weight in the objection to this clause which was made to it by Lord Henry Petty in 1807, and referred to and more strongly urged by Mr Vansittart in 1813. The noble Lord said, "I need hardly press upon the consideration of the committee, all the evils likely to result from allowing the sinking fund to accumulate without any limit; for the nation would be exposed by that accumulation to the mischief of having a large portion of capital taken at once out of the market, without any adequate means of applying it, which would of course be deprived of its value.

"This evil must appear so serious to any man who contemplates its character, that I have no doubt it will be felt, however paradoxical it may seem, that the redemption of the whole national debt at once would be productive of something like national bankruptcy; for the capital would be equivalent almost to nothing, while the interest he had before derived from it would be altogether extinguished. The other evils which would arise from, and which must serve to demonstrate the mischievous consequence of, a prompt discharge of the national debt, I will show presently. Different arrangements were adopted in the further provisions made on the subject of the sinking fund in 1792 and in 1802. By the first the sinking fund of one per cent., which was thenceforward to be provided for every new loan, was made to accumulate at compound interest until the whole of the debt created by such new loan should be extinguished. And, by the second arrangement, all the various sinking funds existing in 1802 were consolidated, and the whole were appropriated to accumulate at compound interest until the discharge of the whole of the debt also existing in 1802. But the debt created since 1802, amounting to about one hundred millions of nominal capital, is still left subject to the act of 1792, which provides for each separate loan a sinking fund of only one per cent. on the nominal capital. The plan of 1802, engrafted on the former acts of 1786 and 1792, provided for the still more speedy extinction of the debt to which it applied. But it would postpone all relief from the public burdens to a very distant period (computed in 1802 to be from 1834 to 1844); and it would throw such large and disproportionate sums into the money market in the latter years of its operation, as might produce a very dangerous depreciation of the value of money. Many inconveniences might also arise from the sudden stop which would be put to the application of those sums when the whole debt should have been redeemed, and from the no less sudden change in the price of all commodities, which must follow from taking off at one and the same moment taxes to an extent probably then much exceeding thirty millions. The fate of merchants, manufacturers, mechanics, and every description of dealers, in such an event, must be contemplated by every thinking man with alarm; and this applies to my observation respecting a national bankruptcy; for, should the national debt be discharged, and such a weight of taxation taken off at once, all the goods remaining on hand would be, comparatively speaking, of no value to the holders, because, having been purchased or manufactured while such taxation prevailed, they must be undersold by all those who might manufacture the same kind of goods after such taxation had ceased. These objections were foreseen, and to a certain degree acknowledged, at the time when the act of 1802 was passed; and it was then answered, that whenever the danger approached, it might be obviated by subsequent arrangements." A great many of these objections appear to us to be chimerical; but, if well founded, we agree with the latter part of the extract, "whenever the danger approached, it might be obviated by subsequent arrangements." It was not necessary to legislate in 1807 or in 1813, for a danger which could not happen till between 1834 and 1844. It was not necessary to provide against the evils which would arise from a plethora of wealth at a remote period, when our real difficulty was how to supply our immediate and pressing wants.

What are the evils apprehended from the extravagant growth of the sinking fund towards the latter years of its existence? Not that taxation will be increased, because the growth of the sinking fund is occasioned by dividends on stock purchased; but, first, that capital will be returned too suddenly into the hands of the stockholder, without his having any means of deriving a revenue from it; and, secondly, that the remission of taxes, to the amount probably of thirty millions, will have a great effect on the prices of particular commodities, and will be very pernicious to the interest of those who may deal in or manufacture such commodities.

It is obvious that the commissioners have no capital. They receive quarterly or daily certain sums, arising from the taxes, which they employ in the redemption of debt. One portion of the people pay what another portion receive. If the payers employed the sums paid as capital, that is to say, in the production of raw produce, or manufactured commodities, and the receivers, when they received it, employed it in the same manner, there would be little variation in the annual produce. A part of that produce might be produced by A instead of by B: not that even this is a necessary consequence; for A, when he received the money for his debt, might lend it to B, and might receive from him a portion of the produce for interest, in which case B would continue to employ the capital as before. On the supposition, then, that the sinking fund is furnished by capital and not by revenue, no injury would result to the community, however large that fund might be; there might or might not be a transfer of employments, but the annual produce, the real wealth of the country, would undergo no deterioration, and the actual amount of capital employed would neither be increased nor diminished. But if the payers of taxes, for the interest and sinking fund of the national debt, paid them from revenue, then they would retain the same capital as before in active employment; and as this revenue, when received by the stockholder, would be by him employed as capital, there would be, in consequence of this operation, a great increase of capital; every year an additional portion of revenue would be turned into capital, which could be employed only in furnishing new commodities to the market. Now, the doubts of those who speak of the mischievous effects of the great accumulation of the sinking fund, proceed from an opinion they entertain that a country may possess more capital than it can beneficially employ, and that there may be such a glut of commodities that it would be impossible to dispose of them on such terms as to secure to the producers any profits on their capitals. The error of this reasoning has been made manifest by M. Say, in his able work *Economie Politique*, and afterwards by Mr Mill, in his excellent reply to Mr Spence, the advocate of the doctrine of the Economistes. They show that demand is only limited by production; whoever can produce has a right to consume, and he will exercise his privilege to the greatest extent. They do not deny that the demand for particular commodities is limited, and therefore they say there may be a glut of such commodities; but, in a great and civilized country, wants, either for objects of necessity or of luxury, are unlimited, and the employment of capital is of equal extent with our ability of supplying food and necessaries for the increasing population, which a continually augmenting capital would employ. With every increased difficulty of producing additional supplies of raw produce from the land, corn, and the other necessaries of the labourer, would rise. Hence wages would rise. A real rise of wages is necessarily followed by a real fall of profits; and therefore, when the land of a country is brought to the highest state of cultivation, when more labour employed upon it will not yield in return more food than what is necessary to support the labourer so employed, that country is come to the limit of its increase both of capital and population.

The richest country in Europe is yet far distant from that degree of improvement; but if any had arrived at it, by the aid of foreign commerce, even such a country could go on for an indefinite time increasing in wealth and population; for the only obstacle to this increase would be the scarcity, and consequent high value, of food and other raw produce. Let these be supplied from abroad in exchange for manufactured goods, and it is difficult to say where the limit is at which you would cease to accumulate wealth, and to derive profit from its employment. This is a question of the utmost importance in political economy. We hope that the little we have said on the subject will be sufficient to induce those who wish clearly to understand the principle, to consult the works of the able authors whom we have named, to which we acknowledge ourselves so much indebted. If these views are correct, there is then no danger that the accumulated capital which a sinking fund under particular circumstances might occasion, would not find employment, or that the commodities which it might be made to produce would not be beneficially sold, so as to afford an adequate profit to the producers. On this part of the subject it is only necessary to add, that there would be no necessity for stockholders to become farmers or manufacturers. There are always to be found in a great country a sufficient number of responsible persons, with the requisite skill, ready to employ the accumulated capital of others, and to pay to them a share of the profits, and which in all countries is known by the name of interest for borrowed money.

The second objection to the indefinite increase of the sinking fund remains now to be noticed. By the remission of taxes suddenly to the amount probably of thirty millions per annum, a great effect would be produced on the price of goods. "The fate of merchants, manufacturers, mechanics, and every description of dealers, in such an event, must be contemplated by every thinking man with alarm; for should the national debt be discharged, and such a weight of taxation taken off at once, all the goods remaining on hand would be, comparatively speaking, of no value to the holders, because, having been purchased or manufactured while such taxation prevailed, they must be undersold by all those who might manufacture the same kind of goods after such taxation had ceased." It is only, then, on the supposition that merchants, manufacturers, and dealers, would be affected as above described, that any evil would result from the largest remission of taxes. It would not of course be said, that by remitting a tax of L.5 to A, L.10 to B, L.100 to C, and so on, any injury would be done to them. If they added these different sums to their respective capitals, they would augment their permanent annual revenue, and would be contributing to the increase of the mass of commodities, thereby adding to the general abundance. We have already, we hope, successfully shown that an augmentation of capital is neither injurious to the individual by whom it is saved, nor to the community at large; its tendency is to increase the demand for labour, and consequently the population, and to add to the power and strength of the country. But they will not add these respective sums to their capitals; they will expend them as revenue! The measure cannot be said to be either injurious to themselves or to the community on that account. They annually contributed a portion of their produce to the stockholder in payment of debt, who immediately employed it as capital; that portion of produce is now at their own disposal; they may consume it themselves if they please. A farmer who used to sell a portion of his corn for the particular purpose of furnishing this tax, may consume this corn himself; he may get the distiller to make gin of it, or the brewer to turn it into beer, or he may exchange it for a portion of the cloth which the clothier, who is now released from the tax as well as the farmer, is at liberty to dispose of for any commodity which he may desire. It may indeed be said, where is all this cloth, beer, gin, &c. to come from; there was no more than necessary for the general demand before this remission of taxes; if every man is now to consume more, from whence is this supply to be obtained? This is an objection of quite an opposite nature to that which was before urged. Now, it is said there would be too much demand and no additional supply; before, it was contended that the supply would be so great that no demand would exist for the quantity supplied. One objection is no better founded than the other. The stockholders, by previously receiving the payment of their debt, and employing the funds they received productively, or lending them to some other persons who would so employ them, would produce the very additional commodities which the society at large would have it in their power to consume. There would be a general augmentation of revenue, and a general augmentation of enjoyment; and it must not for a moment be supposed that the increased consumption of one part of the people would be at the expense of another part. The good would be unmixed, and without alloy. It remains then only to consider the injury to traders from the fall in the price of goods; and the remedy against this appears to be so very simple, that it surprises us that it should ever have been urged as an objection. In laying on a new tax, the stock in hand of the article taxed is commonly ascertained; and, as a measure of justice, the dealer in such article is required to pay the imposed tax on his stock. Why may not the reverse of this be done? Why may not the tax be returned to each individual on his stock in hand, whenever it shall be thought expedient to take off the tax from the article which he manufactures, or in which he deals? It would only be necessary to continue the taxes for a very short time for this purpose. On no view of this question can we see any validity in the arguments which we have quoted, and which were so particularly insisted on by Mr Vansittart.

There are some persons who think that a sinking fund, even when strictly applied to its object, is of no national benefit whatever. The money which is contributed, they say, would be more productively employed by the payers of the taxes than by the commissioners of the sinking fund. The latter purchase stock with it, which probably does not yield five per cent.; the former would obtain from the employment of the same capital much more than five per cent., consequently the country would be enriched by the difference. There would be in the latter case a larger nett supply of the produce of our land and labour, and that is the fund from which ultimately all our expenditure must be drawn. Those who maintain this opinion do not see that the commissioners merely receive money from one class of the community, and pay it to another class, and that the real question is, Which of these two classes will employ it most productively? Forty millions per annum are raised by taxes, of which twenty millions, we will suppose, is paid for sinking fund, and twenty millions for interest of debt. After a year's purchase is made by the commissioners, this forty millions will be divided differently; nineteen millions will be paid for interest, and twenty-one millions for sinking fund; and so from year to year, though forty millions is always paid on the whole, a less and less portion of it will be paid for interest, and a larger portion for sinking fund, till the commissioners have purchased the whole amount of stock, and then the whole forty millions will be in the hands of the commissioners. The sole question then with regard to profits is, whether those who pay this forty millions, or those who receive it, will employ it most productively; the commissioners, in fact, never employing it at all, their business being to transfer it to those who will employ it. Now, of this we are quite certain, that all the money received by the stockholder in return for his stock must be employed as capital; for if it were not so employed, he would be deprived of his revenue, on which he had habitually depended. If then the taxes which are paid towards the sinking fund be derived from the revenue of the country, and not from its capital, by this operation a portion of revenue is yearly realized into capital, and consequently the whole revenue of the society is increased; but it might have been realized into capital by the payer of the tax if there had been no sinking fund, and he had been allowed to retain the money to his own use. It might so, and if it had been so disposed of, there can be no advantage in respect to the accumulation of the wealth of the whole society by the establishment of the sinking fund; but it is not so probable that the payer of the tax would make this use of it as the receiver. The receiver, when he gets paid for his stock, only substitutes one capital for another; and he is accustomed to look to his capital for all his yearly income. The payer will have all that he paid in addition to his former revenue; if the sinking fund be discontinued he may indeed realize it into capital, but he may also use it as revenue, increasing his expenditure on wine, houses, horses, clothes, &c. The payer might too have paid it from his capital; and therefore the employment of one capital might be substituted for another. In this case, too, no advantage arises from the sinking fund, as the national wealth would accumulate as rapidly without it as with it; but if any portion of the taxes paid expressly for the sinking fund be paid from revenue, and which, if not so paid, would have been expended as revenue, then there is a manifest advantage in the sinking fund, as it tends to increase the annual produce of our land and labour; and as we cannot but think that this would be its operation, we are clearly of opinion that a sinking fund, honestly applied, is favourable to the accumulation of wealth.

Dr Hamilton has followed Dr Price in insisting much on the disadvantage of raising loans during war in a three per cent. stock, and not in a five per cent. stock. In the former, a great addition is made to the nominal capital, which is generally redeemed during peace at a greatly advanced price. Three per cents which were sold at sixty will probably be repurchased at eighty, and may come to be bought at 100; whereas in five per cents there would be little or no increase of nominal capital, and as all the stocks are redeemable at par, they would be paid off with very little loss. The correctness of this observation must depend on the relative prices of these two stocks. During the war in 1798, the three per cents were at fifty, while the five per cents were at seventy-three; and at all times the five per cents bear a very low relative price to the three per cents. Here then is one disadvantage to be put against another, and it must depend upon the degree in which the prices of the three per cents and five per cents differ, whether it be more desirable to raise the loan in the one or in the other. We have little doubt, that during many periods of the war, there would have been a decided disadvantage in making the loan in five per cent. stock in preference to three per cent. stock. The market in five per cent. stock, too, is limited; a sale cannot be forced in it without causing a considerable fall, a circumstance known to the contractors, and against which they would naturally take some security in the price which they bid for a large loan if in that stock. A premium of two per cent. on the market price may appear to them sufficient to compensate them for their risk in a loan in three per cent. stock; they may require one of five per cent. to protect them against the dangers they apprehend from taking the same loan in a five per cent. stock.

II. After having duly considered the operation of a sinking fund derived from annual taxes, we come now to the consideration of the best mode of providing for our annual expenditure, both in war and peace; and further, to examine whether a country can have any security that a fund raised for the purpose of paying debt will not be misapplied by ministers, and be really made the instrument for creating new debt, so as never to afford a rational hope that any progress whatever will permanently be made in the reduction of debt.

Suppose a country to be free from debt, and a war to take place which should involve it in an annual additional expenditure of twenty millions—there are three modes by which this expenditure may be provided; first, taxes may be raised to the amount of twenty millions per annum, from which the country would be totally freed on the return of peace; or, secondly, the money might be annually borrowed and funded, in which case, if the interest agreed upon was five per cent. a perpetual charge of one million per annum taxes would be incurred for the first year's expense, from which there would be no relief during peace, or in any future war,—of an additional million for the second year's expense, and so on for every year that the war might last. At the end of twenty years, if the war lasted so long, the country would be perpetually encumbered with taxes of twenty millions per annum, and would have to repeat the same course on the recurrence of any new war. The third mode of providing for the expenses of the war would be to borrow annually the twenty millions required as before, but to provide by taxes a fund, in addition to the interest, which, accumulating at compound interest, should finally be equal to the debt. In the case supposed, if money was raised at five per cent. and a sum of L.200,000 per annum in addition to the million for interest were provided, it would accumulate to twenty millions in forty-five years; and, by consenting to raise L.1,200,000 per annum by taxes for every loan of twenty millions, each loan would be paid off in forty-five years from the time of its creation; and in forty-five years from the termination of the war, if no new debt were created, the whole would be redeemed, and the whole of the taxes would be repealed.

Of these three modes, we are decidedly of opinion that the preference should be given to the first. The burdens of the war are undoubtedly great during its continuance, but at its termination they cease altogether. When the pressure of the war is felt at once, without mitigation, we shall be less disposed wantonly to engage in an expensive contest; and, if engaged in it, we shall be sooner disposed to get out of it, unless it be a contest for some great national interest. In point of economy, there is no real difference in either of the modes; for twenty millions in one payment, one million per annum for ever, or L.1,200,000 for forty-five years, are precisely of the same value; but the people who pay the taxes never so estimate them, and therefore do not manage their private affairs accordingly. We are too apt to think that the war is burdensome only in proportion to what we are at the moment called to pay for it in taxes, without reflecting on the probable duration of such taxes. It would be difficult to convince a man possessed of L.20,000, or any other sum, that a perpetual payment of L.50 per annum was equally burdensome with a single tax of L.1000. He would have some vague notion that the L.50 per annum would be paid by posterity, and would not be paid by him; but if he leaves his fortune to his son, and leaves it charged with this perpetual tax, where is the difference whether he leaves him L.20,000 with the tax, or L.19,000 without it? This argument of charging posterity with the interest of our debt, or of relieving them from a portion of such interest, is often used by otherwise well-informed people; but we confess we see no weight in it. It may indeed be said that the wealth of the country may increase, and as a portion of the increased wealth will have to contribute to the taxes, the proportion falling on the present amount of wealth will be less, and thus posterity will contribute to our present expenditure. That this may be so, is true: but it may also be otherwise; the wealth of the country may diminish; individuals may withdraw from a country heavily taxed; and therefore the property retained in the country may pay more than the just equivalent, which would at the present time be received from it. That an annual tax of L.50 is not deemed the same in amount as L.1000 ready money, must have been observed by every body. If an individual were called upon to pay L.1000 to the income-tax, he would probably endeavour to save the whole of it from his income; he would do no more if, in lieu of this war-tax, a loan had been raised, for the interest of which he would have been called upon to pay only L.50 income-tax. The war-taxes, then, are more economical; for when they are paid, an effort is made to save to the amount of the whole expenditure of the war, leaving the national capital undiminished. In the other case, an effort is only made to save to the amount of the interest of such expenditure, and therefore the national capital is diminished in amount. The usual objection made to the payment of the larger tax is, that it could not be conveniently paid by manufacturers and landholders, for they have not large sums of money at their command. We think that great efforts would be made to save the tax out of their income, in which case they could obtain the money from this source; but suppose they could not, what should hinder them from selling a part of their property for money, or of borrowing it at interest? That there are persons disposed to lend, is evident from the facility with which government raises its loans. Withdraw this great borrower from the market, and private borrowers would be readily accommodated. By wise regulations and good laws, the greatest facilities and security might be afforded to individuals in such transactions. In the case of a loan, A advances the money, and B pays the interest, and every thing else remains as before. In the case of war-taxes, A would still advance the money and B pay the interest, only with this difference, he would pay it directly to A; now he pays it to government, and government pays it to A.

These large taxes, it may be said, must fall on property, which the smaller taxes now do not exclusively do. Those who are in professions, as well as those who live from salaries and wages, and who now contribute annually to the taxes, could not make a large ready money payment; and they would therefore be benefited at the expense of the capitalist and landholder. We believe that they would be very little, if at all, benefited by the system of war-taxes. Fees to professional men, salaries, and wages, are regulated by the prices of commodities, and by the relative situation of those who pay and of those who receive them. A tax of the nature proposed, if it did not disturb prices, would, however, change the relation between these classes, and a new arrangement of fees, salaries, and wages, would take place, so that the usual level would be restored.

The reward that is paid to professors, &c. is regulated, like every thing else, by demand and supply. What produces the supply of men, with certain qualifications, is not any particular sum of money, but a certain relative position in society. If you diminish, by additional taxes, the incomes of landlords and capitalists, leaving the pay of professions the same, the relative position of professions would be raised; an additional number of persons would therefore be enticed into those lines, and the competition would reduce the pay.

The greatest advantage that would attend war-taxes would be the little permanent derangement that they would cause to the industry of the country. The prices of our commodities would not be disturbed by taxation; or if they were, they would only be so during a period when every thing is disturbed by other causes during war. At the commencement of peace every thing would be at its natural price again, and no inducement would be afforded to us by the direct effect, and still less by the indirect effect, of taxes on various commodities, to desert employments in which we have peculiar skill and facilities, and engage in others in which the same skill and facilities are wanting. In a state of freedom every man naturally engages himself in that employment for which he is best fitted, and the greatest abundance of products is the result. An injudicious tax may induce us to import what we should otherwise have produced at home, or to export what we should otherwise have received from abroad; and in both cases we shall receive, besides the inconvenience of paying the tax, a less return for a given quantity of our labour than what that labour would, if unfettered, have produced. Under a complicated system of taxation, it is impossible for the wisest legislature to discover all the effects, direct and indirect, of its taxes; and if it cannot do this, the industry of the country will not be exerted to the greatest advantage. By war-taxes, we should save many millions in the collection of taxes. We might get rid of at least some of the expensive establishments, and the army of officers which they employ would be dispensed with. There would be no charges for the management of debt. Loans would not be raised at the rate of L.50 or L.60 for a nominal capital of L.100, to be repaid at L.70, L.80, or possibly at L.100; and perhaps, what is of more importance than all these together, we might get rid of those great sources of the demoralization of the people, the Customs and Excise. In every view of this question we come to the same conclusion, that it would be a great improvement in our system for ever to get rid of the practice of funding. Let us meet our difficulties as they arise, and keep our estates free from permanent encumbrances, of the weight of which we are never truly sensible till we are involved in them past remedy.

We are now to compare the other two modes of defraying the expenses of a war, one by borrowing the capital expended, and providing annual taxes permanently for the payment of the interest; the other by borrowing the capital expended, and, besides providing the interest by annual taxes, raising, by the same mode, an additional revenue (and which is called the sinking fund), with a view, within a certain determinate time, to redeem the original debt, and get rid entirely of the taxes.

Under the firm conviction that nations will at last adopt the plan of defraying their expenses, ordinary and extraordinary, at the time they are incurred, we are favourable to every plan which shall soonest redeem us from debt; but then we must be convinced that the plan is effective for the object. This, then, is the place to examine whether we have or can have any security for the due application of the sinking fund to the payment of debt.

When Mr Pitt, in 1786, established the sinking fund, he was aware of the danger of intrusting it to ministers and parliament; and therefore provided that the sums applicable to the sinking fund should be paid by the exchequer into the hands of commissioners, by quarterly payments, who should be required to invest equal sums of money in the purchase of stock, on four days in each week, or about fifty days in each quarter. The commissioners named were, the Speaker of the House of Commons, the Chancellor of the Exchequer, the Master of the Rolls, the Accountant-General of the Court of Chancery, and the Governor and Deputy-Governor of the Bank. He thought that, under such management, there could be no misapplication of the funds, and he thought correctly, for the commissioners have faithfully fulfilled the trust reposed in them. In proposing the establishment of a sinking fund to parliament in 1786, Mr Pitt said, "With regard to preserving the fund to be invariably applied to the diminution of the debt inalienable, it was the essence of his plan to keep that sacred, and most effectually so in time of war. He must contend, that to suffer the fund at any time, or on any pretence, to be diverted from its proper object, would be to ruin, defeat, and overturn his plan. He hoped, therefore, when the bill he should introduce should pass into a law, that house would hold itself solemnly pledged not to listen to a proposal for its repeal on any pretence whatever."

"If this million, to be so applied, is laid out with its growing interest, it will amount to a very great sum in a period that is not very long in the life of an individual, and but an hour in the existence of a great nation; and this will diminish the debt of this country so much as to prevent the exigencies of war from raising it to the enormous height it has hitherto done. In the period of twenty-eight years, the sum of a million, annually improved, would amount to four millions per annum; but care must be taken that this fund be not broken in upon: *this has hitherto been the bane of this country;* for if the original sinking fund had been properly preserved, it is easy to be proved that our debts, at this moment, would not have been very burdensome: *this has hitherto been in vain endeavoured to be prevented by acts of parliament;* the minister has uniformly, when it suited his convenience, gotten hold of this sum, which ought to have been regarded as most sacred. What then is the way of preventing this? The plan I mean to propose is this, that this sum be vested in certain commissioners, to be by them applied quarterly to buy up stock; by this means, no sum so great will ever be ready to be seized upon on any occasion, and the fund will go on without interruption. Long and very long has this country struggled under its heavy load, without any prospect of being relieved; but it may now look forward to an object upon which the existence of this country depends; it is therefore proper it should be fortified as much as possible against alienation. By this manner of paying L.250,000 quarterly into the hands of commissioners, it would make it impossible to take it by stealth; and the advantage would be too well felt ever to suffer a public act for that purpose. A minister could not have the confidence to come to this house and desire the repeal of so beneficial a law, which tended so directly to relieve the people from burden."

Mr Pitt flattered himself most strangely, that he had found a remedy for the difficulty which "had hitherto been the bane of this country:" he thought he had discovered means for preventing "ministers, when it suited their convenience, from getting hold of this sum, which ought to be regarded as most sacred." With the knowledge of parliament which he had, it is surprising that he should have relied so firmly on the resistance which the House of Commons would offer to any plan of ministers for violating the sinking fund. Ministers have never desired the partial repeal of this law, without obtaining a ready compliance from parliament.

We have already shown, that in 1807, one chancellor of the exchequer proposed to relieve the country from taxation, with a very slight exception, for several years together, while we were, during war, keeping up, if not increasing, our expenditure, and supplying it by means of annual loans. What is this but disposing of a fund which ought to have been regarded as most sacred?

In 1809, another chancellor of the exchequer raised a loan, without raising any additional taxes to pay the interest of it, but pledged a portion of the war-taxes for that purpose, thereby rendering an addition to that amount necessary to the loan of the following and every succeeding year. Was not this disposing of the sinking fund by stealth, and accumulating debt at compound interest? Another chancellor of the exchequer, in 1813, proposed a partial repeal of the law, by which seven millions per annum of the sinking fund was placed at his disposal, and which he has employed in providing for the interest of new debt. This was done with the sanction of parliament, and, as we apprehend, in direct violation of all the laws which had before been passed regarding the sinking fund. But what has become of the remainder of this fund, after deducting the seven millions taken from it by the act of 1813?[1] It should now be sixteen millions, and at that amount it was returned in the annual finance accounts last laid before parliament. The finance committee appointed by the House of Commons did not fail to see that nothing can be deemed an efficient fund for the redemption of debt in time of peace, but such as arises from an excess of revenue above expenditure; and as that excess, under the most favourable view, was not quite two millions, they considered that sum as the real efficient sinking fund, which was now applicable to the discharge of debt. If the act of 1802 had been complied with, if the intentions of Mr Pitt had been fulfilled, we should now have had a clear excess of revenue of above twenty millions, applicable to the payment of the debt; as it is, we have two millions only, and if we ask ministers what has become of the remaining eighteen millions, they show us an expensive peace establishment, which they have no other means of defraying but by drafts on this fund, or several hundred millions of three per cents, on which it is employed in discharging the interest. If ministers had not had such an amount of taxes to depend on, would they have ventured, year after year, to encounter a deficiency of revenue below expenditure, for several years together, of more than twelve millions? It is true that the measures of Mr Pitt locked it up from their immediate seizure; but they knew it was in the hands of the commissioners, and presumed as much upon it, and justly, with the knowledge they had of parliament, as if it had been in their own. They considered the commissioners as their trustees, accumulating money for their benefit, and of which they knew that they might dispose whenever they should consider that the urgency of the case required it. They seem to have made a tacit agreement with the commissioners, that they should accumulate twelve millions per annum at compound interest, while they themselves accumulated an equal amount of debt, also at compound interest. The facts are indeed no longer denied. In the last session of parliament, for the first time, the delusion was acknowledged by ministers, after it had become manifest to every other person; but yet it is avowed to be their intention to go on with this nominal sinking fund, raising a loan every year for the difference between its real and nominal amount, and letting the commissioners subscribe to it. On what principle this can be done, it would be difficult to give any rational account. Perhaps it may be said that it would be a breach of faith to the stockholder to take away the sinking fund; but is it not equally a breach of faith if the government itself sells to the commissioners the greatest part of the stock which they buy? The stockholder wants something substantial and real to be done for him, and not any thing deceitful and delusive. Disguise it as you will, if of fourteen millions to be invested by the commissioners in time of peace, the stock which twelve millions will purchase is sold by the government itself, which creates it for the very purpose of obtaining these twelve millions, and only stock for two millions is purchased in the market, and no taxes for sinking fund or interest are provided for the twelve millions which government takes; the result is precisely the same to the stockholder, and to every one concerned, as if the sinking fund was reduced to two millions. It is utterly unworthy of a great country to countenance such pitiful shifts and evasions.

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[1] Some of the following observations refer to the period when this article was originally written.—Ed.

The sinking fund, then, has, instead of diminishing the debt, greatly increased it. The sinking fund has encouraged expenditure. If, during war, a country spends twenty millions per annum, in addition to its ordinary expenditure, and raises taxes only for the interest, it will in twenty years accumulate a debt of four hundred millions, and its taxes will increase to twenty millions per annum. If, in addition to the million per annum, taxes of L.200,000 were raised for a sinking fund, and regularly applied to the purchase of stock, the taxes, at the end of twenty years, would be twenty-four millions, and its debt only three hundred and forty-two millions; for fifty-eight millions will have been paid off by the sinking fund; but if at the end of this period new debt shall be contracted, and the sinking fund itself, with all its accumulations, amounting to L.6,940,000, be absorbed in the payment of interest on such debt, the whole amount of debt will be five hundred and thirty-eight millions, exceeding that which would have existed if there had been no sinking fund by a hundred and thirty-eight millions. If such an additional expenditure were necessary, provision should be made for it without any interference with the sinking fund. If, at the end of the war, there is not a clear surplus of revenue above expenditure of L.6,940,000 on the above supposition, there is no use whatever in persevering in a system which is so little adequate to its object. After all our experience, however, we are again toiling to raise a sinking fund; and in the last session of parliament three millions of new taxes were voted, with the avowed object of raising the remnant of our sinking fund, now reduced to two millions, to five millions. Is it rash to prognosticate that this sinking fund will share the fate of all those which have preceded it? Probably it will accumulate for a few years, till we are engaged in some new contest, when ministers, finding it difficult to raise taxes for the interest of loans, will silently encroach on this fund; and we shall be fortunate if, in their next arrangement, we shall be able to preserve out of its wreck an amount so large as two millions.

It is, we think, sufficiently proved that no securities can be given by ministers that the sinking fund shall be faithfully devoted to the payment of debt, and without such securities we should be much better without such a fund. To pay off the whole, or a great portion of our debt, is, in our estimation, a most desirable object, if, at the same time, we acknowledged the evils of the funding system, and resolutely determined to carry on our future contests without having recourse to it. This cannot, or rather will not, be done by a sinking fund as at present constituted, nor by any other that we can suggest; but if, without raising any fund, the debt were paid by a tax on property, once for all, it would effect its object. Its operation might be completed in two or three years during peace; and if we mean honestly to discharge the debt, we do not see any other mode of accomplishing it. The objections to this plan are the same as those which we have already attempted to answer in speaking of war-taxes. The stockholders, being paid off, would have a large mass of property, for which they would be eagerly seeking employment. Manufacturers and landholders would want large sums for their payments into the exchequer. These two parties would not fail to make an arrangement with each other, by which one party would employ their money, and the other raise it. They might do this by loan, or by sale and purchase, as they might think it most conducive to their respective interests; with this the state would have nothing to do. Thus, by one great effort, we should get rid of one of the most terrible scourges which was ever invented to afflict a nation; and our commerce would be extended without being subject to all the vexatious delays and interruptions which our present artificial system imposes upon it.

There cannot be a greater security for the continuance of peace, than the imposing on ministers the necessity of applying to the people for taxes to support a war. Suffer the sinking fund to accumulate during peace to any considerable sum, and very little provocation would induce them to enter into a new contest. They would know that, by a little management, they could make the sinking fund available to the raising of a new supply, instead of being available to the payment of the debt. The argument is now common in the mouths of ministers, when they wish to lay on new taxes, for the purpose of creating a new sinking fund, in lieu of one which they have just spent, to say, "It will make foreign countries respect us; they will be afraid to insult or provoke us, when they know that we are possessed of so powerful a resource." What do they mean by this argument, if the sinking fund be not considered by them as a war fund, on which they can draw in support of the contest? It cannot, at one and the same time, be employed in the annoyance of an enemy, and in the payment of debt. If taxes are, as they ought to be, raised for the expenses of a war, what facility will a sinking fund give to the raising of them? none whatever. It is not because the possession of a sinking fund will enable them to raise new and additional taxes that ministers prize it; for they know it will have no such effect; but because they know that they will be enabled to substitute the sinking fund in lieu of taxes, and employ it, as they have always done, in war, and providing interest for fresh debt. Their argument means this, or it means nothing; for a sinking fund does not necessarily add to the wealth and prosperity of a country; and it is on that wealth and prosperity that it must depend, whether new burdens can be borne by the people. What did Mr Vansittart mean in 1813, when he said that "the advantage which his new plan of finance would hereafter give, in furnishing a hundred millions in time of peace, as a fund against the return of hostilities, was one of great moment. This would place an instrument of force in the hands of parliament, which might lead to the most important results." "It might be objected by some, that keeping in reserve a large fund to meet the expenses of a new war, might be likely to make the government of this country arrogant and ambitious, and therefore have a tendency unnecessarily to plunge us in new contests;" not a very unreasonable objection, we should think. How does Mr Vansittart answer it? "On this subject he would say, from long experience and observation, that it would be better for our neighbours to depend on the moderation of this country, than for this country to depend on them. He should not think the plan objectionable on this account. If the sums treasured up were misapplied by the arrogant or ambitious conduct of our government, the blame must fall on the heads of those who misused it, not on those who put it into their hands for purposes of defence. They did their duty in furnishing the means of preserving the greatness and glory of the country, though those means might be used for the purposes of ambition, rapine, and desolation." These are very natural observations from the mouth of a minister; but we are of opinion that such a treasure would be more safe in the custody of the people, and that parliament have something more to do than to furnish ministers with the means of preserving the greatness and glory of the country. It is their duty to take every security that the resources of the country are not misapplied "by the arrogant and ambitious conduct of our government," or "used for the purposes of ambition, rapine, and desolation."

On the extraordinary assumption that there was any thing in Mr Vansittart's plan that would more effectually than the old plan allow a hundred millions hereafter to be appropriated to the public service, Dr Hamilton has the following observations:

"We are altogether at a loss to form a distinct conception of the *valuable treasure* here held forth. So soon as any stock is purchased by the commissioners, and stands invested in their name, a like amount of the public debt is in fact discharged. Whether a parliamentary declaration to the effect be made or not, is only a matter of form. If the money remain invested in the name of the commissioners, no doubt it may be transferred again to purchasers in the stock exchange when war broke out anew; and money may be raised for the public in this manner. It is an application to the public to invest their capital in the purchase of this dormant stock." "It is true, that if the taxes imposed during war for the purpose of a sinking fund be continued after peace is restored, till a large sum (suppose L.100,000,000) be vested in the hands of the commissioners, the public, upon the renewal of the war, may spend to that amount without imposing fresh taxes; an advantage," observes Mr Huskisson, "not only not exclusively belonging to this plan, but unavoidable under any plan of a sinking fund in time of peace." Mr Vansittart ought to have said, "if our sinking fund should accumulate in time of peace to so large a sum that I can take five millions per annum from it, I can spend L.100,000,000 in a new war without coming to you for fresh taxes: the disadvantages of my plan are, that by now taking L.7,000,000 per annum from it, and making a provision for speedily, and at regular intervals, appropriating more of this fund to present objects, the sinking fund will be so much diminished that I cannot so soon, by a great many years, avail myself of the five millions for the purpose which I have stated." (D. R.)

The year 1825 found L.5,000,000 appropriated to a sinking fund, but this was reduced to L.3,000,000, and even then it was found that it could not be continued with advantage to the nation, and in the year 1828 a committee was appointed by the House of Commons to consider the question, which, after full consideration, came to the only reasonable conclusion, that the true principle upon which to calculate the amount applicable as a sinking fund for the redemption of the debt was the excess of revenue over expenditure. But this decision did not cause the sound policy to be observed, and the deficiency bills payable out of current revenue were met by the fund destined for the extinction of the debt, and so the whole history of the sinking fund, from 1716 up to the last moment, goes to demonstrate the obvious fact that the redemption of the debt by the application of borrowed capital to the purchase of stock is a sham and a delusion, and that the accumulation by any means of a large amount of the securities of the state in the hands of commissioners, has failed in its purpose of securing inviolate the sinking fund for its destined purpose. The only means of diminishing the burden of the national debt is by employing our surplus revenue for that purpose, and it appears to us that the only efficacious manner of so employing it is by the purchase of stock by the state, to cancel and expunge it at once and for ever, so that the surplus revenue of the country would be larger every year by the amount of the interest on the stock cancelled from the period of the commencement of the operation.

Thus it would be out of the power of the minister to retransfer to the public the stock redeemed, in order to apply it to any extraordinary expenditure, and if he did not apply to the people for taxes to support a war, at all events he must come to them for authority to raise the required means by loan, a process which they can understand, and which admits of no mystification. And the sale to the public, by commissioners in whom the stock accumulated under the old system is vested, is neither more nor less than a loan, the purchasers being, in fact, the lenders to the state of the money received for the stock sold.

But these financial operations must be viewed practically as well as theoretically. It has been shown that an accumulated sinking fund never has been preserved inviolate for application to the purpose for which it was designed, and in the same manner an accumulating excess of revenue over expenditure comes with its embarrassment to a finance minister in proportion to its amount. Every tax is more or less inconvenient, not to say oppressive; and when the taxpayer sees at the disposal of the minister the means of its entire or partial repeal he is not disposed to continue its payment beyond the immediate exigency of the time, nor to exchange the present relief which he will experience from its remission for any prospective advantage whatever. Thus, if every year there remained a surplus by which the interest of the debt could be diminished, and this surplus increased in a compound ratio by the diminution otherwise of the charge on the consolidated fund, the people through their representatives in parliament would, in all probability, insist on its application to their present rather than to their future and more solid advantage. Since the adoption of a liberal fiscal policy a large amount of taxation has been repealed. We should have made great progress in the diminution of our debt if we had annually cancelled an equal amount of consols, but we should have failed to give direct relief to the manufacturers and consumers of glass, and soap, and bricks, and other articles upon which the tax has been repealed, and these would not have been satisfied if, with a large surplus revenue, they had been told that in some fifty or sixty years a taxation of L.27,000,000 would be at one blow remitted, in proof of which it may be observed, that among the numerous financial projects which have been contemplated by various administrations for the disposal of the long annuities in the year 1860, when an annual charge of L.1,294,447, and in the year 1867, when a further annuity of L.585,740 will expire, the reduction of the debt has scarcely been mentioned.

In the year 1854, when the unparalleled and increasing prosperity of the empire was rudely interrupted by the breaking out of the Russian war, the Chancellor of the Exchequer announced in Parliament his intention to carry on the expenditure from the income of the country, and to make taxation support the war. But though he did not remain in office long enough to be compelled officially to acknowledge it himself, this was at once discovered to be impracticable by his successor, and in the very first year after the commencement of hostilities L.14,475,000 of increased taxation having been imposed, and found to be less by L.15,721,000 than was required, the government did not deem it possible to induce the House of Commons to submit to so large an additional impost, and were compelled to raise L.16,000,000 by loan, entailing a permanent annual charge of L.480,000, and a further charge of L.116,000 terminable in thirty years.

It was seen with regret by all those who coincide in the principles here enunciated, that the fallacious system to which so many eminent authorities have objected of the old sinking fund, was on this occasion revived by a clause inserted in the bill authorising the loan, which was intended to provide for the future extinction of the debt of L.16,000,000 then incurred, by pledging parliament to an annual payment of L.1,000,000 during sixteen years, to commence at the termination of the Russian war. It is difficult to understand the object of the Chancellor of the Exchequer in volunteering to enter into this engagement with the stock-holder, as while it could not fail to fetter him in his future operations, it was of scarcely any available value to him in the negotiation of his loan.

Although in the then temper of the House of Commons, indignant at the previous parsimony and want of energy which they conceived to have occasioned great disaster to our army in the Crimea, no opposition was made to the whole proposition, nevertheless this part of it did not pass without comment and animadversion. In the House of Lords Lord Monteagle protested strongly against it. "This prospective engagement," he said, "assumed that there would either be a surplus revenue of L.1,000,000 a year, or that parliament would be justified in adding L.1,000,000 a year to the taxation of the country, in order to provide L.1,000,000 annually to apply to the reduction of the debt just contracted. The only third alternative was that of a new loan, or, in other words, the old folly of paying debt with borrowed money. All experience proved that these prospective engagements could not be relied on . . . . It should be remembered that war was not only an expensive operation in itself, but that when it was brought to a close there were always heavy bills to pay, ships to be paid off, retired allowances to provide, in short, the close of war was even more expensive than war itself. Suppose then no surplus existed, and that parliament were unwilling to increase taxation, if money should have been borrowed in time of war, and that at its termination money should have to be borrowed for the purpose of paying off the debt, that would be recurring to one of the most exploded blunders in finance, that of paying off the debt with borrowed money."

It is to be regretted that this fallacious system should have been disinterred, as it was avoidable, but it was practically unavoidable to raise as much as half the requirements of the war by taxation, and the minister was compelled, so far as respected L.16,000,000, to call upon the people for the interest instead of the principal of the war expenditure. And so it is to be feared we shall always find the actual practice opposed to the sound theory, and while on the one hand the nation will not have the courage to look its predominant difficulty fairly in the face, and endeavour to diminish or extinguish its debt by a great temporary sacrifice, we shall scarcely, in our time, see any sound, absolute, and defined system adopted to that end by the administrators of her finances, which will be impregnable to circumstances and independent of exigencies. And if we except the creation of terminable annuities, some of which do not expire till the year 1893, little has been done during nearly half a century of peace and prosperity to diminish the incumbrance of the country; and though the creation of this description of security has been a favourite system with financiers of later years as a means for the reduction of the debt, it may be questioned how far it is consistent with sound policy to create in such a manner a fixed sinking fund, which is always payable whether the revenue of the country be in surplus or deficit.

The following table details the progress of the funded debt of Great Britain for the last thirty-five years.

National Debt existing on 5th January in each year since 1820.

Year.	Unredeemed Debt.	Annual Interest payable.	Year.	Unredeemed Debt.	Annual Interest payable.
	L.	L.		L.	L.
1821	801,565,310	28,064,720	1839	761,347,690	24,135,179
1822	795,312,767	27,875,840	1840	766,547,684	24,290,239
1823	796,530,144	26,419,870	1841	766,371,725	24,283,939
1824	791,701,614	26,271,762	1842	772,530,758	24,444,230
1825	781,123,222	25,541,049	1843	773,068,340	24,459,842
1826	778,128,267	25,429,677	1844	772,169,092	24,432,019
1827	783,801,739	25,683,011	1845	769,193,644	23,719,147
1828	777,476,892	25,490,900	1846	766,672,822	23,642,676
1829	772,322,540	25,332,782	1847	764,608,284	23,580,033
1830	771,251,932	25,318,865	1848	772,401,851	23,813,746
1831	757,486,996	24,091,749	1849	774,022,638	23,862,256
1832	755,543,884	24,027,665	1850	773,168,316	23,836,432
1833	754,100,549	23,982,043	1851	769,272,562	23,719,299
1834	751,658,883	23,901,110	1852	765,126,582	23,594,784
1835	743,675,299	23,591,471	1853	761,622,704	23,489,286
1836	758,549,866	24,042,221	1854*	754,893,401	23,279,122
1837	761,422,570	24,142,470	1854†	752,655,549	23,206,380
1838	762,275,188	24,165,239	1855[1]	751,645,818	22,557,355

* and † Jan. 5, and April 5, respectively.

Description of Stock at Jan. 5, 1821, *and March* 31, 1855.

	Debt.	Stock.	Annual Interest.
	L.539,947,506	3 per cents.	L.16,198,425
	30,642,128	3½ ...	1,072,474
	75,496,163	4 ...	3,019,846
	155,479,513	5 ...	7,773,975
1821	L.801,565,310		L.28,064,720
	L.3,007,775	2½ per cents.	L.75,194
	745,333,404	3 ...	22,360,002
	2,871,515	3½ ...	100,503
	433,124	5 ...	21,656
1855	L.751,645,818		L.22,557,355

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[1] Since this return was compiled, the loan of 1855 has added L.16,000,000 to the capital, and L.596,000 to the interest of the debt, and it is to be feared that the continuance of the war will still further add largely to its amount.

	Unredeemed Debt.	Annual Interest.
At January 5, 1820	L.794,980,481	L.27,736,448
At March 31, 1855	751,645,818	22,557,355
Decrease between January 5, 1820, and March 31, 1855	L.43,334,663	L.5,179,093

Reduction of interest from 1821 *to* 1854 *inclusive.*

Stock purchased with sinking fund	L.1,932,346
Do. transferred for life annuities, and for annuities for terms of years	1,399,878
Do. transferred for redemption of land-tax	63,301
Do. unclaimed for ten years, and purchased with unclaimed dividends	88,737
Do. reduced from a higher to a lower rate of interest	17,372,483
Do. paid off	994,286
	L.21,851,031

Increase of interest during the same years.

Stock created by loans	L.1,805,396	
Do. by Exchequer bills funded	983,476	
Do. exchanged from a higher to a lower rate of interest	13,862,416	
Unclaimed stock re-transferred to the proprietors	20,697	
		16,671,985
Total reduction of interest		L.5,179,046

A detailed statement of the national debt, since the year 1820, specifying the description of stock, the interest payable on each description, the reduction or increase of interest payable each year, with the cause of such reduction or increase, and showing the amount of stock created or redeemed in each year, will be found in *Parliamentary Return*, 10th August 1855. (J. L. R.)

FUNDY, Bay of. See Nova Scotia.

FUNEN, or Fuhnen (Danish *Fyen*), an island in the Baltic, belonging to Denmark, and, after Seeland, the largest island of that kingdom. It lies between Seeland and the mainland of Denmark, being separated from the former by the Great Belt, and from the latter by the Little Belt,—between N. Lat. 55. 2. and 55. 38., and E. Long. 9. 42. and 10. 53. Area 1187 square miles. The surface is generally hilly, particularly in the S.W., but it seldom rises to above 400 feet. With the exception of the S.W. part, the soil is very fertile; but agriculture is still in a backward state. Its chief productions are barley, oats, buckwheat, rye, flax, hemp, hops, and fruits. The rearing of cattle and poultry receives considerable attention, and honey and wax are among its articles of export. The climate is humid and variable, but milder than that of Seeland. There are few manufacturing establishments, and their articles of clothing are chiefly of domestic manufacture. The capital of the island is Odensee. Fünen, with Langeland, Taasinge, and some smaller islands, forms a stift or province of Denmark, with, in 1850, 187,818 inhabitants.

FUNERAL RITES, ceremonies accompanying the interment of the dead.

Egyptians. One of the earliest nations who paid any particular respect to their dead were the Egyptians, the posterity of Ham, the first cultivators of idolatrous worship and superstition after the Deluge. This, no doubt, arose from their belief in the immortality of the soul, its migration into all kinds of animals, and its return to the human body, which they supposed to be within the term of 3000 years. Hence the great care with which they embalmed the dead, and the vast expense they incurred in building proper repositories for them. In fact they were more solicitous about tombs for the dead than about houses for the living. This is strikingly displayed in those stupendous excavations which were appropriated to the reception of the dead, as well as those structures above ground, such as the pyramids, in which some of their kings were entombed.

Among the Egyptians, when a person died, his parents and friends put on mourning habits and abstained from all banquets and entertainments. This mourning lasted from forty to seventy days, during which period the body was embalmed. (See Embalming.) This ceremony completed, it was restored to the friends, who placed it in a kind of open chest, which was preserved either in their houses or in the sepulchres of their ancestors. But before the dead were allowed to be deposited in the tomb, they underwent a solemn judgment. Of this remarkable custom we have a particular account in the first book of Diodorus Siculus. "Those who prepare to bury a relative give notice of the day intended for the ceremony to the judges and to all the friends of the deceased, informing them that the body will pass over the lake of that district to which the dead belonged; when, on the judges assembling, to the number of more than forty, and ranging themselves in a semicircle on the further side of the lake, the vessel, which those who superintend the funeral have prepared for this purpose, is set afloat. This vessel is managed by a pilot, called in the Egyptian language Charon (*fierce-eyed*); and hence they say, that Orpheus, travelling in old times into Egypt and seeing this ceremony, formed his fable of the infernal regions, partly from what he saw and partly from invention. The vessel being launched on the lake, before the coffin which contains the body is put on board, the law permits all who are so inclined to produce an accusation against it. If any one steps forth and proves that the deceased has led an evil life, the judges pronounce sentence, and the body is precluded from burial; but if the accuser is convicted of injustice in his charge he falls himself under a considerable penalty." Such is the description which Diodorus gives of this funeral judicature, to which even the kings of Egypt were subject. The same author asserts that many sovereigns had been thus judicially deprived of the honours of burial by the indignation of the people; and that the terrors of such a fate had the most salutary influence on the conduct of their kings.

Hebrews. The funeral rites amongst the Hebrews were solemn and magnificent. Upon the demise of any person, the relatives and friends of the deceased rent their clothes. This custom is still imitated, but with a due regard to economy, by the modern Jews, who only cut off a piece of their garment in token of affliction. It was usual to bend the dead person's thumb into the hand, and fasten it in that posture with a string, because the thumb having then the figure of the name of God, they thought the evil spirit would not dare to approach it. When they came to the burying-place, they made a speech to the dead in the following terms:—"Blessed be God, who has formed thee, fed thee, maintained thee, and taken away thy life. O dead, he knows your numbers, and shall one day restore your life;" and so on. After this they delivered the funeral oration upon the deceased; then said a prayer, called the "righteousness of judgment;" and, finally, turning the face of the dead body towards heaven, they cried out—"Go in peace."

Greeks. Amongst the ancient Greeks it was usual before the interment to place a piece of money in the mouth of the deceased, as Charon's fare for wafting the departed soul over the river Styx. This ceremony was considered unnecessary in those countries supposed to be situated in the neighbourhood of the infernal regions, and to lead thither by a direct road. The corpse was likewise furnished with a cake composed of flour, honey, and other ingredients, which was designed to appease the fury of Cerberus, and to procure the ghost a safe and quiet entrance to Hades. Whilst the corpse continued in the house, a vessel of water was placed before the door, that those concerned about the body might purify themselves by washing; the Greeks, as well as the Jews, believing that pollution was contracted by touching a dead body.

The ceremonies by which they expressed their sorrow for the death of their friends were various; but it seems to have been a constant rule to recede as much as possible in habit and behaviour from their ordinary customs. For this reason they abstained from banquets and entertainments; they divested themselves of all ornaments; and they tore, cut off, or shaved their hair, which they cast on the funeral pile, to be consumed with the remains of their deceased friend.

After interment followed the περίδειπνον, νεκρόδειπνον, τάφος, or feasts, at which the company used to appear crowned; and upon this occasion they spoke in praise of the dead, as far as they could go with truth, as it was esteemed a notorious wickedness to disregard truth in their eulogiums. And not only at these feasts, but even before the company quitted the sepulchre, they were sometimes entertained with a panegyric upon the deceased.

Athenians.

The Greek soldiers who died in battle had not only their tombs adorned with inscriptions showing their names, parentage, and exploits, but were also honoured with an oration in their praise. The custom among the Athenians in the interment of their soldiers was as follows:—"They used to place the bodies of their dead in tents three days before the funeral, that all persons might have an opportunity of recognising their relatives, and paying their last respects to them. Upon the fourth day a coffin of cypress was sent from every tribe to convey the bones of their own relatives; after which went a covered hearse, in memory of those whose bodies could not be found. All these, accompanied by a concourse of people, were carried to the public burying-place, called Cerameicos, and there interred. One oration was spoken in commendation of them all, and their monuments were adorned with pillars, inscriptions, and other ornaments usual about the tombs of the most honourable persons. The oration was pronounced by the fathers of the deceased persons who had acquitted themselves most valiantly. Thus, after the battle of Marathon, the fathers of Callimachus and Cynægyrus were appointed to pronounce the funeral oration. And on the return of the day upon which the solemnity was first held, the same oration was annually repeated."

Burying the dead in the earth seems to have been the most ancient practice amongst the Greeks, though that of burning the body came afterwards to be very general. It was customary to throw on the funeral pile those garments which the deceased had usually worn. The pile was lighted by one of his nearest relatives or friends, who made prayers and vows to the wind to assist the flames, that the body might quickly be reduced to ashes; and whilst the pile was burning, the friends of the deceased stood by it, called upon him, and poured out libations of wine.

Romans.

The funeral rites among the ancient Romans were very numerous. In the case of persons of distinction the body was kept seven days. It was also washed with warm water and anointed with oil. Lest the deceased was merely in a trance, his friends at intervals, with the view to arouse him, raised a shout. This last act was called *conclamatio.* The third conclamation was on the seventh day; when, if no signs of life appeared, the corpse was dressed and embalmed by the *pollinctores,* placed on a couch in the vestibule of the house, with its feet towards the door; while the outside of the gate, if the deceased were of rank, was hung with cypress boughs. In the course of these seven days before the dead was placed a small altar called *acerra*, on which perfumes were burnt; and the *libitinarii* (undertakers) provided articles necessary for the interment.

On the seventh day a public crier was sent about the city, inviting the people to the solemnization of the funeral in these words: *Exsequias L. Tit. filii, quibus est commodum ire, jam tempus est. Olus* (i. e. *ille*) *ex ædibus effertur.* The company being assembled, the last conclamation ended, and the couch was covered with purple. The procession then moved forward, headed by a trumpeter, who was followed by women called *præficæ*, singing songs in praise of the deceased. Lastly, the corpse followed, borne by the nearest relations; and if the person were of rank or dignity, images of all his predecessors were carried before him on poles. The deceased was followed by his children, kindred, and others, clad in mourning (*atrati*). From this act of following the corpse, these funeral rites were called *exsequiæ.* The deceased being thus brought to the rostra, the next of kin made a funeral oration in praise of him and his ancestors. The body was then carried to the *pyra* or funeral pile and burnt. The ashes were afterwards gathered; and the priest, sprinkling the company thrice with clean water, the eldest of the *præficæ* crying aloud, *Ilicet*, dismissed the people, who took their leave of the deceased in this form, *Vale, vale, vale; nos te ordine quo natura permiserit cuncti sequemur.* The ashes, enclosed in an urn, were deposited in the sepulchre or tomb.

Christians.

The ancient Christians testified their abhorrence of the Pagan custom of burning the dead, and always deposited the body entire in the ground; and it was usual to bestow the honour of embalming upon the martyrs at least, if not upon others. They prepared the body for burial by washing it with water, and dressing it in funeral attire. The exportation or carrying forth of the body was performed by near relations, or by persons of such dignity as appeared consistent with the circumstances of the deceased. The singing of psalms was the chief ceremony in the funeral processions of the early Christians.

Roman Catholics.

In the Roman Catholic Church, the body of the deceased is washed, and a crucifix is put in its hand. At its feet is placed a vessel full of holy water, with a sprinkler, that those who come in may sprinkle both themselves and the body. A priest also stands by the corpse, and prays for the deceased. In the funeral procession the exorcist walks first, carrying the holy water, next the cross-bearer, afterwards the rest of the clergy, and lastly the officiating priest. They sing the *miserere* and some other psalms; and at the end of each psalm a *requiem.* We learn from Alet's ritual that the faces of deceased laymen must be turned towards the altar when they are placed in the church, and those of the clergy towards the people. The corpse is placed in the church, and surrounded with lighted tapers: after the office for the dead, mass is said; then the officiating priest sprinkles the corpse thrice with holy water, and as often throws incense on it. The body being laid in the grave, the officiating priest sprinkles it with holy water.

Greek Church.

The funeral ceremonies of the Greek Church are much the same with those of the Latin. It needs only to be observed, that after the funeral service they kiss the crucifix, and salute the mouth and forehead of the deceased; after which each of the company eats a piece of bread and drinks a glass of wine in the church, wishing the soul a good repose, and the afflicted family all consolation. (See also Burial; Burning of the Dead; and Burying-Place.)

Funeral *Games.* It was customary for persons of rank among the ancient Greeks and Romans to institute games, with all sorts of exercises, to do honour to the *manes* of their deceased friends. Patroclus's funeral games occupy the greater part of Book xxiii. of the Iliad; and Homer introduces Agamemnon's ghost, telling the ghost of Achilles that he had been a spectator at a great number of such solemnities.

Greeks.

The funeral games of the Greeks consisted chiefly of horse-races. The prizes were of different kinds and value, according to the rank and magnificence of the person who instituted them. The garlands given to victors on the occasion usually consisted of parsley, which was thought to have some relation to the dead.

Romans and Gauls.

These games, among the Romans, consisted chiefly of processions, and sometimes of mortal combats of gladiators around the funeral pile. In very early times they, as well as the Greeks, were accustomed to slay a number of captives and slaves before the pile, as victims to appease the manes of the deceased. Cæsar relates that the Gauls also observed this sanguinary custom.

FUNERAL *Oration*, a discourse pronounced in praise of a person deceased, at the ceremony of his funeral. This custom is very ancient. In the latter part of the account given of the Egyptian ceremonies of interment may be perceived the first rudiments of funeral orations, which were afterwards moulded into a more regular form by other nations who adopted this custom. Nor should it be omitted to be remarked, that those funeral solemnities were attended not only with orations in praise of the deceased, but with prayers for him; which prayers, it seems, were made by one who personated the deceased.

The Grecians received some of the seeds of superstitious and idolatrous worship from the Egyptians, through Cecrops, Cadmus, Danaus, and Erechtheus; and among other customs transplanted from Egypt into Greece were the solemnities used at the burial of the dead. Of these an encomium on the deceased always formed part.

From the Egyptians and Grecians, especially from the latter, the Romans received many of their laws and customs, and among them that of pronouncing funeral orations in praise of the dead. Plutarch says that "he approved of the law of the Romans, which ordered suitable praises to be given to women as well as to men after death." But from what he says in another place it appears that the old Roman law provided that funeral orations should be made only for the elder women; and therefore he says that Cæsar was the first who made one upon his own wife, though it was not then usual to take notice of younger women in that way; but by that action he gained much favour with the populace. The reason why such a law was made in favour of women, Livy tells us, was—that when the public treasury was unable to yield the sum agreed upon to buy off the Guals when besieging the city and capitol, the women gave up their jewels for the purpose; for which cause they not only received thanks, but this additional honour, that after death they as well as men should be honoured with orations.

This custom of the Romans very early obtained among the Christians. Some of their funeral orations are extant, as that of Eusebius on Constantine, those of Nazianzen on Basil and Cæsarius, and of Ambrose on Valentinian, Theodosius, and others. Gregory, the brother of Basil, made a funeral oration on Melitus bishop of Antioch. These orations were usually pronounced before the bodies of the deceased were committed to the earth, which custom has been more or less continued ever since.

FUNFKIRCHEN (i.e. *Five Churches*, Hungarian, *Pecs*), a free city of Hungary, capital of the circle of Baranya, on the declivity of Mount Mecsek, 105 miles S.S.W. of Buda. This is one of the oldest cities of Hungary, and is the seat of a bishop, and of the civil and military boards of the circle. It is well built, and consists of a single street nearly four miles in length. The cathedral is of great size, and said to be the oldest in Hungary. It has an ecclesiastical seminary, gymnasium, and other educational establishments, and had formerly a university which was much frequented. Fünfkirchen has manufactures of woollen cloths, flannels, tobacco, leather, and paper; and a considerable trade in wine, tobacco, and gall-nuts, the produce of the vicinity. There are some coal mines in the vicinity. Pop. 15,500, Hungarians, Germans, and Croatians.

FUNGI, the Mushroom order. See BOTANY, vol. v., pp. 146, 217, &c.

FUNGIBLES, in *Scots Law*, are such moveable goods and effects as may be estimated by number, weight, or measure; as corn, butter, ale, money, &c.

FUNICULAR, or ROPE-MACHINE. See MECHANICS.

FUR TRADE.

History.

THERE is perhaps no branch of commerce that has drawn forth a more daring and adventurous spirit, or given rise to a more patient and courageous endurance of personal dangers, privations, and hardships, than the fur trade, as is manifest throughout its whole history. By its means we have become accurately acquainted with nearly three-fourths of the continent of North America. The indefatigable exertions of the fur merchant, stimulated by the prospect of large gains from his hazardous pursuits, have made known numerous tribes of men and nations partially acquainted with the arts and refinements of civilized life, who otherwise might have remained many ages, or for ever, immersed in heathen darkness, and sunk in barbarity. Nor are the general advantages derived from the fur trade confined to a more accurate geographical knowledge of a vast range of country, and the extension of the arts of peace and social happiness. The adventurous fur trader has often been the precursor of the gospel missionary, and has enabled him to pursue his important labours with comparative security and success.

Whence furs were introduced.

The use of furs seems to have been introduced into Europe by the northern invaders of the Roman empire. In the sixth century the skins of sables were brought to Rome from the shores of the Arctic Ocean through the intervention of numerous parties, so that the cost to the consumer was very high. During several centuries after that time furs were not at all common in western Europe. In 1252 A.D., Marco Polo mentions, as a subject of curiosity, that he found the tents of the khan of Tartary lined with the skins of sables and ermines, which had been brought from countries far north, "from the land of darkness." In less than a century, however, from that time, the wearing of furs as a part of fashionable dress had become rather prevalent in England, since in 1337 Edward III. commanded that all persons among his subjects should be prohibited the use of furs unless they could spend L.100 per annum.

Arctic regions.

Early in the seventeenth century the shores of the Arctic seas were found tenanted by furred animals of great value; and the idea of forming a settlement was suggested by Grosseliez, a Frenchman. The suggestion was made first to his own government; but as it was coolly received, he obtained, through the English ambassador, an interview with Prince Rupert, before whom he laid his plans. The prince warmly entered into the project, and assisted in fitting out a vessel, which reached in September 1668 the river then called Nemisco, to which the adventurers gave the name Rupert in honour of the prince. After wintering there with less difficulty and suffering than they had anticipated, they returned and gave so favourable a report that Prince Rupert, the Duke of Albemarle, the Earl of Craven, Lord Ashley, and others, formed themselves into a company, and subscribed L.10,500 for the purpose of commencing a traffic in furs. A charter of incorporation was granted by Charles II. in 1670, giving to the Hudson's Bay Company full possession of "All the lands and territories upon the countries, coasts, and confines of the seas, bays, lakes, rivers, creeks, and sounds, in whatsoever latitude they shall be, that lie within the entrance of the straits, commonly called Hudson's Straits, that are not already actually possessed by or granted to any of our subjects, or possessed by the subjects of any other Christian prince or state." And the charter proceeds to grant further, that "The whole and entire trade

Hudson's Bay Company.

and traffic to and from all havens, bays, creeks, rivers, lakes, and seas into which they shall find entrance by water or land out of the territories, limits, or places aforesaid; and to and with all the natives and people inhabiting, or which shall inhabit within the territories, limits, and places aforesaid; and to and with all other nations inhabiting any the coasts adjacent to the said territories, limits, and places which are not already possessed as aforesaid, or whereof the sole liberty or privilege of trade and traffic is not granted to any other of our subjects.”

Settlements on the Rupert, Moose, Albany, Nelson, and Severn.

On Rupert's river the company immediately formed a settlement; and in 1674 stations were settled on Moose river, and a few years later on the Albany, and soon after two more on the Nelson and the Severn. By these vigorous measures the French court was awakened to a sense of its neglect, and Grosseliez, already detached from the English service, was sent out in the year 1682 to found a factory on the river Hayes, which he accomplished, and also surprised the British factory on the Nelson.

French settlements and seizures.

After this time hostilities became frequent between the French and the English settlers; yet notwithstanding immense losses sustained by the company from 1682 to 1688 (amounting to L.118,014), they were able in 1684 to pay to the shareholders a dividend of 50 per cent. Again in 1688 an equal dividend was made, and in 1689 one of 25 per cent. In 1690, without any call being made, the stock was trebled, while at the same time a dividend of 25 per cent. was paid on the increased or newly created stock. By other captures of their factories by the French in the years 1692, 1694, 1696, and 1697, the company suffered further loss to the amount of L.97,500. At the peace of Utrecht (in 1713), however, these captured factories were restored to the company, who by 1720 had again trebled their capital, with a call of only 10 per cent. on the shareholders. Now they strengthened the old forts and formed several new ones in the interior; but in 1749 a question arose in parliament concerning the rights of the company, which was decided in their favour. Again in 1782 several of their factories were taken by the French under La Perouse; still their traffic seems to have continued very lucrative until the invasion of their rights and territories by a strong rival association, designated the North-west Company, whose fierce competition caused much animosity and bloodshed. This was not only very destructive to the fur trade, but most injurious to the Indians.

North-west Company.

The North-west Company consisted of 23 partners, comprising some of the most wealthy and enterprising settlers in Canada, and employed about 2000 persons as clerks, interpreters, guides, and boatmen (voyageurs), who were stationed over the vast regions of Canada ceded in 1763 by the French to the English.

Management.

Shareholders who engaged actively in the trade were called agents, some of whom resided at the different ports established by the company in the Indian territory, and others at Quebec and Montreal, each attending to the affairs of the Company in his appointed district. These active partners met annually at Fort-William, one of their stations on Lake Superior, where they discussed matters connected with the affairs of the association, and arranged future plans. The clerks of the North-west Company were mostly young Scotchmen, of respectable families, who were willing to undergo the hardships attendant upon a residence of some years in these inhospitable regions, in order that they might thus secure the advantage of succeeding in turn to a share of the profits of the undertaking, the custom being to take from among the clerks as partners those who had acquired the experience necessary for the management of the business.

New stations.

The hunters of this company crossed the Rocky Mountains about the year 1805, and established stations on the northern head-waters of the Columbia. In 1813 they purchased Astoria on this river, which was relinquished by Mr Astor[1] of New York and his partners in consequence of the war between the United States and Great Britain.

War between Hudson's Bay Company and the North-west Company.

At length the Hudson's Bay Company, being roused by the activity of the North-west Association, exercised for the first time its chartered right to colonise, and sold in 1812 a tract of land on Lake Winnipeg and the Red River to Lord Selkirk, who introduced a considerable number of persons from Scotland. The consequence was an open war between the partizans of the rival companies. After a war of two years the Red River settlement was destroyed by the massacre of the governor, Mr Semple, and many of his associates, while the survivors were driven away. But this melancholy and barbarous state of matters was put an end to by the union of the rival companies in 1821, since which the trade has been peacefully and successfully prosecuted.

Union of the rival companies.

When the partnership of the North-west Company was about to expire in 1821, the three London representatives of the firm offered to merge their interests in those of the Hudson's Bay Company. This was agreed to, and an act of parliament was passed (1st and 2d Geo. IV., cap. 66), under which the crown grants to the Hudson's Bay Company and to the three representative partners of the North-west Company in London and Montreal a license of exclusive trade for twenty-one years in the “Indian territories;” that is, over all those tracts that might not be included in the charter given by Charles II., and also over those tracts which by mutual consent were open to the subjects of England and to those of the United States. The three North-west Company agents merged into the Hudson's Bay Company; the exclusive trading license was surrendered in 1838; and, after careful investigation on the part of the government, the crown granted on the 30th of May 1838 another license for twenty-one years of exclusive trade over the Indian and neutral territories.

Present state of Hudson's Bay Company.

The affairs of the Hudson's Bay Company are at present conducted by a governor, deputy-governor, and a committee of 7, elected by 239 proprietors, representing a capital of L.400,000. Of the 239 proprietors 55 have more than two votes. L.900 of stock must be held for six months by each voter previous to voting, except such stock be acquired by bequest or marriage; and each member of the committee must hold not less than L.1800 stock. The mode of election, oaths to be administered, government, &c., are prescribed by the charter of Charles II. already referred to.

Seat of government.

Accordingly, the Company has established at the Red River settlement a governor, council, recorder, sheriff, coroner, &c., for the proper government of the affairs of the Assiniboia, or Red River Territory, and for the careful and legal administration of justice throughout Rupert's Land. Though not enjoined by the charter of 1670, trial by jury was introduced by Sir George Simpson under the direction of the Hudson's Bay authorities in England. Crime is comparatively rare in Rupert's Land; and justice is administered under the same safeguards that exist in England.

Traffic.

The traffic of the Company in furs and peltry is regulated by a Deed Poll, dated March 26th, 1821, when the North-west Company and it united; and by another Deed Poll, dated June 6th, 1834, “for ascertaining the rights and prescribing the duties of the chief factors and the chief traders, and for conducting the trade.” The business of the Company is superintended by the twenty-five chief factors at the respective stations; and under them the twenty-eight chief traders carry on the traffic with the Indians. The clerks serve under both the factors and the traders; and the very humblest clerk, by good conduct, may rise to the chief positions in the service of the Company. The salaries of the clerks range from L.20 to L.100 per annum. Three chief factors and two chief traders are allowed to leave the country annually for one year.

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[1] A most interesting account of the North-West Fur Company is given by Washington Irving in his ASTORIA.

Free trade in furs. The Hudson's Bay Company have no monopoly, as some suppose, of the importation of furs into England; they have to compete with the furs of the United States, of Russia, of Norway, &c.; and if other traders can undersell the Company the public have of course the benefit. Beaver and other skins are now much lower in price than formerly when so much used in the manufacture of hats; and the gradual reduction in the price of foreign furs has been chiefly brought about by the steady supply from the Hudson's Bay territories. Hence London is the most extensive fur market in the world. The fall in the prices of all furs has been very great; but as beaver constitutes the largest item in value, the reduction of profit to the Company will be seen by comparison with the prices and amount of sales. In 1839 a beaver skin was worth 27s. 6d.; in 1846, 3s. 5d. The number of skins sold in 1839 was 55,486 for L.76,312; those sold in 1846 were 45,389 for L.7856. There is also great variety in the prices of articles of similar denomination; but the Company are obliged to pay the same price to the Indians for all skins according to tariff; whether the skins are good or bad the Company must buy them. Hence the profits of the shareholders are not to be estimated by the difference in price between the cost of a skin at one of the Company's forts in the interior, and its sale price in London. The annual dividend is (1855) about 6 per cent.

The Hudson's Bay Company have now about 140 establishments besides hunting expeditions and shipping, employing 25 chief factors, 28 chief traders, 152 clerks, 1200 regular servants, besides employing in occasional labour the services of a large number of the natives; a steam vessel and five sailing vessels of from 100 to 300 tons, all armed. Their forts or stockaded positions extend from the coast of Labrador to the Pacific, and from the northern boundaries of Canada to the shores of the Arctic Ocean. At every large trading establishment there is an "Indian Hospital," from which the natives derive the greatest benefit; and several medical men are maintained by the Company at different forts. Ministers of the gospel of every denomination are encouraged and protected by the Company, and a bishop of the Church of England now presides over the diocese of Rupert's Land.

The fur trade is prosecuted in the north-western territories of the United States by an association called the North American Fur Company, of which the chief managers reside at New York. Its principal station is Michilimackinac, to which are brought all the peltries collected at the other ports of the Mississippi, Missouri, and Yellowstone rivers, and all over the vast range of country extending thence to the Rocky Mountains. This Company is admirably organized and managed: it employs steamboats for ascending the rivers, which also penetrate with ease to regions which could formerly be explored only through the most painful efforts in barges and keel-boats, or by small parties on foot or on horseback.

Fur skins imported. About 5,000,000 skins of animals applicable as furs are annually imported into Britain. The subjoined table gives the imports and exports of fur-skins in the year 1851.

Animals.	Total imported into England.	Exported.	Consumed in England.
Racoon	525,000	525,000	None.
Beaver	60,000	12,000	48,000
Chinchilla	85,000	30,000	55,000
Bear	9,500	8,000	1,500
Fisher	11,000	11,000	None.
Fox, Red	50,000	50,000	None.
... Cross	4,500	4,500	None.
... Silver	1,000	1,000	None.
... White	1,500	500	1,000
... Gray	20,000	18,000	2,000
Lynx	55,000	50,000	5,000
Marten	120,000	15,000	105,000
Minx	245,000	75,000	170,000
Musquash	1,000,000	150,000	850,000
Otter	17,500	17,500	None.
Seal, Fur	15,000	12,500	2,500
Wolf	15,000	15,000	None.
Marten, Stone and Baum	120,000	5,000	115,000
Squirrel	3,000,000	100,000	2,900,000
Fitch	65,091	28,276	36,815
Kolinkski	53,410	200	53,210
Ermine	187,104	None.	187,104
Rabbit	120,000	None.	120,000
Wolverine	1,200	1,200	None.
Skunk	1,200	1,200	None.
Sea-Otter	100	100	None.

Fur-Skinned Animals.—The northern and arctic regions abound with races of animals, which are thickly covered with fine hair or fur, and whose skins are very beautiful and valuable as articles of clothing. The animals that are captured for their fur, are:—The Russian Sable (*Mustela zibellina*).—This rich and beautiful skin has long been esteemed one of the most valuable and useful furs that have been brought to our country. About 25,000 are annually collected in the Russian territories, of which only a small number is imported into England. The fur is brown, with some gray spots on the head. The darker varieties are the most highly valued, a single skin being frequently sold for L.9, though the average value does not exceed L.2 or L.3. Naturalists are not agreed whether to consider the animal from which the skin is procured as a distinct species. Some are of opinion that the Russian sable, the stone and pine martens, as well as the Hudson's Bay sable, are but one species, on which the differences of food and climate have produced some slight variations in form and colour. To the furrier, however, the Russian sable is easily distinguishable, from the length and fulness, as well as the darker colour of the fur. The use of this choice variety is necessarily limited to the wealthy, on account of its scarcity. In the reign of Henry VIII., by a law which sought to regulate the expenses of the different classes, and to distinguish them by peculiarity of costume, the use of the sable was confined to the nobility above the rank of viscount. The Hudson's Bay Sable (*Mustela canadensis*).—The sable skins next in repute to the Russian are those imported by the Hudson's Bay Company, of which no less than 120,000 are annually brought into this country. As the natural colour of the skins is much lighter than the prevailing taste, it is the practice to dye many of them a darker colour, and the furs thus treated are scarcely inferior to the natural sable. The Baum or Pine Marten (*Mustela abietum*).—The sables imported under this name are the produce of Europe. The animal is found in extensive forests remote from the habitations of man, and preying on birds and the smaller animals. They are distinguished from the stone marten by the yellow colour of the throat; other parts of the skin are brown. When dyed, they have a similar appearance to the best sable. The Stone Marten (*Mustela saxorum*).—This marten is generally found in mountainous and stony places, though a frequent visitor to farm-yards and homesteads. It is generally distributed through most European countries. The under fur is a bluish-white, with the top hairs a dark brown. The throat of this variety is usually of a pure white, by which character it is generally distinguished. The French manufacturers excel in dyeing this fur, from which circumstance it is frequently called French sable. It is also dyed in this country, the excellent qualities of the skin adapting it to a great variety of purposes to which furs are applied. The Fisher.—There are about 11,000 of these skins annually brought to this country from North America; they are larger than the sables, and the fur is longer and fuller. The tail is long, round, and full, gradually tapering to a point, and quite black; a few years since it formed the common ornament to a national cap worn by the Jew merchants of Poland, and at that time was worth from 6s. to 9s., but its present value does not exceed 6d. to 9d. The Minx (*Mustela vison*).—There were 245,000 skins of this little animal brought to this country in 1850 from the possessions of the Hudson's Bay Company and North America. The fur resembles the sable in colour, but is considerably shorter and more glossy. It is a very durable and useful fur, and is exported in large quantities to the Continent. The Ermine (*Mustela erminea*).—This animal is similar in form and habit to the common weasel of this country; but in Siberia, Russia, and Norway, from whence the skins are imported, the little animal, during winter, becomes as white as the snowy regions it inhabits, and is esteemed as the whitest fur known, though its summer dress is a dingy brown. The tail of the skin, of which the lower half is jet black, is generally introduced as an ornament to the purely white fur. It is worn on state occasions, and in the reign of Edward III., its use was restricted to the royal family. The Fitch or Polecat (*Mustela putorius*).—These skins are produced throughout Europe, and in no place of better quality than in our own country. The ground of the fur is a rich yellow, while the top hair is a jet black. This fur is at present very little used in this country, but is much worn in America. It is very durable, but the natural smell of the fur, which is rather unpleasant, is difficult to counteract. The North American Skunk (*Mephitis americana*).—The skins known under this name are imported by the Hudson's Bay Company. The animal from which they are taken is allied to the polecat of Europe, and, from the fœtor it emits when attacked, which has been known to affect persons with sickness at 100 yards distance, has received the soubriquet of "l' Enfant du Diable." It has a soft black fur, with two white stripes running from the head to the tail, which is short and bushy. The skins, though imported into England in small numbers, are usually re-exported to the continent of Europe. The Kolinkski (*Mustela siberica*).—The Kolinkski or Tartar sable is of a bright yellow colour, and is sometimes used for ladies' dress in its natural state, but it is more frequently dyed brown to imitate other sable, to which it bears a strong resemblance. It is remarkable for the uniformity of its colour, having no spot or difference of shade in any part of the body. The tail, which is of the same colour, is exclusively used for the best artists' pencils. The Musquash or Musk Rat (*Fiber zibethicus*).—The animal known under this name is found in great numbers in North America, frequenting swamps and rivers, and, like the beaver, building its habitations of mud with great ingenuity. Dr Richardson states, that it has three litters of young in the course of the summer, producing from three to seven at a litter. The animal has a peculiar smell, similar to that of musk; but it must not be mistaken for the animal from which the musk of commerce is procured, which is a native of Tibet. About one million skins are brought to this country annually; the fur resembles that of the beaver, and is used by hat manufacturers. The skins are also dyed by the furrier, and manufactured into many cheap and useful articles. The Nutria, or Coypou (*Myopotamus coypus*).—This rodent quadruped is an expert swimmer, and frequents the neighbourhood of water, where it lives in burrows; it is smaller than the beaver, and considerably larger than the musquash, but has a resemblance to both these animals in its natural habits, and in the qualities of its fur. Until lately this fur was very much used by hat manufacturers, and as many as 600,000 skins have been annually imported from Buenos Ayres and Chili, in which countries the animal abounds. Owing to the wars that continue to be carried on between the different states of Buenos Ayres, and the consequent withdrawal of the trappers from their accustomed occupations, the importations have fallen to 3000 skins, which are dressed and dyed as a substitute for the costly fur seal. The Hamster (*Cricetus vulgaris*).—About 100,000 of the skins of the hamster are annually collected in central Germany, where the animal abounds; it has a poor, short, and coarse fur, and is almost exclusively used for cloak linings by the Greeks; the colour of the back is a reddish-brown, the belly black, with a few light spots. The animal is about 9 inches in length, and lives under ground, forming several apartments for storing grain separate from its own hybernaculum. It is so industrious and provident, that when the peasants go "hamster nesting" in the winter, they possess themselves not only of the skin but of the valuable store of good grain, which is said frequently to exceed two bushels. The Perwitzky.—The skin of this animal is beautifully marked like tortoiseshell, and is brought from the south-eastern territories of Asiatic Russia; the fur is short, giving little warmth, and is chiefly made into cloak linings, and used by the Russians. The Beaver (*Castor americanus*).—Beaver skins are imported by the Hudson's Bay Company in less quantities than formerly; the use of the fur in our hat manufactories has greatly diminished since the introduction of silk hats, and a considerable depreciation has taken place in their value. This beautiful fur is sometimes used for articles of dress. In order to prepare the skin for this appropriation the coarse hairs are removed, and the surface is very evenly cut by an ingenious machine, somewhat similar to that used in dressing cloth. The fur thus prepared has a beautiful appearance, not unlike the costly South Sea otter, and has the advantage of lightness, with durability and cheapness. The white wool from the under part of the beaver still obtains a high price, and is largely exported to France, where it is manufactured into ladies' bonnets. There is no doubt that the beaver was formerly an inhabitant of the British Isles, and Pennant remarks that two or three waters in the principality of Wales still bear the name of Llyn yr afangc, or the Beavers' Lake. The Otter (*Lutra vulgaris, Lutra canadensis*).—The large supply of otter skins used by the Russians and Chinese is derived principally from North America. The quality of the fur is in most respects similar to the otter of the British Isles, of which there are about 500 skins collected annually. This animal has frequently been tamed, and from its extreme agility in the water, has been rendered serviceable in catching fish for the use of its owner. The American otter is much larger in size than the European, being about five feet from the nose to the tip of the tail; a smaller variety abounds in the East Indies, the fur of which is very short. The Sea Otter (*Enhydra marina*).—The sea otter has a very thick, soft, woolly fur, and is most highly prized by the Russians and Chinese, to whom most of the skins are exported. In its habits it is allied to the seal, but has never been met with in large numbers. It is found in the North Pacific, from Kamschatka to the Yellow Sea on the Asiatic coasts, and from Alaska to California on the American coast. The annual production is about 1000 skins, of which 100 are imported into this country by the Hudson's Bay Company. Seal (*Phoca*).—There are numerous varieties of these animals, some of which are found on the western coasts of Scotland, Ireland, and Wales. They frequent, in immense numbers, the coasts of Newfoundland, Greenland, and Labrador, and the importations into this country frequently exceed 500,000 in one season. The young seals of some species increase in size with great rapidity, and it is asserted by the seal fishers that they double their bulk in eight days. The greater portion are tanned and enamelled with black varnish for ladies' shoes; other descriptions are well adapted for fur, especially the seal of the South Seas and the north-west coast of America. Before they can be used as a fur, it is necessary to remove the very coarse hairs which cover a beautifully fine and silky fur. The roots of these hairs are deeply seated in the substance of the thick pelt, while the fur is strongly attached to the upper surface of the skin. By shaving the pelt to half its natural substance the roots of the coarse hairs are cut through, and they easily fall out; but the same effect is produced by a natural process of fermentation, which ensues when the skins are properly prepared and allowed to remain together. The soft curly fur of the seal is now rarely used in its natural state, but is dyed a deep Vandyke brown, and has the appearance of the richest velvet. The Fox.—Of foxes' skins brought to this country there are many varieties; the black and silver foxes (*Vulpes fulvus*, var. *argentatus*) from the arctic regions are the most valuable. Many of the skins when highly dressed are worth from 10 to 40 guineas. They are purchased for the Russian market, being highly prized in that country. The cross and red foxes (*Vulpes fulvus*) are used by the Russians, Turks, and Greeks for cloak-linings and collars. The blue and white foxes are used in this and other countries for ladies' dresses. The white foxes (*Vulpes lagopus*) are represented by arctic voyagers as exceedingly numerous, and migrating in troops over the frozen seas at the approach of the rigorous season. They are easily caught, fifteen having been taken from one trap in four hours. The Wolverine (*Gulo luscus*).—This animal, which is only met with in North America, Norway, and Sweden, is now generally considered by zoologists as identical with the glutton of old writers. It is extremely mischievous to the fur-trader, and will follow the marten-hunter's path round a line of traps extending forty or fifty miles, merely to come at the baits. The fur is generally dark nut-brown, passing, in the depth of winter, almost into black, and is chiefly used in Germany and other northern countries for cloak-linings. The Bear (*Ursus*).—There are several descriptions of bear-skins used by the furrier. The skin of the black bear of North America (*Ursus americanus*) is used in this country for military purposes, for rugs, and carriage hammercloths. In Russia it is frequently manufactured for sleigh coverings, and the skin of the cub bear is highly valued for trimmings and coat-linings. That of the grizzly bear (*Ursus ferox*) is applied to similar uses. That of the white polar bear, of which the supply is very limited, is frequently made into rugs, bordered with the black and grizzly bear skins. The fur of the brown or Isabella bear (*Ursus Isabellinus*) has frequently been very fashionable in this country, when its value has been tenfold the present price. It is still considerably used in America for various articles of ladies' dress. The Hare.—The wool or under fur of the European gray hare (*Lepus timidus*) is extensively used for manufacturing felt hats, both in Europe and America. A few of these are dressed for the purpose of being worn as a protection to the chest. The white hare of Russia and the polar regions (*Lepus glacialis*) was formerly much worn in its pure white state as a lining for ladies' cloaks, and as a substitute for the white fox, but the skin being exceedingly tender, its use for this purpose has been discontinued. The white hare is also frequently dyed; it looks exceedingly rich, but is not very durable. The Rabbit (*Lepus cuniculus*).—The English rabbit, both in its wild and domestic state, affords a very plentiful supply of useful fur. When dressed and dyed in imitation of other skins, it is manufactured into a great variety of cheap and useful articles for the middle classes. The wool has recently been manufactured into a peculiar cloth adapted for ladies' use, but by far the greater number of skins are still used for hatters' purposes. The English silver-gray rabbit was originally a breed peculiar to Lincolnshire, where great attention was paid to it; but warrens have since been formed in various parts of the country. Skins of this variety are continually exported to China and Russia, where they are much esteemed and command a comparatively high price. The Hudson's Bay rabbit is beautiful in the length and texture of its fur, but the skin is so fragile, and the fur so liable to fall off with slight wear, that it has little value as an article of dress. The white Polish rabbit is a breed peculiar to that country; its skin is often made into linings for ladies' cloaks, and being the cheapest and most useful fur for that purpose, the animal is imported in great numbers. The Squirrel (*Sciurus vulgaris*).—This attractive little animal abounds in most countries, especially in Siberia and the north of Europe. It is from the Russian dominions that we derive our principal supply of the skins of this agile creature, which exceeds in number that of any of the fur-producing animals. It is said that 15,000,000 are every year captured in Russia, our supply from thence exceeding 3,000,000 annually. The fur of the squirrel, of which there are several varieties, is light, warm, and durable; some of the lighter colours are dyed in imitation of sable. The colour of the Siberian squirrels varies from a pearl gray to a dark blue gray; the under parts, which are white, are frequently cut out and made into cloak-linings, remarkable for their lightness: the tails are manufactured into boas for foreign markets; they are also extensively used in the manufacture of artists' pencils. The Chinchilla (*Chinchilla lanigera*).—There are two chief varieties of chinchilla, the produce of South America: those from Lima are short in the fur, and inferior in quality to those from Buenos Ayres and Arica; the colour is a silvery gray, Arica producing the darkest and best-coloured skins. The general appearance of the animal places it between the squirrel and the rabbit: in its natural abodes it has the agility of the former, and resembles the rabbit in living in holes and burrows. The extreme softness and delicacy of the fur adapt it only for ladies' use. Though much admired and frequently worn in this country, it is more extensively consumed in France, Germany, and Russia. The Racoon (*Procyon lotor*).—The racoon is an inhabitant of North America: the skins are imported into this country in immense numbers; but meeting with no demand for our home trade, are exported by merchants who purchase them at the periodical sales. They are used throughout Germany and Russia for lining shubes and coats, and, being of a durable nature and moderate in price, are esteemed among the most useful furs. The Common Badger (*Meles vulgaris*); American Badger (*Meles labradoria*).—The skin of the European badger, from the wiry nature of its hair, is generally used for the manufacture of superior kinds of shaving brushes; but the skins exported from North America have a soft, fine fur, which renders them suitable for many purposes for which the larger furs are used. The Cat.—In Holland the cat (*Felis domesticus*) is bred for its fur; it is fed on fish, and carefully tended until the fur arrives at its greatest perfection; large numbers are also collected in England and many other countries. The wild cat (*Felis catus*) is much larger and longer in its fur, and is met with in extensive forests, particularly in Hungary; the colour is brownish-gray, mottled, and spotted with black. The softness and durability of the fur render it very suitable for cloak-linings, and it is also made into wrappers for open carriages and railway travelling. The Canada Lynx (*Felis canadensis*); Lynx Cat (*Felis rufa*).—The fur of the lynx is long, soft, of a grayish colour, and sometimes, as in the Norway lynx, covered with brown spots; the belly is white, silky, and not unfrequently spotted with black. The change of fashion has for some time discarded it from this country; but it is dyed, prepared, and exported in considerable quantities for the American market, where it is much valued and admired. It is generally used for cloaks, linings, and facings, for which purposes it is very appropriate, being exceedingly soft and light.

PRESERVATION OF FURS.

The fur of most animals is in its greatest perfection at the approach of winter, and before the animal has attained its greatest age. It is the object of the furrier, by dyeing the inferior skins, to imitate the more perfect specimens. Some difficulty has attended this process, as the nature of the skin will admit of the dyes being used only in a cold state; but the method which has been practised in Paris and London has been so far successful, that the permanence of the colour in the dyed sable is frequently found of equal durability to that of skins of the natural colour. Considerable excellence has been attained also in dyeing rabbit and inferior furs of those colours which are more suitable to the prevailing taste.

The first process of the fur dresser is to prepare the skins from the raw state, and render them fit for ornamental dress. In this country, the usual practice is to trample them in closed tubs with a little salt butter, turning them over and over for several hours. By this means the skins are made into soft and pliable leather. The next process is to rub them on the flesh side over a blunt iron in order to remove loose pieces of integuments, and to reduce the substance, after which it is necessary to cleanse the fur and skin completely from the grease. For this purpose it is again trampled with sawdust—usually that from mahogany—which being beaten out and repeated several times, conduces to render the fur glossy and clean, and to fit it for the cutter to fashion into any shape that may be necessary.

Furs are subject to injury by several species of moths, whose instincts lead them to deposit their eggs at the roots of the fine hair of animals. Linnæus mentions five species that prey upon cloth and furs, of which *Tinea pellionella*, *T. vestionella*, and *T. tapetzella* are the most destructive. No sooner is the worm hatched than it eats its way through the fur, and continues increasingly destructive until it arrives at its full growth, and forms itself a silken covering, from which in a short time it again emerges a perfect moth. Another cause of the decay of furs is the moisture to which they are frequently exposed; the delicate structure of the fine underfur cannot be preserved when any dampness is allowed to remain in the skin. This fact is well known to the leather manufacturer, who, having wetted his skins, allows them to remain in a damp cellar for a few days for the purpose of removing the hair, which is pulled out with the greatest facility after remaining only one week in a moist condition. It follows from these observations that to preserve furs it is necessary to keep them dry, and to protect them from moths; if exposed to damp or rain, they must be dried at a moderate distance from the fire; and when put by for the summer should be combed and beaten with a small cane, and very carefully secured in a dry brown paper or box into which moths cannot enter. During the summer they should be examined once a month, to be again beaten and aired, if the situation in which they have been placed be at all damp. With these precautions, the most valuable furs may be preserved uninjured for many years.

MANUFACTURING OF FUR FOR FELTING PURPOSES.

In the manufacturing of furs for the making of hats, the principal kinds of skins used are the hare, rabbit, beaver, and nutria. All these kinds of skins, in the northern parts of Europe, as well as in America, are divided by furriers into two distinct sorts, namely, the *seasoned* and *unseasoned* skins. The former are those which are taken off the animal in winter, when the fur is at its full growth, and in the highest state of perfection as to fineness; the latter are those obtained in spring, summer, and autumn. The fur in the unseasoned skins is short, coarse, and hairy, and is generally not worth more than a third of the value of furs cut off the best-seasoned skins. The mode of manufacturing both descriptions is, however, the same; of which we shall now endeavour to give a brief account.

Hare-Skins.—The first mechanical operation performed on the hare-skin is to open it with a knife down between the middle of the forelegs, taking great care that the skin be not torn; for there is a considerable waste of the fur if this precaution be not attended to. The skin must now be rubbed with what is called a *rake*, which resembles a common dinner knife, with teeth like a saw. This is used for the purpose of clearing away all impurities and dried blood which may happen to be upon the skin. This cleaning is of very great importance; for the smallest particle of dirt or blood will greatly injure the fur for felting purposes. The operation requires to be carefully and judiciously performed for another reason. If the workman be not attentive, he will tear up, along with the bloody and dirty parts, a considerable part of the good and clean fur, and thus great loss will be incurred.

Hare-skins, after being thus opened and cleaned, must be damped on the pelt side with a little water, and placed under a heavy weight, pelt to pelt, to press them, so that all ridges and inequalities in the pelt may be removed. The skins are now fit for what is called *shearing.* Their outsides are all covered over with a kind of hair, which possesses no felting properties whatever; and this must be taken off with hand shears. These are of two kinds; the one the common shears used for clipping the wool off sheep; the other kind resembles the cutting shears of tailors, only the bowl is made equally large on both sides, for the admission of all the fingers. Some furriers prefer one kind of shears and some another. Those like tailors' shears make the neatest work when skilfully used; but the other requires less time for their management. The shearing of the skins forms a very important part of their manufacture; for if one cuts too far down, he will seriously destroy both quality and quantity of the fur, as well as disfigure its appearance. On this account many furriers confine a part of their work-people to this branch of the business alone; for the greater part of the profits of a master depends upon the manner in which this shearing process is performed.

After a hare-skin has been submitted to the process of shearing, it presents an appearance altogether different from what it did before. A novice would not know it to be the same skin. Previously, it was of a uniform brown colour; now, it is down the whole of the back of a most beautiful jet black, which gradually becomes fainter as it approaches the sides of the skin. After it undergoes the process of *rounding*, which consists in taking off all the irregular or angular pieces of skin, and making the pelt smooth and even, it is then fit for the cutting-board.

The cutting-boards of furriers are made of the willow tree, and are commonly about twenty inches wide, and from two to three feet broad. They ought to be moistened with water at short intervals, when used, to make the wood soft, and prevent the edge of the cutting-knife from being taken off too soon. These knives are sometimes made of common sheet-iron, but more frequently of steel, which are to be preferred to the former, on account of keeping their edge longer, and being much lighter for the hand. A fine edge will not cut the fur off the skins; it must be a rough edge, which is obtained from rubbing the knife about every two or three minutes upon a piece of common freestone, of not too fine a grain. These knives are from five to six inches in length and three in breadth, and resemble in some measure those knives used by grocers for the cutting up of cheeses. The skins are all, before cutting, split down the middle of the back into halves. The cutting then commences at the head or cheeks of the skin, and always in the line of direction in which the fur lies. The cutting-knife is run quickly backward and forward against the first joint of the fingers across the skin; whilst at every two or three strokes the hand must be lifted up, to gather in the fur that has been cut, and preserve it in as fleecy a form as possible. Care must be taken against *chopping* the fur; because, when this takes place, the felting principle in all furs is considerably weakened, and in some entirely destroyed.

An important point in the getting up of furs for sale is, to keep them in as unbroken or fleecy consistency as possible. This, abstractly considered, is of no consequence to their felting power; but the practice of the trade as to this matter has arisen from a desire to keep the different kinds of fur from being mixed with one another, and thereby in some degree to prevent adulteration. From this cause the above mode of cutting the hare-skin has been long since much improved by the use of instruments made of tin, against which the cutting-knives run, and which are so contrived as to gather in the whole fur off the largest skin with as much ease as the fur of a half skin could be gathered by the hand when the knife runs against the fingers. This simple invention preserves all the most valuable parts of the skin in one lump or fleece, and enables the workman to sort the fur with more ease and readiness than before.

Rabbit-Skins.—The rabbit-skin is cut in precisely the same manner as that of the hare, only there is a considerable difference in the mode of dressing or preparing the former. The rabbit-skin is covered over on the pelt side with large quantities of grease or fat, from which the hare-skin is comparatively free. This must be removed when the rabbit-skin is first opened. The knife used in opening the skin must be pressed down upon that part of the pelt where the fatty substance is, till it gets beneath the cuticle on which it rests, when the whole of the greasy matter may be removed, and a little whitening rubbed on the spot. If this operation be not well attended to, the grease will get mixed with the fur, and damage it considerably. The rabbit, like the hare skin, is covered over with hair upon the top of the fur; but this hair cannot be taken off by shearing, as in the case of the former, but must be removed by *pulling* it out. This is done with a short knife about three inches long, which is held so as to grasp the hair between the thumb and it, which is secured from injury by having a piece of buckskin leather placed over it. The hand of the workman ought to fall lightly upon the skin, otherwise the hair will be cut and the fur pulled out also, which will deteriorate its quality and diminish its quantity very considerably.

Beaver-Skins.—The skin of the beaver is manufactured in the same way as that of the rabbit. The fat, however, in the former is much greater in quantity and more firmly imbedded in the pelt than in the latter; and of course greater care and trouble are required to remove it. Fuller's earth mixed with whitening is used to imbibe the fatty particles. The pulling the outside hair off is of great importance. The cutting of the beaver has been for some years performed by machines; the thickness and regularity in the pelt affording facilities for this mode of operation, which the generality of other skins do not.

The fur of the beaver is sorted into three or four different kinds; but that which is cut off the cheek of the skin bears the highest price. White beaver is comparatively scarce, and is much esteemed for fine drab hats.

Nutria-Skins.—These are dressed like rabbit-skins, only the hair on the outside of the skins is much stronger than in the rabbit, and requires a sharper knife and greater strength to remove it. Nutria-skins are full of fat; and before they are submitted to the pulling process, they must be well washed with soap and boiling water. The skin is laid with the pelt downwards, and well scrubbed on the fur side with a brush, till the grease is entirely removed. They must then be well washed in cold spring water, which is extracted from amongst the fur by a piece of wood made for the purpose. After this they are placed before a stove or hot fire to dry, and are then fit to go through the other manufacturing processes.

Both the beaver and nutria furs, before they are used for hat purposes, must go through the operation of *blowing.* This is done for the purpose of clearing them of those short black hairs which remain amongst the fur after it is separated from the pelt. A blowing machine consists principally of a cylinder, into which the fur is placed; and by means of a fly-wheel, situated within it, the stuff is thrown up, and the hairs, by reason of their greater specific gravity, fall to the bottom, and leave all the fine fur upon the top. Hare and rabbit furs are also partially used in a blown state for the nap or outside covering of hats.

Though the hare, rabbit, beaver, and nutria furs are the staple articles of hat manufacture, yet there are other furs occasionally used in their stead, or in conjunction with them. These are the furs of the otter, the seal, musquash, and the mole. The otter is fully as fine as the beaver itself; but the principal objection hatters have to its use is, that it does not retain a good black, but acquires a brown or coppery shade. The seal is not so fine as the otter. It finishes dull upon a hat, and, in consequence, is not much used at present. Musquash is a useful fur. The mole is the only skin known to furriers which for felting purposes needs no preparatory dressing before cutting. Its fur is alike fine throughout. But notwithstanding its fineness, it is so very short as to prevent its being extensively used in the hat manufacture.

Within the last century many attempts have been made to apply machinery to the cutting of the various kinds of fur, but, with the exception of the beaver fur, these attempts have hitherto been but partially successful. The great difficulties in the way of machinery for cutting purposes are, the unevenness on the surface, and the inequalities in the thickness of the pelt in different skins. The smallest particles of the fleshy part of the skin getting among the fur will injure it; so much so, that a piece of pelt not larger than a pin's head will destroy the finest hat. This circumstance has greatly increased the difficulty of bringing machinery to bear upon the fur trade. There are, however, at this moment some machines employed in the cutting of hare and rabbit skins in England; but until they undergo numerous improvements, they are not likely, from the obstacles above adverted to, to realize the expectations of gain at first entertained by those employing them, either in the saving of labour, or in the superior manner in which the fur is manufactured.

Many experiments have also been made to dispense with the usual processes of cutting the different kinds of fur with knives, by applying chemical substances to the pelts, so as to loosen the roots of the fur, and make it leave the pelt upon a slight application of force. Lime has often been tried for this purpose, by using it in the same manner as skinners do in the management of sheep-skins. Some furriers have also tried a partial state of putrefaction; but this, as well as the lime preparation, has proved abortive. The fur obtained off different kinds of skins by such means looks in every respect as well to the eye as if it had been manufactured in the usual manner; but the felting principle is by all such means entirely destroyed.

Carroted Fur.—Sulphuric acid has the property of increasing the felting power of most kinds of fur. When this is applied the fur is called *carroted*, from the colour which the acid gives it. The most common kind of fur submitted to this process is that belonging to the rabbit-skin; and it is generally employed in small quantities for the manufacture of all fine stuff hats. Carroted coney wool is made in the following manner:—Mix one part of sulphuric acid with two parts of pure spring water, in a dish of stoneware; then take and wet the rabbit-skin with a brush all over, making the liquid penetrate as near to the bottom of the fur as possible; care being used, in this process, not to touch the skin with the fingers, lest they be burned, but with a piece of iron hoop doubled so as to resemble a pair of tongs. When the skins are thus wet, they must be placed over a very hot fire to dry; but they must not be placed too near, lest they take fire, which they are very apt to do from the application of the acid. Instead of drying them before the fire in this manner, some run a hatter's finishing iron, heated to a certain degree, over the skins, and allow them to dry gradually in the sun. This is found to be a very good plan. When the skins are dry they ought to be gently beaten with a rod, and moistened on the pelt side with water, previous to their being put under the pressing stone. They are then cut in the usual manner. Skins prepared in this way attract a great quantity of moisture from the atmosphere; and carroted fur always feels to the hand as if partially wet.

The fur off the rabbit-skin improves in its felting capabilities by being kept a moderate length of time after being taken off the skin; but hare fur does not. Great attention ought to be paid by hat manufacturers, who keep considerable stocks of fur on hand, as to the place in which they are deposited. If it be too damp, they will rot; if too dry, they will diminish in weight; therefore a moderately dry and cool place ought to be chosen. The great enemy to all furs is the common moth. This destroys the felting principle. Whenever the slightest appearance in the fur indicates the secure lodgment of this little creature, it ought immediately to be used; or, if this cannot be done, it should be taken out of the paper bags, and broken all over with a small switch rod, or, what will answer the purpose still better, a hatter's bow. The same rules apply to the keeping of skins in good condition as to fur. The situation ought to be cool, dry, and well aired. They will seldom keep longer than twelve or eighteen months without running great risk of suffering injury from the moth or black beetle. Too many ought not to be heaped together, and particularly if they be rabbit-skins, because the fat or grease about these skins will get heated, run amongst the fur, and become of such an acrid nature as to corrode the very pelt itself. It was formerly the practice to keep hare and rabbit skins a long time, under the idea that the fur upon them will increase in length from the moisture left in the pelt. This is an entirely erroneous opinion. Any one who will make the experiment will find that the amount of fur obtained off any given quantity of skins is much greater in weight when manufactured immediately after they are taken off the animal, than after having been kept for six or twelve months.

The qualities of all kinds of furs differ very considerably, from climate and other local circumstances. The best rabbit fur, used for the manufacture of the finest London hats, is commonly considered as the produce of the east coast of England, particularly from Lincolnshire to Berwick inclusively. The rabbit fur is always stronger in the felting principle when got off rabbits bred on the sea-coast, than in those found in inland places, however favourable in other respects these places may be for the rearing of the animals. The skins along the tract of coast already mentioned seem all of the same size and quality. North of Berwick the rabbit-skin becomes smaller, and the fur weaker and shorter; and the further north, along the coast, the more inferior it is found. Hare fur in Great Britain is superior, for hat purposes, to any in the world.

FURCA, a Latin word signifying properly a *fork*, was also used among the ancient Romans to denote an instrument of punishment, composed of two pieces of timber joined together in the form of the letter V inverted. This was placed on the offender's neck, while his hands were fastened to the two ends; and in this way he was compelled to carry about the badge of his disgrace wherever he went. Slaves were frequently punished thus. Sometimes the infliction of the scourge was superadded. The furca was also employed in the ancient mode of capital punishment, when the criminal was fastened to it and scourged to death. The *patibulum*, another instrument used for the same purpose, or as a gibbet, appears to have been in the form of the Greek letter Π.

FURCHÉ, in *Heraldry*, an epithet of a cross forked at the ends.

FUREEDPORE, a town of Hindustan, the principal place of the British district of the same name, under the jurisdiction of the lieutenant-governor of Bengal, on the right or S.W. bank of the Ganges. The district of Fureedpore, which is also called Dacca Jelalpore, is bounded N. by the British district Mymensing, E. by Dacca, S. by Backergunge, W. by Jessore and Pubna. Area, 2052 square miles. It is altogether an alluvial tract, being intersected by the Ganges, and also by several feeders and offsets of that river. Pop. 855,000, which gives 416 to a square mile. The district was included in the grant of the Dewanny made by the emperor Shah Alum to the East India Company in 1765. The town is 115 miles N.E. of Calcutta, in Lat. 23. 36., Long. 89. 50. (E. T.)

FURETIÈRE, ANTOINE, author of the *Dictionnaire Universel de la Langue Française*, was born at Paris in 1620. He first studied law, and practised for a time as an advocate, but finally entered the church, and became abbé of Chalivoy, and prior of Chuines. In his leisure moments he devoted himself to letters, and in virtue of his satires in prose and verse was admitted a member of the French Academy in 1662. That learned body had long promised to the world a complete dictionary of the French tongue. Furetière had already planned and executed a work of a similar nature which he was on the point of publishing when the Academy interfered, alleging that he had borrowed from their stores, and that they had the exclusive privilege of publishing such a work as that in question. After much bitter recrimination on both sides, Furetière was expelled from the academy. For this act of cruel injustice he took a very severe revenge in his satire entitled *Couches de l'Académie*. His *Dictionnaire Universel* was published in Holland two years after his death, which happened in 1688. It was afterwards revised and improved by Basnage, who published his edition of it in 1701, and again in 1725. This work enjoyed a deservedly high reputation till the appearance of the *Dictionnaire de Trevoux*, which indeed is based on that of Furetière. Furetière's other works, consisting chiefly of satires and fables, do not possess any very great literary merit.

FURIES (in Latin *Furiæ* or *Diræ*, in Greek *Erinnyes* or *Eumenides*), in *Ancient Mythology*, the deities whose business it was to punish in Hades the crimes committed upon earth. The name "Eumenides," applied to these goddesses by the Greeks, signifies the "kindly" or "propitious" deities. Like the term "Semnæ," or "venerable," it was euphemistically employed by the Athenians, who feared to call these terrible beings by their real names. Though the proper office of the Eumenides was to punish murder, perjury, disrespect to old age, and other such crimes, they were sometimes invested with very different functions. Thus, in Æschylus' play, *The Eumenides*, they appear not only as the instruments of wrath and vengeance against the matricide Orestes, but also as promising victory and every sort of prosperity to the people of Athens. In this play, too, they are described as being far more numerous than accorded with the received traditions. They seem to have numbered at least fifteen, whereas common accounts make them only three, and give their names Alecto, Tisiphone, and Megæra.

In friezes and sculptures the furies are depicted as dark beings, with serpents intertwined among their hair, blood dripping from their eyes, and holding scourges or torches in their hands. The sacrifices offered to them consisted generally of black sheep. No wine was offered at their sacrifices, but only libations of oil, honey, and water, called "nepalia." Everything relating to these deities is fully discussed in the second essay appended to Müller's edition of the *Eumenides* of Æschylus.

FURLONG, an English measure of length, equal to one-eighth of a mile, 220 yards, or 660 feet.

FURLOUGH, in military language, a license granted by a commanding officer to an officer or to a private to be absent from duty for a certain time.

FURNACE,

Definition and uses.

A GENERAL name for those contrivances used in the arts and in chemistry, by which an extraordinary degree of heat is generated, much more intense than what obtains in our ordinary fire-places. These are of very extensive use, particularly where metals and minerals are the subjects of manufacture or of examination, such substances requiring a very powerful heat for their reduction, calcination, or fusion. Hence the various kinds of furnaces which occur in the manufacture of iron, steel, brass, copper, zinc, &c. in smelting, casting, and forging the metal, and in numerous other processes connected with the formation of it. In other cases, such as glass-works, potteries, and various others, it is in general not so much a very intense heat that is wanted, as a steady temperature, and the fire of such magnitude as will keep a large body of material in fusion, and at a very equable state for working. Another large and extensive class of furnaces, and one which is becoming every day of more and more importance, is that applied to the generation of steam in the boilers of steam-engines; and here also it is not so much an intense heat which is necessary, as a very large quantity for a rapid production of the elastic fluid. The construction of furnaces therefore forms an interesting and very important branch of practical mechanics. We shall endeavour at present to explain the general principles of their construction, and describe a few of those most generally in use; and further information will be found in treating of the different arts, manufactures, and processes where the furnaces are chiefly employed.

General principles.

In regard to the general principles on which the operation of furnaces depends, the exact nature of the process of combustion is, we believe, hardly yet settled among chemical philosophers; and experiments are wanting to determine many points which might be practically useful. It was thought, for example, by Sir Humphry Davy, that by a vivid and rapid combustion of our fuel, a much greater quantity of heat would be generated than by a slow and languid action; and this theory, were it consistent with fact, would often be of great importance where economy of fuel is the object. Be this, however, as it may, it is certain that, in our ordinary furnaces, whatever be the fuel, the grand supporter of combustion is the atmospheric air, or rather the oxygen, which forms one of its constituent parts; and it is the combination of this aerial element with the solid mass of the combustible material in the furnace, which somehow or other, not well understood, produces all the heat that we obtain.

Supply of air.

To provide, therefore, a supply of this vital principle is the first object in the construction of every furnace. It appears, from some experiments on the products of combustion made by our celebrated chemist Dr Thomson of Glasgow, that for every pound weight of good caking coal consumed in a furnace, there will be required at least 150 cubic feet of common air; and adding fifty more for what cannot be rendered effective, we may allow at least 200 cubic feet to each pound of coal; and this may give us some idea of the vast quantity of air which must be required for many of the large furnaces and fires which are frequently used. In many of the furnaces, for instance, for the boilers of our steam-vessels, the consumpt of coal is more than twenty cwt. each hour; and by the above calculation this will require 7400 cubic feet of air per minute.

Draught by chimney.

It may seem at first no easy matter to supply so large a stream, and to make it pass regularly through the fire; yet this is done in the simplest manner, by means of the chimney, on the principle of the ascensional power of heated air; and few examples occur in practical mechanics of so simple, beautiful, and highly useful an application of a general principle. Air, like every other substance, is expanded by heat, and this in a remarkable degree, owing to the feeble aggregation of its elementary parts. With every degree of Fahrenheit, from the temperature of freezing to that of boiling mercury, or 680°, it expands the 488th part of its bulk. This is according to the accurate experiments of Messrs Petit and Dulong; and these philosophers also found the important law to obtain exactly within the above range of the thermometer, that equal increments of heat produced equal increments of expansion. Hence with a heat of 488°, which is far surpassed in our fires, the volume of the air is doubled; but with every such expansion the air becomes in proportion specifically lighter, and ascends by its buoyancy through the colder and of course denser medium around it. The fire therefore heating the air above it, this ascends, and the chimney forming a tube or perpendicular shaft, either directly above the fire-place, or in communication with it, the heated air fills it, and forms a rarefied column standing in the midst of the ordinary medium. The external columns, therefore, pressing on all sides into the partial vacuity, must rush in below where there is a free communication through the fire: thus a constant draught of air sets in towards the fire and up the chimney; and by this means the combustion in the furnace is kept up. It is exactly what takes place on a great scale over the globe itself, by the sun heating excessively the regions under the line; and this causing everywhere a current of heated air upwards, draws continually a current of cold air from the regions on each side of the tropics; and it is this which produces the phenomenon of the trade-winds, the opposite currents coming into collision under the equator, and destroying each other's effect as to north or south, while the rotation of the earth gives the whole an apparent motion nearly due east. The chimney then is the most essential part of every furnace, and its use is not only to create a draught of heated air, but to receive and discharge the smoke and other aerial products which arise from the combustion. In ordinary fire-places, where only a very moderate degree of heat is wanted to heat our apartments comfortably, the chimney is left open below, immediately above the fire-place, for the convenience of getting fuel or cooking utensils put on. In that case only a very small portion of the air which ascends up the chimney passes through the fire, namely, that which ascends from under the grating, and perhaps a little in the front. The greater proportion ascends above the fire-place, and this mixing with the heated air, cools it, and moderates the draught, which would otherwise become too great. In furnaces, however, where all the heat is required which can be produced, a different arrangement becomes necessary. The fire-place in these must be closed on all sides, and

Essential parts.

Grating.

every access to the air excluded, excepting below, where the fuel rests on an open grating, consisting of iron bars laid parallel to each other, and at such distances apart as will retain the fuel, while the air is admitted through them, and the ashes and other refuse drop down into the ash-pit below. Hence arises the same general construction in every furnace; and, however they may vary in particular forms and dimensions, each contains a *fire-place*, *grating*, *ash-pit*, and *chimney*. It is very essential, particularly where an intense temperature is wanted, that the fire-place should be surrounded with substances of a very slow conducting power for heat, otherwise this would be soon dissipated in the surrounding atmosphere, and no high degree of temperature attained. Clay is found very useful for this purpose in small furnaces intended for experiments; and the effect is most strikingly exhibited if we try the action of a fire-place of sheet iron: the heat is extremely feeble, and is observed dissipating itself on all sides; but if we line it with an inch thickness of clay or pounded charcoal, a very intense heat may then be generated. In large furnaces there is no material so useful for this purpose as brick, which is not only a slow conductor, but can be made to withstand very intense heats. The magnitude of the fire must evidently be determined by the size of the grating; for, however large the fire-place be made, or great the quantity of fuel in it, unless the grating is such as will admit a sufficiency of air, the combustion will not proceed. In large fires, therefore, intended to generate a great quantity of heat, such as those for steam-engine boilers, the grates must be made large in proportion. In fires, again, where it is not so much quantity as an intense temperature, the grate may be quite small, as the temperature will depend chiefly on the power of the draught. Most of the operations of the brass-founder, and of gold and silver-smiths, are performed with furnaces of which the grate does not exceed two feet in area. It may be reckoned generally, that for every ten pounds of coal consumed in an hour, there should be a square foot of area in the grating. The spaces between the bars should be about three eighths or half an inch. The bars themselves should be loose, and made to rest on two cross bars, one at each end, so that they can be taken out and renewed at pleasure. In that case they are made about an inch thick, and with a swell in the middle for greater strength. They are seldom made more than two feet or two and a half feet in length, one or more of such lengths being used if required.

Power of the draught.

But the grating itself, though it will admit it, will not determine any air to enter and pass through the fire. This is done by the draught in the chimney; and according as this is more or less powerful, the fire will burn with greater or less force. It is of the first importance, therefore, to determine what are the circumstances in the form and dimensions of the chimney on which the effect of this draught depends, and by which it may be regulated to our purposes. It is evident, in the first place, that the warmer the air is in the chimney, the greater will be its buoyant force, and the more powerful, therefore, the draught upwards. Every means, therefore, should be taken to preserve the heat in the chimney; and hence the great advantage in dwelling-houses of conducting the vents as much as possible through the interior walls, which are not exposed to the cooling effects of the atmosphere, or of wind and rain, and also carrying them up in a mass together, by which each protects the other from the cold; secondly, the interior of the chimney should be as straight, smooth, and regular as possible, that the current of air may traverse it with the least possible degree of impediment. There should be no projections, nor any sudden inequalities in width, which are sure to create eddies, and obstruct the progress of the air. Hence even the cylindrical form of a chimney will be found to improve the draught, because it presents a larger area than a square in proportion to its circumference, and therefore presents less obstruction. A decided improvement has lately been introduced in the construction of domestic chimneys, by the use of cylindrical cans of fire-brick, about a foot long, and built in, one above the other, to the top of the chimney. These are glazed inside, and present on the whole a very smooth and equal bore for the heated air. The cylindrical form of a chimney also presents externally less extent of cooling surface than the square. Still there are facilities of construction in the square form which give them an advantage. But whether circular or square, as the air becomes necessarily rather cooler at the top of the chimney than the bottom, and therefore denser, hence the chimney should have a slight degree of taper in proportion to this.

Height of chimney.

But of all the circumstances affecting the draught of furnaces, that which has the most powerful influence is the height of the chimney. The reason of this will be evident, if we consider that the mechanical force producing the draught is nothing else than the superior weight of the external air over that within the chimney. The latter forms a column expanded by heat, and having thus lost part of the air which it would have contained had it been at the same temperature with the external air. The external column, therefore, presses on the internal with a force exactly equal to this difference, and which is evidently proportional to the height of the chimney. For suppose we had a chimney fifteen feet high, and the air within it heated to 488°, then one half of the air originally in the chimney will be expelled. The column of fifteen feet would now, if the tube were extended, occupy thirty feet. This fifteen feet, therefore, of the expanded air, being taken out of the scale of the internal column, it is evident that the external air will now act with a preponderating force exactly equal, or with such a pressure as will be due to a column of the expanded air fifteen feet high, which is just equal to a column of the ordinary air seven and a half feet high. But suppose the chimney is thirty feet high under the same circumstances, then the column of expanded air expelled by the heat will be thirty feet high, and the preponderating column of ordinary air fifteen feet, just double of the former, in proportion to the double altitude, and so of every other height; and hence we deduce an important rule, that the *height* of the preponderating part of the column of air, by which the draught is produced in the chimney, is in every case *proportional to the height of the chimney itself;* and it is easy, from what has been stated, to form a calculation of this height in every case. Let H be the height of the chimney, n the number of degrees by which the internal air is heated beyond the external, taking of course the average heat of the top and bottom of the chimney, or any other rule for giving a true average from top to bottom, then $H + \frac{nH}{488}$ will be the height of the internal column when expanded by the heat, and $\frac{nH}{488}$ the height of the preponderating part of the external column, supposing it to have the density of the internal. But suppose it to be of the ordinary density, it will be $\frac{nH}{488 + n}$.

These principles then being established, it is easy now to calculate the velocity with which the external air will rush into the chimney; and this is the most important point to arrive at, as it is this which must determine the rate of supply, and whether it will be more or less than what is calculated on. This velocity, then, or V, according to the well-known formula, will be each second eight times the square root of the height of the preponderating part of the column; and as this height is proportional to that of the chimney itself, hence the rule that *the velocity is proportional to the square root of the height of the chimney.* Taking then the above expression for the height of the preponderating part of the column, we have the velocity of the external air rushing into the chimney $V = 8\sqrt{\frac{nH}{480+n}}$. But in passing along the sides of the chimney, the air, particularly with great velocities, encounters considerable obstruction; and for this, and for what may arise from inequalities or other causes, we may allow 6 instead of 8 for the co-efficient in the above formula; this gives $V = 6\sqrt{\frac{nH}{480+n}}$. The air is also greatly obstructed at the grating, and in passing through the interstices of the fuel; but this is supposed to be allowed for by giving the grating an enlarged capacity on this account, so that it may have the same facility in passing through the fire as it has in the chimney. This source of obstruction therefore need not be taken into account.

The above simple formula will be found to agree very nearly with facts; and we have been thus particular in deducing it from well-known and established principles, as rules and calculations have been given on this subject by different authors, the results of which differ considerably from each other. In cases of this nature, it is really superfluous to enter into all the refinements of calculation; there are in actual practice so many anomalies and deranging circumstances, that the only rules of any utility are those which embody simply, but with accuracy, the leading principles involved in the action; more complicated formulæ, even though rigidly exact, instead of guiding, serve often rather to deter the practical engineer from any calculation at all. In an ingenious paper on this subject, by an eminent mathematician, in the *Quarterly Journal of Science*, rigorous formulæ are given for the above calculations; but they are more complex, and the accuracy of some parts may be doubted. The rarefaction of the air by heat, for example, is calculated by a rule which makes it, for 1500°, to be expanded upwards of twenty times its natural volume; whereas, by Petit and Du Long's experiments, it would not exceed $4\frac{1}{4}$ times. Let us now take an example. Suppose we have a chimney thirty feet in height, and the average temperature of the air in it 300° above the external atmosphere, What will be the velocity with which the external air will enter the chimney? Here $H = 30$ $n = 300$, therefore $V = 6\sqrt{\frac{9000}{788}}$, or about 20 feet per second. Hence a chimney at this height, and one foot square, ought to supply 1200 feet per minute; and, from what we have seen, this would be sufficient to consume six pounds of coal per hour; and by enlarging the area of the chimney it would be adapted to a larger fire. But suppose it is raised to 100 feet, the velocity being in every case as the square root of the height, this would give the ratio of $5\frac{1}{2}$ to 10, or 37 feet per second, and a supply, with a one-foot chimney, of 2220 feet a minute. This shows how slowly the effect of raising the chimney proceeds. It requires the height to be raised four times to double the effect, and nine times to triple it; and this explains the great effect, comparatively, which is often produced by chimneys of moderate height judiciously constructed.

In this manner it is easy to calculate the effect of different heights and areas of chimneys, and proportion our dimensions to the nature of the fire to be used. In the above calculations it must be kept in view that the velocity referred to is always the velocity of the external air entering under the fire. The velocity in the chimney itself may be often very different; and by not attending to this distinction, serious mistakes may be committed. The formula for this velocity is simpler, being $V = 6\sqrt{\frac{nH}{480}}$, and in the above case it is twenty-five in place of twenty, and the supply 1500 feet in place of 1200.

Blast-furnace.

In the smelting of iron, and other uses, where a more intense temperature is required than can be produced by the natural draught of a chimney, it is necessary to resort to artificial means for increasing the effect; and this gives rise to the *blast-furnace*, where the draught is produced by the action of bellows or blowing cylinders throwing by mechanical force a violent current of air into the fire. The same object has recently been attained in a very convenient manner by means of fanners, which was originally proposed, we believe, by Desaguliers in the *Philosophical Transactions*, under the name of the centrifugal wheel, for the purpose of ventilating hospitals, ships, &c., and was a few years ago revived and successfully adapted to the blast-furnace by Messrs Carmichael, engineers, Dundee, and is now employed, not only for smelting, but instead of the bellows in the smith's forge, eight or ten forges being in some manufactories all supplied from one fan-wheel.

Description of furnaces.

We shall now describe a few of the furnaces most generally in use. The first is the common air-furnace used chiefly for melting the metals. In this, the metal being placed in a crucible, is set in the heart of the fire, and the heat is communicated directly from the materials in combustion, of which charcoal or coke is the most powerful. The draft is produced by a chimney of proper capacity and height, and the heat generated is retained by a building of brick. The most perfect form of air-furnace of this description would be to have the chimney ascending right above the fire-grate, and to be nearly of the same capacity. In that case, the draft would operate with the most powerful effect. But in practice it is found more convenient to have the use of the space immediately above the fire-place for getting in and out the crucibles and the metal. The chimney is therefore set to a side, and the draft directed into it by a sloping vent, or even by a level flue, the height of the chimney making up for any deficiency in the direct course of the heated air. Plate CCLXIV. fig. 1, shows a furnace of this description, being a section and side elevation. A shows the fire-place or body of the furnace, with a smelting-pot or crucible on its stand. The stand is often omitted, but is useful in raising the crucible above the grate, so as to allow the bottom of it to receive the full heat of the fire. B is the sloping flue, terminating in the chimney C, and D is the cover or door for closing the opening when the crucible is set. The angle E at the top of the inclined vent serves for setting a crucible to heat when necessary. *a* is the grate, and F the ash-pit opening through the outer wall, or into a cellar below, which serves to prevent the cold air rushing in from injuring the workmen. *d* is the damper. Fig. 2 is a plan of the same furnace, showing the furnace-bars, &c.

Common air-furnace.

Fig. 3 is a section of another air-furnace, with a horizontal flue above the fire-place. Fig. 4 is a section of a brass-founder's melting-furnace, which is found to answer the purpose extremely well. The body of the furnace is circular, composed of three courses of bricks formed to the arch, as shown in the plan, fig. 5. At the top and bottom, and at the two intermediate joints of the bricks, the whole is bound with hoops like a barrel, forming a very strong and durable construction. The flue is horizontal, and of small capacity compared with the fire-place. Above all there is an iron plate, with a flanch in front, holding the brick-work together, and an iron cover, *a*, shutting the opening. A is the ash-pit; B the pavement on the floor of the workshop.

Reverberatory furnaces.

The next sort of air-furnace is what is termed the reverberatory furnace. In this the metal is acted on, not by the heat generated among the combustible materials in the heart of the fire, but by the action of the flame and the heated air striking against it as it ascends up the chimney. The fuel best suited for this furnace, therefore, is coal, not coke; and for the purpose of directing the current, the space above the fire-place is arched over, and a horizontal or slightly descending flue is extended from this space to about three or four times the length of the fire-place, until it terminates in the bottom of the chimney. In this flue the metal is placed, and the flame and heated air striking against the top of the arch above the fire-place, is from thence reflected with full force against the metal, and from this sort of reverberation which takes place the furnace takes its name. From this action, and from the flame heating the interior of the chimney, the effect of this furnace is very powerful; and it is most extensively used in the iron manufacture.

At Pl. CCLXIV. figs. 6, 7, and 8, are represented a plan and sections of one of these reverberatory furnaces. A is the fire-place with the arch above; B the descending flue; C the chimney; *d* the damper; E the ash-pit; F is an opening for introducing the metal or other substance to be acted on, which is laid on the inclined hearth at B, where the flame, reverberating from the top of the arch, strikes with full force. If the substance is intended to be melted, it runs down, and can be taken out at the opening G.

At fig. 9 is a view of another reverberatory furnace, contrived by Dr Black. The hearth or bottom of the flue B here is horizontal. Immediately above the fire-place there is an arched cover, H, of iron, from the top of which an arch of brick-work is extended all the way to the chimney, in which the flame reverberates down upon the hearth. There is only one opening, F, for the introduction of the metal. This furnace may be used with advantage for roasting various substances, such as the ores of metals, for the purpose of expelling their volatile matter. It may also be employed for the cupellation of metals, the door, F, being a little opened for admitting atmospheric air.

Furnace by Mushet.

A furnace of great power was constructed and employed by Mr Mushet, in his numerous and valuable experiments on iron and steel, and was found very convenient for such operations. It is represented at Plate CCLXV. figs. 1, 2. 3. Fig. 1 is the section of an assay or melting and annealing furnace, and also a small reverberatory furnace for fusing in very high heats with the flame of pit-coal.

The assay-furnace is cased in cast iron, with a flanch projecting inward the breadth of a brick, and about half an inch more, which serves instead of bearers for the bars (see fig. 2 at D). Upon this flanch the brick-work is reared. It ought to be of good fire-bricks on the bed. The furnace is nine inches square; total height twenty-seven inches. From the top of the flanch to the bottom of the flue the interval is eighteen inches; the flue is four inches high; the height above is five inches; flue seven inches long, and keeps opening into the chimney, as may be seen at fig. 3 at E. If the chimney is under twenty-five feet in height, a larger flue is requisite; and if beyond thirty-five feet, a smaller flue will throw the heat more regularly through the furnace. In general, however, more harm ensues from too small than too large a flue. G is the floor-line, and also represents the edge of a grate which covers the ash-pit, which is better seen on the ground-plan, fig. 3, and in fig. 2 at H. This grate lies nine inches from the bars, having an open space for the admission of air. It projects twenty-four inches outwards, and serves the operator to stand upon.

I I, in figs. 1 and 2, is the ash-pit. In fig. 3, which is a ground-plan of the chimney and furnaces, C is the annealing or cementing furnace, in which the crucibles are annealed or baked to a bright red heat, and from thence introduced, along with the matter to be operated upon, into the assay-furnace. It also serves instead of a cementing furnace, being easily made to produce a heat of 100° of Wedgewood. It may be made of any size, from nine to fourteen inches square; a nine-inch chimney being sufficiently wide to the extent of an eighteen-inch furnace.

The chimney to each furnace is carried up five feet perpendicular; they then gradually incline to the centre opening, which they enter about twelve feet above the flues. L, L, L are dampers. From the grates of this assay-furnace to the top of the chimney the interval is thirty-three feet.

This furnace has melted 400 grains of malleable iron in ten minutes, and half a pound from lumps in forty minutes. If the materials to be operated upon are prepared with judgment, any experiment to the extent of half a pound of matter may be performed in half an hour, and less quantities in much less time. When approaching to its highest heat, a Stourbridge clay crucible (which drops in 168° of Wedgewood) will disappear in fifteen minutes from the time that it is put in. The first five bring it to 140° of Wedgewood, at which cast iron boils. Steel boils in it at 160°, and malleable iron boils in it at 170° to 172° of Wedgewood. It is probable, however, that the advantages of this furnace do not result from the height of the chimney (which is not so great), or from the size of its opening. More, it is likely, depends upon the flue, the opening of the grate bars, the size of the fuel, and particularly the feeding of the fire.

Muffle furnaces.

In many cases it is desirable to heat the articles of manufacture without exposing them to the smoke or dust arising from the fire or flame. This gives rise to a variety of furnaces variously adapted to the purpose; a kitchen oven is a furnace of this description; also the brass-founder's hot-plate or lacquering furnace; the furnaces used by enamellers; and all the different kinds known by the name of muffle-furnaces, in which a close vessel or cavity is formed above the fire-place, or in the draft of heated air from it, with a door opening externally, and by this the articles to be heated are introduced. Plate CCLXV. fig. 4, represents a very convenient lacquering furnace or hot-plate for brass-founders. It stands at some distance from the wall of the apartment. The fire-place is immediately under the plate, and the flue carried horizontally into the chimney. Above the plate there is a square cover or box of tin plate, open below, which can be let down over the plate, and encloses the articles as in an oven.

Figs. 5 and 6 represent a convenient furnace for enamellers. It is merely a common air-furnace, similar to those already described, with a close vessel of earthenware placed over the fire-place, the latter being swelled out to allow the heated air to ascend on each side of the vessel. A is the fire-place; B the ash-pit; *a* the grate; C the vessel with its door; D the chimney; and *d* the damper; the other parts to be understood. This furnace may also be used for assaying metals by cupellation.

Figs. 7, 8, and 9, represent a muffle-furnace for producing very intense degrees of heat, and which was employed by Pott, and afterwards by D'Arcet, in their experiments on earths and stones exposed to a continued and violent heat. The fire-place or body of the furnace, B B, is in the form of an oblong coffer, swelling out in the middle. A shows the hole for the muffle; and the dome or upper part of the furnace is shown in D D, with a large door C, for introducing the fuel; *g* is the grate, *s* the ash-pit; and the other parts will be understood.

For an account of the glass-house furnaces, and those in the potteries and other manufactories, we must refer to the respective articles in this work.

Steam boiler furnace.

In regard to furnaces for steam-boilers, the object of these, as already mentioned, is to produce rapidly a large quantity of heat for the generation of the steam. For this purpose the fire-place and grate are of great extent, and the flame and heated air, after striking the bottom of the boiler, is conveyed in flues along the bottom, and then round and round the sides, so as to deliver the whole of the heat, or as much of it as possible, to the water, before it ascends into the chimney. Figs. 8, 9, 10, Plate CCLXVI. represent a furnace and boiler of this description. A is the fire-place; B, B, the grate bars; C, C, the boiler; D, D, D, the flues running under and around the boiler, and terminating in the chimney, E. For a more particular account, we must refer to the article STEAM-ENGINE.

In all these furnaces, and particularly those for steam-engines, a very important object has often been attempted, namely, a consumption of the immense volumes of smoke occasioned by the large fires which must be kept up for their use. For an account of these, see SMOKE and STEAM-ENGINE.

Figs. 11, 12, 13, and 14, represent the forms of fire-tongs found useful in the operations connected with furnaces.

Chemical furnaces.

Furnaces are of very extensive use in the numerous processes of chemistry, and are variously constructed, according to the notion of the chemist, the uses required, or the means within his reach. They may be divided into three kinds; crucible-furnaces, wind-furnaces, and blast-furnaces. The first are used with charcoal, or, in the larger ones, with charcoal mixed with coke. The draft for the supply of air is obtained from the mere height of the crucible, or by the addition of a funnel pipe. In the wind-furnaces, the draft is obtained by connecting them with the chimney of the laboratory, and therefore more powerful, and better adapted for various uses. In the blast-furnace, again, the air is supplied by bellows; and furnaces of this kind are capable of producing the most intense degree of heat required. The crucible-furnaces are thus described by Professor Faraday, in his well-known work on Chemical Manipulation.

An exceedingly useful furnace, either in a large or small laboratory, may be made out of a black-lead or earthen crucible. The proper crucibles for this purpose are known by the name of *blue pots*, and may be had of almost every size less than the height of twenty-two inches, and of twelve or fourteen inches diameter in the top. They are made of clay and plumbago mixed, and are easily cut by a saw, rasp, or file. The price of one which will make a very good furnace for small operations is about six shillings.

One of these vessels, of the height of twelve inches, and seven inches in width at the top within (Plate CCLXVI. fig 1), will make a very useful furnace for the igniting of a small crucible, heating a tube, or distilling with large glass retorts at moderate temperatures, or with smaller glass or earthen retorts at higher temperatures. It is first, in the course of preparation, necessary to have certain round holes pierced in it. These are easily made; a gimlet, bradawl, or other small instrument, is to be used to penetrate the sides; and the small apertures thus produced are to be enlarged with a rat's-tail and round rasp, and ultimately finished with a half-round rasp, which will make them of the size required. Four of these holes are to be placed at equal distances from each other, and about two inches from the bottom of the pot. They may be one and a fourth or one and a half inch in diameter. A second ring of holes, five or six in number, is to be made half way between the top and bottom of the pot, and a third row of five or six within two inches of the top. These holes should be rather smaller than the four lower ones.

The pot should now be bound round with iron or copper wire, to hold it together when it cracks, and a handle made to it of iron wire.

A small round grate of cast iron is only wanting to render this furnace complete for many operations; and several of these grates of different sizes should be ready at hand to drop in, and fit at different heights, as may be required. The part below the grate then forms the ash-pit, and the part above forms the body of the furnace. For the purpose of regulating the fire, if this requires to be diminished, the air-holes can be closed with stoppers made of soft brick or old blue pots; and, to increase the temperature, the body of the furnace itself may be enlarged by setting on the top of it a portion of an old pot, as in fig. 2, cut off so as to form a ring, several of which may be added as occasion requires; and they increase considerably the draft as well as the capacity of the furnace. Another simple method of increasing the power of these furnaces is to set on the top a piece of straight funnel pipe, as at fig. 3, two feet long, four inches diameter, opening out below like a funnel, till it is about eight inches diameter, with a wooden handle for the convenience of taking off or putting on. These simple furnaces are very powerful, and are capable, without difficulty, of raising a crucible two and a half inches in diameter to a white heat. In fact, all the ignitings and heatings which belong to the analysis of siliceous and other minerals have long been made in furnaces of this kind at the Royal Institution.

If the funnel-pipe in one of these crucible furnaces be connected with any chimney or flue in the laboratory, which is easily done by kneeing the pipe at the top, and having two or three short pieces to fit in for adjusting it to different lengths, as at fig. 4, its power is greatly increased, and in fact it becomes a wind furnace. The funnel termination at the bottom should be lined with fire-clay, and have an opening for the introduction of fuel, to be closed by a stopper when the fire is in order; or a still better arrangement is to continue the furnace upwards by a deep ring with the feeding apertures in it, as at fig. 5.

On the same principle with the crucible-furnace is a small portable furnace contrived by Mr Knight, and represented at Plate CCLXVII. fig. 1, and consisting of a cylinder of sheet-iron lined with an earthy composition. A B is the fire-place; B C the ash-pit, closed on all sides excepting at the register door, D, where air is admitted; E is an opening for fuel; F a recess for the neck of a retort. Fig. 2 is a funnel top for the furnace, with a pipe above extending by other lengths into the chimney. Fig. 3 is a sand-bath, which can be used in place of the dome, with a pipe rising up from it.

Dr Black's portable furnace.

On the same principle is the well-known portable furnace of Dr Black, represented at fig. 4, Plate CCLXVII, which is the most complete of the kind which has yet been contrived. It is made of sheet iron, formed into an elliptic shape for the purpose of getting a chimney separate from the body of the fire-place, and is carefully lined with clay well tempered. A B is the fire-place; B C the ash-pit; E a sliding door for the admission of fuel; D another door for the same purpose, and also for the introduction of a muffle. Fig. 5 is a cover, and fig. 6 a sand-bath. F is the chimney, which is lengthened by pipes, and connected with the chimney of the house.

On the same general principle of the wind-furnace is the general laboratory or table-furnace, which, being of considerable magnitude, is fixed in the laboratory, and forms one of the most important and useful pieces of apparatus which the chemist employs. From the extreme facility which, if conveniently arranged, it gives to every operation, its use is partly domestic, partly chemical;

for it has to warm and air the place, occasionally to heat water, as well as to supply the means of raising a crucible to ignition, or of affording a high temperature to flasks through the agency of a sand-bath.

These objects are best obtained by those furnaces which are built with a table top. The fire-place itself is constructed of brick-work with iron front and fittings; and the flue being carried horizontally for three or four feet, is afterwards carried off to and connected with the main flue existing in the wall. The fire-place and horizontal flue are covered with a large plate of cast iron, of from two to three feet in width. This is formed in the middle, over the heated part, into sand-baths; a round moveable one over the fire itself, and a long fixed one over the flue. The sand-baths supply every gradation of heat, from dull redness, if required, down to a temperature of 100° or lower; whilst on each side of them exists a level surface, which answers every purpose of an ordinary table, and supplies extraordinary facilities to experiments going on in the sand-bath or furnace. Nor are these advantages gained by any serious sacrifice of heating power in the furnace itself; for it is easy so to construct it as to make its ordinary combustion not more rapid than that of a common fire, and yet, by closing the fire-door and opening the ash-pit, to obtain a heat that will readily melt gold, silver, or cast iron.

A furnace like this is best placed in the middle, or towards one end of the laboratory, independent of the wall; for then it most effectually warms the air of the place, and there is working room all round it. The flue may then either descend and be carried off for a short distance under ground, or it may be connected by a funnel pipe with the upright draught chimney. But if more convenient, either as occupying less of the room of a small laboratory, or for other reasons, it may be placed with advantage against one side; and where the laboratory is made out of a room previously built, the best situation is generally against the fire-place, and the flue of the furnace is then easily connected with the chimney previously existing. When a furnace of this kind stands against the wall, it is frequently advantageous to construct a wooden hood over the sand-bath, to receive the fumes evolved during the digestions and solutions made upon it, and conduct them away to the chimney.

Being in constant requisition as a table, a furnace of this kind should be about thirty-four or thirty-five inches in height; its other dimensions, and even its form, must depend upon the space that can be allotted for it; and the following is a more particular description of the one in the laboratory of the Royal Institution, constructed under the direction of Mr Brande. It is represented at fig. 7, Pl. CCLXVII., and in section at fig. 8 through the line AB. It has the brick-work fifty-two inches in length and thirty-eight in width; the iron plate, including sand-bath, being fifty-seven inches by forty-two. Others have been constructed, the plates of which are only forty inches by twenty-seven. The principal part of this furnace is necessarily of brick-work, only the top plate, with the backs and the front, being of iron. The front is a curved iron plate, having two apertures closed by iron doors, one belonging to the fire-place, and the other to the ash-pit. It is thirty-four inches high and fourteen inches wide. The ash-hole door moves over the flooring beneath; the bottom of the fire-place door is twenty-two inches from the ground, and the door itself is eight and a half inches by seven. This front is guarded within, at the part which encloses the fire, by a strong cast-iron plate, having an opening through it, corresponding to the door of the fire-place. It has clamps attached to it, which, when the furnace is built up, are enclosed in the brick-work. In the setting or building of the furnace, two lateral brick walls are raised on each side the front plate, and a back wall at such a distance from it as to leave space for the ash-hole and fire-place. These walls are lined with Welsh lumps where they form the fire-chamber. Two iron bars are inserted in the course of the work, to support the loose grate bars in the usual manner, the grate being raised nineteen inches from the ground. The side walls are continued until of the height of the front, and are carried backward from the front until in two parallel lines, so as to afford support for the iron plate which is to cover the whole. The back wall of the fire-place is not raised so high as the side walls by six inches and a half, the interval which is left between it and the bottom of the sand-bath being the commencement of the flue or throat of the furnace. In this way the fire-place, which is fourteen inches from back to front, and nine inches wide, is formed, and also the two sides of the portion of the horizontal flue which belongs to the furnace, and is intended to heat the larger sand-bath. The bottom of this part of the flue may be made of brick-work, resting upon bearers laid on the two side walls; or it may be a plate of cast iron, resting upon a ledge of the brick-work on each side, and on the top of the wall which forms the back of the fire-place. When such an arrangement is adopted, the plate must not be built into the brick-work, but suffered to lie on the ledges, which are to be made flat and true for the purpose; for, if attached to the walls, it will by alternate expansion and contraction disturb and throw them down. The ends of the side walls, forming as it were the back of the furnace, may be finished either by being carried to the wall against which the furnace is built, or enclosed by a piece of connecting brick-work, to make the whole square and complete; or a warm air cupboard may be built in the cavity beneath the flue, and the door made to occupy the opening between the walls. Occasionally the flue may be required to descend there, and pass some distance under ground. These joints should be arranged and prepared before the plate constituting the top of the furnace is put on to the brick-work, so that when the plate with its sand-baths are in their places, they may complete the portion of the horizontal flue by forming its upper side.

The size of this plate is the first thing to be considered, and having been determined upon from a consideration of the situation to be occupied by the furnace, and the places of the sand-bath also having been arranged, the brick-work must then be carried up, so as to correspond with these determinations, and with the plate itself, which in the mean time is to be cast. The sand-bath and the plate are to be formed in separate pieces. The bath over the fire is best of a circular form, and of such diameter, that when lifted out of its place, it may leave an aperture in the plate equal in width to the upper part of the fire-place beneath; so that a still or cast-iron pot, or a set of rings, may be put into its place over the fire. The other sand-bath must be of such a form as to correspond with the shape and size of the flue beneath. These vessels are to be of cast iron, about three tenths of an inch thick; their depth is to be two and a half inches or three inches, and they are to be cast with flanches, so as to act in the corresponding depressions of the plate, that the level of the junctions may be uniform. This will be understood from the accompanying sections of the furnace, see fig. 8, given through the line A B of the view. It is essential that these sand-baths be of such dimensions as to fit very loosely into the apertures in the plate, a space of the eighth of an inch or more being left all round them when cold, as shown in the section, otherwise, when heated, they will expand so much as entirely to fill the apertures, and even break the plate. The plate itself should be half an inch thick.

When the plate and its sand-baths are prepared, and the brick-work is ready, the furnace is finished by laying the plate on the brick-work, with a bed of mortar intervening. If the walls are thin, or any peculiarity in their arrangement occasions weakness, they should be bound together, within by cranks built into the work, and without by iron bands. The alternate changes of temperature from high to low and low to high, to which the furnace is constantly subject, renders it liable to mechanical injury, in a degree much surpassing that which would occur to a similar piece of brick-work always retained nearly at one temperature.

The sand-baths which have been described are liable to an accident that has induced some chemists to substitute others made of wrought iron. When first heated, they frequently, indeed generally, crack from the unequal expansion in different parts; and the plate itself is subject to the same accident. If constructed of wrought iron, this effect is not produced; but then, after being used some time, they warp into very irregular and inconvenient forms, especially if made of thin metal; whilst, on the contrary, those of cast iron, when cracked, are rarely injured for the uses to which they are to be applied, and seldom suffer further change.

These baths should have washed sea-sand put into them. It is heavy, and occasions no dust when moved; whilst, on the contrary, unwashed and bad sand contains much dirt, and occasions great injury in experimenting. A piece of straightened iron hoop, about twelve inches in length, should lie on the furnace, as an accompaniment to the baths, being a sort of coarse spatula with which to move away the sand.

The circular sand-bath is frequently replaced by a set of concentric rings, or a cast-iron pot, see fig. 9. The rings are convenient for leaving an aperture over the fire of larger dimension, according as a larger or smaller number are used at once; and being levelled at the edges, fit accurately into each other, without any risk of becoming fixed by expansion. The external one, like the sand-baths, should be made smaller than the depression in the furnace plate in which it rests. The iron pots are of various sizes, and adapted to the furnace by means of the rings. A red heat is easily obtained in them for sublimation.

In cases where a greater heat is required than can be obtained by the table furnace, or any of the portable furnaces already described, other wind furnaces may be constructed by proportioning the size of the chimney to that of the furnace, much surpassing these in the intensity of heat produced; but in these and other cases it is better to have recourse at once to the *blast-furnace*, the operations being more manageable and expeditious, the heat greater, and the consumption of fuel smaller. By a little contrivance, one of the crucible furnaces before described is easily converted into a blast-furnace, and a very high temperature for small vessels obtained. This is done by closing the holes of the ash-pit with the stoppers, except one, and applying to that the nozzle of a pair of double-hand bellows, from which a draft is to be urged, and the furnace aided at the same time by the piece of upright funnel pipe; the fuel is to be charcoal.

A very powerful blast-furnace on a small scale has been contrived by Mr Aikin; it is represented at fig. 10, and is all made out of broken pots. The lower piece, A, is the bottom of one of these pots, cut off so low as only to leave a cavity of about an inch deep, and ground smooth above and below. The outside diameter over the top is five and a half inches. The middle piece or fire-place, B, is a larger portion of a similar pot, with a cavity about six inches deep, and measuring seven and a half inches over the top, outside diameter, and perforated with six blast-holes at the bottom. These two pots are all that are essentially necessary to the furnace for most operations; but when it is wished to heap up fuel above the top of a crucible contained, and especially to protect the eyes from the intolerable glare of the fire when in full height, an upper pot, C, is added, of the same dimensions as the middle one, and with a large opening in the side, cut to allow the exit of the smoke and flame. It has also an iron stem with a wooden handle (an old chisel answers the purpose very well), for removing it occasionally. The bellows, which are double, D, are firmly fixed by a little contrivance, which will take off and on, to a heavy stool, as represented in the plate; and their handle should be lengthened so as to make them work easier to the hand. To increase their force on particular occasions, a plate of lead may be firmly tied on the wood of the upper flap. The nozzle is received into a hole in the pot, A, which conducts the blast into its cavity. Hence the air passes into the fire-place, through six holes of the size of a large gimlet, drilled at equal distances through the bottom of the pot, and all converging in an inward direction, so that if prolonged, they would meet about the centre of the upper part of the fire. No luting is necessary in using this furnace, so that it may be set up and taken down immediately. Coke, or common cinders taken from the fire when the coal ceases to blaze, sifted from the dust, and broken into very small pieces, form the best fuel for higher heats. The fire may be kindled at first by a few lighted cinders and a small quantity of wood charcoal. The heat which this little furnace will afford is so intense, that its power was at first discovered accidentally by the fusion of a thick piece of cast iron. The utmost heat procured by it was 167° of Wedgewood's pyrometer, when a Hessian crucible was actually sinking down in a state of porcelaneous fusion. A steady heat of 155° or 160° may be depended on if the fire be properly managed and the bellows worked with vigour.

The following is a description of a most excellent blast-furnace, which has been in use for some years in the laboratory of the Royal Institution, and is represented at fig. 11. It is sufficiently powerful to melt pure iron in a crucible in twelve or fifteen minutes, the fire having been previously lighted. It will effect the fusion of rhodium; and even pieces of pure platinum have sunk together into one button in a crucible subjected to its heat. All kinds of crucibles, including the Cornish and the Hessian, soften, fuse, and become frothy in it; and it is the want of vessels which has hitherto put a limit to its applications. The exterior consists of a blue pot, eighteen inches in height and thirteen inches in external diameter at the top. A small blue pot of seven and a half inches internal diameter at the top had the lower part cut off so as to leave an aperture of five inches. This, when put into the larger pot, rested upon its lower external edge, the tops of the two being level. The interval between them, which gradually increased from the lower to the upper part, was filled with pulverized glass-blowers' pots, to which enough of water had been added to moisten the powder, which was pressed down by sticks, so as to make the whole a compact mass. A round grate was then dropped into the furnace, of such a size that it rested about an inch above the lower edge of the inner pot: the space beneath it, therefore, constituted the air chamber, and the part above the body of the furnace. The former was seven and a half inches from the grate to the bottom, and the latter seven and a half inches from the grate to the top. Finally, a horizontal hole, conical in form, and one and a half inch in diameter on the exterior, was cut through the outer pot, forming an opening into the air-chamber at the lower part, its use being to receive the nozzle of the bellows by which the blast was to be thrown in. The furnace being thus completed, the next object was to dry it gradually, that when used it might not be blown to pieces by confined aqueous vapour; a charcoal fire was therefore made in it, and left to burn some hours, being supplied with air only by the draught through the hole into the chamber beneath. When vapours ceased to be formed, the furnace was considered to be ready for use.

This furnace has always been used with a pair of large double bellows mounted in an iron frame, the furnace being raised upon a stool, so as to bring the aperture of the air-chamber to a level with the nozzle of the bellows. The latter has generally been inserted in the aperture; for this and similar furnaces are of such depth compared to their width, that when charged with a crucible and fuel, there is so much resistance to the passage of the air, when urged by a blast competent to create and sustain a vivid combustion, that a part returns by the side of the nozzle, if the aperture be left open. The bellows spoken of is far larger than necessary for the furnace described, and is rarely worked to one third of its power; for otherwise the heat rises so high as to destroy the crucible, and the results are lost. It is, however, at all times advisable to have an abundant command of air.

The heat produced in this furnace is such as at every violent operation to cause the production of some slag from the melting of the inner surface of the furnace itself, where the combustion has been most vivid. The slag running down the interior, collects round the edge of the grate, and should be removed with a chisel and hammer, or with an iron rod, after each operation, that the grate may be clear and free of obstruction for the next process. When in the course of time the interior of the furnace is so far injured as to become thin and weak, it must be displaced, and the furnace restored to its original state by the introduction of a new inside, as before.

The fuel to be used in this furnace is coke. Its consumption is very small, considering the heat that is obtained in consequence of the short period of each operation. The superiority of the blast-furnace over the wind-furnace, in many operations for which high temperatures are required, depends upon the rapidity of its action. It is requisite to employ this furnace in the open air, or under a well-arranged vent; for an immense number of sparks, much flame, and a current of hot air, are projected during its operation, which might occasion serious mischief in a room, unless the ceiling were at a considerable height, or guarded by a metal screen.

The *fuel* to be used in furnaces is of three kinds, coal, coke, and charcoal. *Coal* is the ordinary fuel for the laboratory table furnace, or that intended to be in use every day, and to serve for fusions, roastings, and other operations, for which its temperature may be sufficient. It is very desirable that this coal should be good, and not of the kind which contains much sulphur, or an abundance of earthy matter; for the first interferes with various fusions and ignitions, and the latter renders the fire dirty and dusty, and, when the temperature is raised to a high point, causes an abundance of clinkers. On certain occasions to be hereafter distinguished, especially if the coal be sulphureous and bad, it may be necessary at times to use both coke and charcoal in the table-furnace. Coal should never be used in the blast-furnace; for, in consequence of its softening and swelling by heat, it aggregates, closes the small channels by which the air finds a passage through the fuel, and impedes the combustion.

Coke is in constant requisition. It varies in quality with the coal from which it is obtained. Such as is intended for the service of the blast-furnace should be free from sulphureous, earthy, and metallic matter. Of this kind is the Staffordshire coke, which may be obtained at various wharfs on the canals near London. It is frequently so little altered in appearance as to resemble the original coal. It burns completely away in a blast-furnace, leaving scarcely a trace of slag, so that after several successive portions have been introduced, no material quantity of refuse is produced upon the grate, nor any thing that will act seriously on the crucible as a flux.

On the contrary, if common gas-coke be used in this furnace, the oxide of iron and earthy matter which it contains is so abundant, that slag is soon produced, which flowing over the crucible, corrodes and destroys it.

The *charcoal* intended for laboratory use may be of the ordinary kind, and must not be either too large or too small. If large, the pieces should be broken down, or they will be unfit for use in the crucible furnaces, for which it is principally intended. Charcoal is a quick fuel; but burning with facility, a small quantity of it can be easily retained in a state of regular combustion; and hence, in cases where but little space intervenes between the substance to be heated and the side of the furnace, or when a small temporary fire is required in the air, it is very convenient. Where Staffordshire coke will burn, and, by means of a blast or a draught of air, will give sufficient intensity of heat, it is very superior to charcoal in duration. Occasionally a mixture of coke and charcoal is convenient, since it affords a combination possessing the qualities of permanency and freedom of combustion.

A charcoal box is almost as essential in a laboratory as one for coal, and should have its appointed place.

It must be remembered, that all operations with furnaces should be carried on in safe situations; care being taken that no danger be incurred by the ascent of sparks, flame, or hot air, by lateral vicinity to combustible bodies, or by standing on an unprotected wooden surface.

When small furnaces are placed upon tables, stools, or trays, a brick or a piece of sheet iron should be interposed, according to the mode by which the heat is likely to be communicated.

For further information on the subject of furnaces, see the articles already referred to, and others connected with particular arts where they are used. See also Lewis's *Philosophical Commerce of Arts;* Faraday's *Chemical Manipulation;* Parke's *Chemical Essays;* Aikin's *Dictionary of Chemistry;* Tredgold *on Warming and Ventilating Buildings;* Tredgold's *Account of the Steam-Engine;* Davies Gilbert, *Quarterly Journal of Science*, vol. xiii.; Watt's Patent Furnaces, *Repertory of Arts*, vol. iv. p. 226; Raley's Patent Furnaces, *Repertory of Arts*, vol. x. p. 155; Miche on Reverberatory Furnaces, in Rozier's *Journal*, vol. xxxii. p. 385; Howard's Improved Air Furnace, in Tilloch's *Philosophical Magazine*, vol. v. p. 190; Perceval's Chamber Lamp Furnace, *Repertory of Arts*, vol. iii. p. 29, and in the *Transactions of the Royal Irish Academy*, vol. iv., p. 91; Accum's Improved Universal Furnace of Dr Black, in his *System of Practical Chemistry*, vol. ii., p. 357, and in Nicholson's *Journal*, vol. vi., p. 273, 8vo. Curaudeu's new Evaporating Furnace is described in the *Annales de Chimie*, No. 149, an. xii.; and in Nicholson's *Journal*, vol. ix. For other descriptions of furnaces, see IRON-MAKING, &c. (G. B.)

FURNEAUX ISLANDS, a group of islands in Bass Strait, between Australia and Van Diemen's Land, consisting of four large and numerous smaller islands. Great Island, the principal, is about 40 miles in length by 10 in breadth; Cape Barren, Clarke's, and Preservation Islands, are the next in size. These islands are barren and unproductive, being sandy in the lower parts.

FURNES, a town of Belgium, province of W. Flanders.

26 miles W.S.W. of Bruges, on the canal from Bruges to Dunkirk, not far from the North Sea. It has a brisk trade in corn, cattle, butter, and cheese; and contains (1851) 4766 inhabitants.

FURRUCKABAD, a fortified town of Hindustan, province of Agra, and capital of the district of the same name. The town was built by a Patan colony about a hundred years ago, and is situated about a mile from the western bank of the Ganges. It contains a small citadel, and the palace of the nabob. The streets are wide, and the houses and open places are shaded with trees. It carries on an extensive trade with Cashmere and other parts of India, and derives considerable benefit from the extensive military cantonments of Futtehghur in its vicinity. Long. 79. 40., Lat. 27. 24.

The district of Furruckabad is situated for the most part in a country inclosed between the Ganges and the Jumna, and between the 27th and 28th degrees of north latitude. Area, 2122 square miles. Pop. 1,064,607; of which 936,747 are Hindus, and 127,860 Mohammedans. The latter are stated to be descendants of the Patans or Afghans, who early in the last century established themselves in the tract extending between Oude and the Punjaub. In 1749 the emperor of Delhi, marching to Furruckabad, confiscated the estates of the deceased ruler, and conferred them upon the vizier of Oude; from whom, however, they were again wrested by Ahmed Khan, brother of the former ruler. After a lapse of some years the territory appears to have reverted to the vizier of Oude, who in 1801 transferred it to the protection of the British. Upon assuming possession the East India Company effected an arrangement with the tributary nawaub, under which his claims were liquidated by an annual stipend, which is still enjoyed by his descendants. The district is represented as tranquil and prosperous. (E. T.)

FURSTENWALDE, a town in the Prussian province of Brandenburg, government of Frankfort, on the right bank of the Spree, and on the railway between Berlin and Frankfort, 28 miles E. of the former city. It has manufactures of linen and woollen goods, and about 5000 inhabitants. It was taken by the Swedes in 1631, and burned by the Imperialists in 1633.

FURTH, an important manufacturing town of Bavaria, circle of Middle Franconia, at the confluence of the Pegnitz with the Rednitz, 5 miles N.W. of Nurnberg, with which it is connected by railway. This town is chiefly indebted for its importance to the industry and perseverance of the Jews, who here enjoy privileges not accorded to them in other parts of the continent. At the beginning of the present century they composed nearly one-half of the whole population, and they now amount to about 2700. They have a college, a separate court of justice, several schools and synagogues, and two Hebrew printing establishments. The manufactures are various, including mirrors, jewellery, lacquered wares, chandeliers, spectacles, liqueurs, tobacco, leather, woollen and cotton goods, &c. A large annual fair is held here at Michaelmas, which lasts for fourteen days. In 1632 Gustavus Adolphus was defeated in the neighbourhood of this town, in attempting to carry the intrenchments of Wallenstein. Pop. (1849) 16,061.

FURTHCOMING, in *Scots Law*, is an action by which a person who has used an arrestment in the hands of his debtor's creditor may have the money or goods so arrested delivered up to him or sold in satisfaction of his claim.

FUSE, or FUZE, in *Artillery*, a small tube filled with a combustible composition, used for firing shells. This tube is cut to a length proportioned to the intended range of the shell, so that it may explode at the instant the shell touches the ground. The composition consists of nitre, sulphur, and mealed powder. A 13-inch fuze burns forty seconds. Naval service fuzes are made of gun-metal, calculated for certain ranges.

FUSEE (Lat. *fusus* a spindle), in *Clock-work*, a kind of grooved cone around which the chain or cord is wound. (See CLOCK AND WATCH WORK, vol. vii., p. 28.)

FUSELI, HENRY, an eminent painter and writer on art, was born at Zürich in Switzerland, 7th February 1741. His father was John Caspar Füssli, an artist of some note, and author of *Lives of the Helvetic Painters*. This parent destined his son for the church, and with this view sent him to the Caroline College of his native town, where he received an excellent classical education. One of his schoolmates there was Lavater, with whom he formed an intimate friendship. After taking orders in 1761, Fuseli was obliged to leave his country for a while in consequence of having aided Lavater to expose an unjust magistrate, whose family, however, was still powerful enough to make its vengeance felt. He first travelled through Germany, and then visited England, where he supported himself for some time by literary hack-work. At this time he had the good fortune to become acquainted with Sir Joshua Reynolds, to whom he showed his drawings. By Sir Joshua's advice he now devoted himself wholly to art. In 1770 he made an art-pilgrimage to Italy, where he remained till 1778, in which year he returned to England, taking Zürich on his way. He found a commission awaiting him from Alderman Boydell, who was then organizing his celebrated Shakspeare gallery. Fuseli painted a number of pieces for this patron, and about this time published an English edition of Lavater's work on physiognomy. He likewise gave Cowper some valuable assistance in preparing the translation of Homer. In 1788 Fuseli married, and soon after became an Associate of the Royal Academy. Two years later he was promoted to the full dignity of an Academician. In 1799 he exhibited a series of paintings from subjects furnished by the works of Milton, with a view to forming a Milton gallery, corresponding to Boydell's Shakspeare gallery. In that year he was appointed professor of painting to the Academy. Four years afterwards he was chosen keeper. In 1805 he brought out an edition of Pilkington's *Lives of the Painters*, which, however, did not add much to his reputation. Canova, when on his visit to England, was much taken with Fuseli's works, and on returning to Rome in 1817 caused him to be elected a member of the first class in the Academy of St Luke. Fuseli died at Putney Hill, 16th April 1825, at the advanced age of eighty-four, and was buried in the crypt of St Paul's Cathedral.

Though under any circumstances Fuseli would probably have made himself a great name in art, yet he enjoyed peculiar advantages in making his appearance at a time when English art was begining to recover from the degradation into which it had been gradually falling since the days of Rubens and Vandyke. Portrait-painting had been restored to its ancient dignity by Sir Joshua Reynolds: the great school of British landscape had been founded by Wilson and Gainsborough: but historical painting had nothing to show except a few specimens from the pencil of Reynolds, some hasty and superficial yet powerful and promising pieces by Mortimer, and the solemnly correct and tamely cold productions of West. The very qualities that were wanting in these men, Fuseli possessed in profusion. He had a daring invention, was original, fertile in resource, and ever aspiring after the highest forms of excellence. His mind was capable of grasping and realizing the loftiest conceptions, which, however, he often spoiled on the canvas by exaggerating the due proportions of the parts, and throwing his figures into attitudes of fantastic and over-strained contortion. In the treatment of his subjects, which he delighted to select from the region of the supernatural, he pitched everything upon an ideal scale, believing a certain amount of exaggeration necessary in the higher branches of historical painting. In this theory he was confirmed by the study of Michael

Angelo's works and the marble statues of the Monte Cavallo, which, when at Rome, he used often to contemplate in the evening, relieved against a murky sky or illuminated by lightning. But this idea was by him carried out to absurd extremes, not only in the forms, but also in the attitudes of his figures; and the violent and intemperate action which he often displays destroys the grand effect which many of his pieces would otherwise produce. A striking illustration of this occurs in his famous picture of "Hamlet breaking from his attendants to follow the Ghost." Hamlet, it has been said, looks as though he would burst his clothes with convulsive cramps in all his muscles. Even in pieces where calmness and simplicity are aimed at, the figures are sometimes twisted into monstrous convolutions, or twisted into the most abrupt and singular angles. This intemperance is the grand defect of nearly all Fuseli's compositions. On the other hand, however, his paintings are never either languid or cold. His figures are always full of life and earnestness, and seem to have an object in view which they follow with rigid intensity. Like Rubens he excelled in the art of setting his figures in motion. Though the lofty and terrible was his proper sphere, Fuseli had a fine perception of the ludicrous. The grotesque humour of his fairy scenes, especially those taken from the *Midsummer Night's Dream*, is in its way quite as remarkable as the poetic power of his more ambitious works. As a colourist Fuseli has but small claims to distinction. He scorned to set a palette as most artists do. He merely dashed his tints recklessly over it. Not unfrequently he used his paints in the form of a dry powder, which he rubbed up with his pencil either with oil, or with turpentine, or gold size, regardless of the quantity, and depending for accident on the general effect. This recklessness may perhaps be explained by the fact that he did not begin to paint in oil till he was twenty-five years of age. Despite these drawbacks, however, Fuseli possessed the elements of a great painter. He was an enthusiastic lover of his art, and had he enjoyed a better training, and adopted a more temperate habit of thinking, he might have taken rank with the masters of the sublime Italian school, which he so deeply admired. Fuseli's general powers of mind were great. He was a thorough master of French, Italian, English, and German, and could write in all these tongues with equal facility and vigour, though he preferred German as the vehicle of his thoughts. His writings contain perhaps the best art-criticism that English literature can show. Many interesting anecdotes of Fuseli, and his relations to contemporary artists, are given in his *Life* by John Knowles, who also edited his works in 3 vols. 8vo, London, 1831.

FUSIBLE Metal, an alloy of three parts of lead with two of tin and five of bismuth, which melts at 197° Fahr. Teaspoons made of this very fusible alloy often form part of a conjuror's apparatus.

FUSIL (Fr. from Lat. *fusus*, *fundo*), a light musket or firelock.

Fusil, in *Heraldry*, a bearing of a rhomboidal form, longer than the lozenge; so called from its shape, which resembles that of a *spindle*.

FUSILIERS, or Fusileers, a body of troops formerly armed with a fusil or light musket that might be slung over the shoulder. In former times the term was applied to infantry soldiers who bore fire-arms, as distinguished from pikemen and archers. The name is still retained in the British army, which has four regiments of fusiliers, viz., the 7th, 21st, 23d, and 87th, but their equipment does not differ from that of other regiments.

FUST (Ital. *fusto* a stalk or stem), in *Architecture*, the shaft of a column, or the part between the base and the capital.

FUST, John, a goldsmith of Mayence, in the middle of the fifteenth century, and a man not more distinguished for his riches than for his knowledge of the arts, shares with Guttemberg and Schœffer the glory of having invented printing. Guttemberg is generally considered as the first inventor of this art; and, according to some, Fust had only the merit (by no means a slight one) of supplying him with money; whilst others are of opinion that the goldsmith contributed both his funds and his industry towards the completion of the invention. But however this may be, a partnership was formed between them in 1450, and it appears that these associates practised successively three sorts of impressions: first, the *tabellary*, that is, in carved tablets or plates, like our engravings on wood; secondly, the *xylographic*, or in moveable characters of wood; and, lastly, the impression in characters cast in moulds or matrices, analogous to, if not identical with, the stereotype founding of the present day. There is reason to believe, however, that Fust, notwithstanding his acquirements, contributed but little of his own invention to the operations of the partnership contracted with Guttemberg; since the latter appears to have been the first who thought of applying to regular compositions the same mode which had been long practised at the foot of engravings for their explanation; and since Schœffer, in inventing the punch, completed the discovery, if indeed this ought not to be considered as the discovery itself. Fust, zealous in favour of all that regarded his art, was so much delighted with the invention of Schœffer that he gave the latter his daughter in marriage. The *Biblia Sacra Latina*, without date, in folio, and consisting of 637 leaves, is probably the first production of printing, and seems to have been executed between 1450 and 1455, during the partnership of Fust and Guttemberg; but some think that the impression was struck from the characters invented by Schœffer. In 1455 difficulties arose between Fust and Guttemberg, who, in consequence, separated on the 6th of November. But, in reimbursement of the sums he had advanced, Fust remained proprietor of the establishment, which he now carried on with Schœffer; and to this new partnership we are indebted for the Psalter, *Psalmorum Codex*, of 1457, the most ancient work printed with a date (reprinted in 1459 from the same characters, which also served for the re-impressions of 1490, 1502, and 1516); the *Durandi Rationale Divinorum Officiorum*, 1459; the *Constitutiones Clementis Quinti*, 1460; the celebrated *Biblia Latina* of 1462, the first Bible with a date; and the treatise *De Officiis* of Cicero. Fust and Schœffer exercised printing until 1466, when Fust went to Paris, and is thought to have died of the plague which then ravaged that city.

Fust, the goldsmith of Mayence, and the promoter of printing, has, however, been sometimes confounded with Faust the magician, whose name is associated with so many imaginary horrors. The latter, born about the commencement of the sixteenth century, was the son of a peasant of Weimar, or, as some say, of Kundling. He was educated by one of his uncles, who caused him to study theology; and, notwithstanding a strong propensity to debauchery, he completed his course, and obtained the degree of doctor. But having become disgusted with this pursuit, he cultivated medicine and astrology, and in particular applied himself to the study of magic. From this time his historians are only insipid romancers, who relate a thousand absurdities respecting him. They make him conjure up the devil himself; employ an infernal spirit named Mephistopheles, with whom he made a paction for twenty-four years; descend into hell, and travel through the celestial spheres, as well as through all the countries of this sublunary world, everywhere surrounding himself with illusions, playing mischievous pranks, having commerce with Helen the wife of Menelaus, causing Alexander the Great to appear to Charles V., and, lastly, to terminate the whole in a suitable manner, having his neck twisted by the devil at the expiration of his compact with that personage. Much more infallible than even the illustrious Mathew Laensberg, Faust yearly circulated in Germany almanacks, which, being dictated by Beelzebub, could scarcely fail to have great success. Such are the marvellous feats related by George Rodolph Widman, who published at Frankfort, in 1587, 8vo, the history of John Faust, and Christopher Wagner, his valet. This history, or rather this romance, reprinted at Berlin in 1590, and at Frankfort in 1591, re-appeared at Hamburg, 1598–1600, in three volumes 4to, with historical, physical, and moral commentaries, filled with ignorance and folly; and it was also translated into English, Dutch, and French. Adelung has honoured Faust with an article at the end of his *History of Human Follies*, where will also be found the *Conjurationes Fausti*, but without the mysterious figures which ought to have accompanied them, and by means of which the reader might easily perform the same prodigies as the magician of Weimar. The Germans, who are fond of the marvellous, have often brought upon the scene the descent of Dr Faust to the infernal regions. Of this number are the celebrated Goethe, Klinger, and J. F. Schink; whilst Trithemus, the most ancient of all, J. Manlius, Schaller, Wier, Del Rio, and even Camerarius and Gesner, have discoursed of Faust and his enchantments, of which Peter-Frederick Arpe has favoured the world with a catalogue. But, notwithstanding the testimony of these writers, many others (perhaps with reason) regard this personage as entirely imaginary, and consider his history as a romance intended merely for amusement. Some, indeed, including Conrad Durius, are disposed to think that the legend of Faust is a satire fabricated by the monks against John Fust, one of the inventors of printing, who had incurred the resentment of these cenobites by being concerned in a discovery which superseded their useful functions as copyists of manuscripts; but others have shown that this opinion is not well founded. Upon the subject of Faust, the curious reader may consult Zeltner's *Schediasma de Fausto præstigiatore ex Joanne Fausto a quibusdam ficto;* Struvius in his *Introductio in not. Rei Litterar.*, and in his *Bibl. Antiq.;* and Neumann's *Dissertatio Historica de Fausto præstigiatore*, Wittemberg, 1683, 1693, 1711, in 4to. (J. B—E.)

FUSTIAN, in *Commerce*, a kind of cotton stuff, twilled or ribbed on one side.

Fustian, in *Criticism*, an inflated or bombastical style of writing or speaking.

FUSTIC, the wood of *Morus tinctoria*, used as a yellow dye. See Dyeing, vol. viii., p. 295, &c.

FUSTUARIUM, in *Roman Antiquity*, a method of inflicting capital punishment upon any soldier guilty of theft, desertion, or similar crimes. When the accused had been found guilty, he was made to stand in front of the legion to which he belonged. One of the tribunes then touched him lightly with a stick, and all the soldiers immediately rushed upon the criminal and beat him to death with clubs (fustes). If he escaped—as he was allowed to do if he could, but which was rarely if ever possible—he was forbidden ever to return to his native country, and his nearest relatives were not allowed to receive him into their houses. This method of capital punishment continued to be enforced even under the empire. The "animadversio fustium" differed from the "fustuarium." It was a kind of corporal chastisement inflicted upon freedmen of the lower orders, and was less severe than the flogging with *flagella*, which was confined to slaves.

FUTTEHGHUR, a town of Hindustan, British district of Furruckabad, on the western bank of the Ganges, three miles from the city of Furruckabad. In the vicinity is the British military cantonment. The station is held in high estimation by the military, being healthful and abundantly supplied with provisions. Holkar, the Mahratta chief, appeared before the place in 1804, and was preparing for the assault of the fort, when the arrival of the British army under Lord Lake drove him into precipitate flight. Lat. 27. 22.; Long. 79. 41. (E. T.)

FUTTEHPOOR, a town of Hindustan, province of Agra, 24 miles from the town of that name. It was enlarged and embellished by Akbar, in honour of a celebrated saint, to whose prayers the Emperor Akbar thought that he was indebted for a son. The tomb of this saint is situated on a mountain near the town, and is still the resort of Mohammedan pilgrims. The place is inclosed with a high stone wall of great extent; but the space within appears never to have contained buildings. Futtehpoor presents at present a wide extent of ruined houses and mosques, interspersed with fields of rice and mustard, with a few tamarind trees; and nearly in the middle, on a high ridge of rocky hills, is a range of numerous palaces, serais, and other public buildings, in the best style of Mussulman architecture, with a noble mosque in good repair. Long 77. 44. E.; Lat. 27. 5. N.

FUTTEHPORE, in Hindustan, a town in the British district of the same name, on the route from Allahabad to Cawnpore. Lat. 25. 57.; Long. 80. 54. It is described as a large and thriving town, with a population (1853) of 20,864. The district, of which it is the chief place, is bounded N.E. by the Ganges, separating it from the kingdom of Oude, E. by Allahabad, S.W. by the Jumna, and N.W. by Cawnpore. Area, 1583 square miles. Pop. 679,787; of which 612,437 are Hindus, and 67,350 Mohammedans The district is described by a recent traveller (Captain Leopold Von Orlich) as a boundless garden, in which sugar-cane, indigo, cotton, poppy, wheat, barley, and many vegetables flourish. In 1801 the Vizier of Oude transferred the district to the East India Company in commutation of the subsidy which he had stipulated to pay for the defence of his territory. (E. T.)

FUTTOCKS, in a ship, the timbers raised over the keel, or the encompassing timbers which form her breadth and capacity. *Futtock plates* are iron plates crossing the sides of the top-rim perpendicularly. The dead eyes of the top-mast rigging are fitted to their upper ends, and the futtock shrouds to their lower ends.—(Dana's *Seaman's Manual.*)

FUTWA, a town of Hindustan, in the British district of Patna, under the jurisdiction of the Lieut.-Governor of Bengal, situated at the confluence of the Pompon with the Ganges, nine miles south of Patna, over which is a good bridge of brick. In 1574, when the Afghan army was retreating before Akbar, the bridge broke down, and the troops were mostly either drowned or put to the sword. It is noted for the manufacture of tablecloths and sheeting. Long. 85. 22. E.; Lat. 25. 30. N. (E. T.)

FYNE, Loch, an arm of the sea in Argyleshire, about 40 miles in length, and 5 in average breadth. See Argyleshire.

FYZABAD, a town of Hindustan, province of Oude, on the S. bank of the river Dewah or Gogra. This city is said to have owed its origin to the Nabob Sufder Jung, who in 1740 erected some temporary houses in an extensive garden at this place; and his son, Shuja Addowleh, after the battle of Buxar, made this his residence, and gave orders for erecting a palace and other public buildings. The city soon rose into importance; but Shuja having subsequently transferred his residence to Lucknow, many of the houses, which had been hastily built, fell into decay. It is still, however, a considerable city, and contains a numerous population, chiefly of the lower classes, the merchants and bankers having removed to Lucknow along with the court. Fyzabad was the residence of the two celebrated Begums, the mother and grandmother of the last-mentioned nabob. Adjoining is the ancient city of Oude or Ayodha, the capital of the great Ram, who conquered Ceylon. The city contains some handsome tombs belonging to the reigning family; and its gardens are celebrated for grapes and other fruits. It is 90 miles E. of Lucknow. Long. 82. 10. E.; Lat. 26. 46. N.

G.

G, the seventh letter and fifth consonant of our alphabet, and the third in the Hebrew, Phœnician, Chaldee, Syriac, Samaritan, Arabic, and Greek. The Hebrews call it *ghimel* or *gimel*, a camel, from its fancied resemblance to the hump on the back of that animal; and it bears the same appellation in the Samaritan, Phœnician, and Chaldee: in the Syriac it is called *gamel*, in Arabic *jim*, and in Greek *gamma*. The Greek gamma, Γ, is manifestly the ghimel, ג, of the Hebrews or Samaritans turned in the opposite direction. The early Latins used C for the Greek *gamma*, and hence C came to hold the third place in the alphabet. Diomedes (lib. ii., cap. *De Litera*) calls G a new letter. His reason is, that the Romans had not introduced it before the first Punic war, as appears from the *Columna Rostrata* erected by Duilius, in which C is everywhere found instead of G. It was Sp. Carvilius who, as we learn from Terentius Scaurus (120 A.D.), first distinguished between these two letters, and invented the figure of the G.

G, however, is found instead of C on several medals (Vaillant, *Num. Imperat.* tom. i., p. 39); and Beger produces a medal of the *Familia Ogulnia* where we find *Gar* instead of *Car*, which is the reading on those of Palin. But C is more frequently seen on medals instead of G, as *Aucustalis*, *Callæcia*, *Cartacinensis*, &c.; not that the pronunciation of these words was altered, but only that the G was unskilfully or negligently cut by the workmen; as may be seen in different inscriptions of the eastern empire, where AVC is frequently found for AUG, and so in other cases. The northern nations frequently changed the G into V or W, as in *Gallus*, *Wallus*; *Gallia*, *Wallia*, *Vallia*, &c. But it must not be supposed that the French have changed the W into G; because they wrote *Gallus* long before *Wallus* or *Wallia* was known, as appears from all the ancient Greek and Roman writers. And yet it is equally true that the French change the W of the northern nations, and V consonant, into G; as *Willielmus*, William, into *Guillaume*; *Wulphilas* into *Gulphilas*; *Vascon* into *Gascon*, and so in other cases.

The letter G is a mute, and cannot be sounded without the help of a vowel. It is formed by the reflection of the breath against the palate by the tongue, or, as Martianus Capella expresses it, G *spiritus cum palato*; so that G is a palatal letter. The modern G takes its form from that of the Latins. In English it has two sounds; one from the Greek Γ, which is hard, as before *a*, *o*, *u*, *l*, *r*; and the other soft, resembling that of *j*, as in *gesture*, *giant*. G is often hard before *i*, as *give*, &c., and sometimes before *e*, as *get*, &c. It is also hard in derivatives from words ending in *g*, as *singing*, *stronger*, &c.; and generally before *er* at the ends of words, as *finger*. G is mute before *n*, as *gnash*, *sign*. G*h* has the sound of the hard G in the beginning of a word, as *ghostly*; in the middle, and sometimes at the end, it is quite silent, as *right*, *though*. At the end of a word G*h* has often the sound of *f*, as *laugh*, *rough*, *tough*.

As a numeral, G was anciently used to denote 400; and with a dash over it thus, G̅, 40,000. As an abbreviature, G stands for *Gaius*, *Gellius*, *gens*, *genius*, &c. G. G. for *gemina*, *gessit*, *gesserunt*, &c. G. C. for *genio civitatis* or *Cæsaris*. G. L. for *Gaius libertus*, or *genius loci*. G. V. S. for *genio urbis sacrum*; G. B. for *genio bono*; and G. T. for *genio tutelari*. In music, G is the mark of the treble cleff; and from its being placed at the head, or marking the first sound in Guido's scale, the whole scale took the name of *gamut*.

GABARA, or GABBARA, in *Antiquity*, the dead bodies which the Egyptians embalmed and kept in their houses, especially those of such as had died as martyrs, or with the reputation of great piety and holiness.

GABARDINE (Span. *gabardina*, a coat with a hood and close sleeves) has been sometimes used to denote a coarse frock, or mean dress. In this sense it is used by Shakspeare in his *Tempest* and *Merchant of Venice*, and by Butler in his *Hudibras*.

GABEL (Fr. *gabelle*; Sax. *gafel* or *gafol*): a tax, impost, or duty, particularly that on salt, but afterwards applied to all other taxes.

GABIA GRANDE, a secular town of Spain, in the province and archbishopric of Granada. It contains 4000 inhabitants, and is situated on a rising ground on the left bank of the river Genil. Gabia has a public granary and several tile and gypsum kilns.

GABII, now CASTIGLIONE, in *Ancient Geography*, an old and at one time important city of Latium, on the Via Prænestina, between 12 and 13 miles from Rome. Long before the foundation of Rome, Gabii seems to have been one of the largest and most populous of the Latin cities. According to an old tradition, noticed both by Dionysius and Plutarch, Romulus and Remus are said to have been educated there. During the period of regal Rome, Gabii appears to have kept its ground against the growing power of that city, and only fell into the hands of Tarquin the Proud by a stratagem contrived by his son Sextus. On the expulsion of the Tarquins, Sextus took refuge at Gabii, and was murdered by the inhabitants in revenge for his treachery. After this period Gabii always appears in history as the ally or dependent of Rome, and gradually fell into such a state of decay as to become a proverb of desolation. In this condition it remained till the reign of Tiberius, when the fame of its cold sulphureous waters tended to revive it considerably. After the third century it disappears altogether from history. The only relic of the ancient Gabii now visible is a temple of Juno on a hill now crowned by the ruins of the mediæval fortress of Castiglione.

In the neighbourhood of Gabii were valuable and extensive quarries of an excellent building-stone, known as the "lapis Gabinus," which was largely used by the Romans. It was a hard and compact variety of the volcanic tufa found in abundance throughout the Campagna, and closely resembled the "lapis Albanus," to which, however, it was superior.

GABINIA LEX, in *Roman Antiquity*, a law proposed by the tribune Gabinius, B.C. 139, introducing the ballot in the election of magistrates.

GABION, in *Fortification*, a kind of basket of wicker-work, cylindrical in shape, generally about three feet high, open at both ends, and filled with earth. See FORTIFICATION.

GABLE (from the Celtic *gavael*), the upright triangular end of a house, from the cornice or eaves to the top.

GABLER, JEAN PHILIPPE, was a celebrated Protestant divine, to whom we are indebted for several important works, critical and exegetical, on the text of the New Testament. He was born at Frankfort-on-the-Maine, June 4, 1753. After having studied the ancient languages and their literature, as well as the philosophy of Wolf and the theology of Baumgarten, he resorted to the university of Jena. Being much dissatisfied with theology as then taught, Gabler was on the point of abandoning it altogether, when Griesbach, who was preparing for the publication of his New

Testament, and had just been appointed to a professorship at Jena, persuaded him to continue to pursue his theological studies. In 1780 he gave private lectures on theology at Gottingen, and soon got permission to open a public course. In 1783 he was nominated professor of philosophy at Dortmund, and two years after at Altdorf, where he became also deacon of the Protestant church in that town. He received the degree of D.D. in 1787, and in 1804 he became one of the professors of the faculty of Jena. Griesbach dying some years after, Gabler was appointed to fill his chair as first professor of theology; and, while still holding the rank of private, ecclesiastical, and consistorial counsellor, he died, Feb. 17, 1826.

The works which Dr Gabler has left show him to have been not only a man of consummate erudition, but a profound thinker. Rising above all prejudice, he gave expression to his ideas in the most candid and liberal manner. The principal of his works are: "*Essai d'herméneutique du Nouveau-Testament*, Altdorf, 1788; *Introduction Historico-critique au Nouveau-Testament*, Altdorf, 1789; and *Nouvel essai sur l'histoire de la création de Moïse*, Altdorf, 1795; a supplement to *L'Histoire Primative* by Eichhorn, of which he published an edition, much enhanced by a learned preface and notes. He took an active part also in the redaction of the *Journal Théologique*, Nuremberg, 1796–1811, in 16 vols.

GABRIEL SIONITA, a learned Maronite, was born near the end of the sixteenth century at Edden, a small town on Mount Lebanon. He was appointed professor of oriental languages at Rome, whence he was transferred in 1614 to Paris, in order that he might co-operate with Le Jay in the preparation and construction of his famous Polyglot. The Syriac and the Arabic texts were prepared by Sionita from copies which he made with his own hand from MSS. at Rome. The vowel points were added by himself as they still stand both in Le Jay and in the English Polyglot. His also is the Latin version which is in accordance with the punctuation of the texts. A dispute having arisen between him and Le Jay, he did not continue to superintend the Arabic and Syriac portions of the work to the end; in these Abraham Ecchel continued and completed the work. Sionita was the translator of the *Arabic Geography of Abu-Abdallah-Mohamed Edrisi* into Latin, and entitled *Geographia Nubiensis*, 4to, 1619. He published also an *Arabic Grammar*, which bore a high character in its day. He also translated the Psalms of David into Arabic; and soon after died in 1646 at Paris, where he had for some years been professor-royal of Syriac and Arabic.

GABRIEL (*i.e.*, *the mighty one of God*), the heavenly messenger who was sent to Daniel to explain the vision of the ram and the he-goat (Dan. viii.), and to communicate the prediction of the Seventy Weeks (Dan. ix.) Under the new dispensation he was employed to announce the birth of John the Baptist to his father Zechariah, and that of the Messiah to the Virgin Mary (Luke i.) Both by Jewish and Christian writers Gabriel is accounted one of the archangels, though the Scriptures affirm nothing *positively* respecting his rank.

GAD, a son of Jacob by his concubine Zilpah, and who became the progenitor of one of the twelve tribes. The Gadites were a warlike people, and at the time of the conquest of Canaan numbered 45,650 warriors. As a reward for having formed the vanguard of the army in war, they were allowed to appropriate to their exclusive use some pastoral districts beyond the Jordan. The inheritance of this tribe, called the *land of Gad*, was situated beyond the Jordan in Gilead, north of Reuben, and separated on the east from Ammon by the river Jabbok. According to 1 Chron. v. 11, the Gadites had extended their possessions on the east as far as Salkah, though the latter had been allotted by Moses to Manasseh (Deut. iii. 10, 13): a proof how difficult it is to draw a decided line of demarcation between the possessions of pastoral tribes. The territory of Gad forms a part of the present Belka (Burckhardt, *Syria*, ii. 598.)

Gad, a Jewish prophet, the domestic seer of king David, and his adviser in all matters of importance.

GADAMES, or Ghadames, an oasis S.W. of Tripoli, in the Sahara of Africa. It stands S. of the main chain of the Atlas Mountains, with a town near it, in Lat. 30. 10., Long. 90. 19. E. This important oasis contains numerous villages and a few antiquities of the Roman period, while it forms the centre of divergent routes to Tunis, Tripoli, the Oases of Ghraat, Twat, Gharglah, &c. See Tripoli.

GADARA, a city of Palestine, and by Josephus considered as the capital of Peræa, to the S.E. of the Lake of Tiberias. Pliny places it on the river Hieromax (now Yarmak). The country which took its name from Gadara—"the country of the Gadarenes"—was the eastern boundary of Galilee. At the time of its capture by Antiochus, Polybius states that it was the strongest city in those parts. It was restored by Pompey, and was the seat of one of the five sanhedrims instituted by Gabinius. This seems strange, since it was considered one of the Grecian cities, and so exempted from the jurisdiction of Archelaus, and put under the prefecture of Syria, though it had, by special grace, been granted to Herod the Great. The ruins of the ancient Gadara (now our Keis), to the south of the Yarmak, are very considerable. They are on the E. side of the Jordan valley, and about six miles S.E. by E. of the Sea of Galilee. The hot spring and baths of Gadara were celebrated in ancient times, ranking second only to those of Baiæ. These springs burst out from the foot of the mountain on which the city was built, and the baths were built over them. The temperature of the water is lower than the springs of Tiberias. The ruins of a Roman bath are still visible at the source of the springs.

GADES, Gaddis, or Gadis. See Cadiz.

GADOR, a royal town of Spain, in the province of Granada and bishopric of Almeria. It contains about 2000 inhabitants, and is situated on the bank of the river Almeria. The surrounding country produces of excellent quality all the cereals, as well as wine, silk, and oil, in abundance. The Sierra de Gador abounds with mines of various metals, especially of lead, in the working of which there are constantly employed above 10,000 hands. This Sierra is a lofty and enormous piece of marble, from which the finest species of lime is made. The marble of Gador dissolves completely in acids, without leaving the slightest residuum of sand or any other substance. It thus differs essentially from all the other limestones of Spain, but especially from that of Valencia; hence the ancient Spanish proverb is easily understood—*Donde hay yeso y cal, no hay mineral*—"where there is gypsum and lime there is no mineral," which is the fact in reference to the marble and limestone of Valencia. Hence also the immense difference between the ancient buildings of the city and the modern, the former being made with mortar formed of the pure water from the Rambla, while the moderns employ sea-sand.

GADFLY. See index to Entomology.

GAELIC LANGUAGE. See Language, Philology, &c.

GAERTNER, Joseph, an eminent botanist, who was born at Calw, in the duchy of Würtemberg, March 12, 1732. In the university of Gottingen he studied theology, law, and medicine, and attended the lectures of the celebrated Haller. Natural history was his forte, however; and the lessons of his illustrious teacher there, as well as those of Adrian Van Rogen at Leyden, rendered him still more devoted to its cultivation. After receiving his doctor's degree he travelled through Italy, France, England, and more recently Holland and England, and published several memoirs upon various subjects bearing upon marine botany and zoology. In 1768 he was appointed professor of natural history and botany at St Petersburg, where he commenced his great work, *Carpologia seu Descriptiones et Icones fructuum et seminum plantarum*, upon which his eminent reputation depends. At the end of two years he was obliged, by the severity of the climate, to leave Russia and return to his native land, where for eight years he arduously pursued his great undertaking. During his second visit to Holland and England, Sir Joseph Banks and Thunberg opened to him their valuable collections, the one from the South Seas and the other from Japan. So long as botany continues to be studied as a science, this great work will be held in high estimation. It contains the essential generic characters and particular descriptions of the fruits of 1000 genera, illustrated by figures drawn by himself. Gaertner excels in the anatomical elucidation, definition, and description of the parts of the seeds of plants. Schräber has named a genus of plants after him, *Gaertenera*. His other works are, *De fluctibus et seminibus plantarum*, Stuttgard, 1788, and Tubingen, 1791, in 2 vols. 4to.; a *Memoire sur les Mollusques*, printed in the *Transactions Philosophiques*. A notice of the life and writings of Gaertner was published by Deleuse in vol. i. of the *Annales du Musée D'Histoire Naturelle*.

GAETA, the ancient *Caieta*, a strongly fortified seaport-town of Naples, province of Terra di Lavoro, at the extremity of a peninsula forming the N.W. boundary of the gulf of Gaeta, 40 miles N.W. of Naples. The ancient town is said to have derived its name from Caieta the nurse of Æneas, who, according to Virgil and others, was buried here. The port became early an important shipping station, and Cicero describes it as being in his time "*portus celeberrimus et plenissimus navium.* The neighbourhood, too, became a favourite place of resort with the Romans, and the coast between Caieta and Formiæ, about four miles distant, was studded with numerous elegant villas. The town, however, seems to have been an inconsiderable place up to the time of Antoninus Pius, by whom it, together with the port, was much improved. After the fall of the western empire it for some time enjoyed a republican form of government, and was afterwards governed by dukes, who acknowledged the temporal supremacy of the pope. In 1435 it was taken by Alphonso V. of Aragon, and since that time it has belonged to the crown of Naples. It has sustained several remarkable sieges; in modern times may be mentioned those of 1702, 1734, and 1806. In 1815 and 1821 it held out for some time against the Austrians. The palace of the governor was for some time the residence of Pope Pius IX. after his flight from Rome in 1849. Of the ancient city the remains comprised a temple and aqueduct. The most interesting, however, is the sepulchre of L. Munatius Plancus, called *Torre di Orlando*, which stands on the highest part of the isthmus connecting the citadel with the mainland. It is of a circular form, in excellent preservation, and retains its inscription uninjured. Mola di Gaeta occupies the site of the ancient Formiæ, where Cicero had a favourite villa, and where he was put to death by order of Antony. Gaeta is surrounded by walls flanked by bastions and redoubts, and defended by a castle. It is the see of an archbishop, and has a fine cathedral, several other churches and convents, a public seminary, hospital, and foundling asylum. It has a considerable trade, and the port is one of the best in Italy. Pop. (exclusive of the garrison) about 10,000, of whom nearly three-fourths are in the suburbs.

GÆTULIA, in *Ancient Geography*, a district of Africa, bounded on the N. by Mauretania and Numidia, E. by the country of the Garamantes, S. by the basin of the Niger, and W. by the Atlantic. The Gætuli, who inhabited it, and from it took their name, are stated by Sallust to have been one of two great aboriginal races of Africa; the Libyans being the other. They originally occupied the northern sea-board of Africa, from which they were gradually driven out by the Asiatic invaders, who afterwards became known as Numidians and Mauretanians. They were a warlike race of fierce disposition, and without a settled government; and roved over the deserts, clad in skins, and living on milk and the proceeds of the chase. They engaged but little in trade, though their country yielded abundantly some valuable natural products. The shores of the Atlantic, especially, furnished in great quantities the murex, from which the famous purple dye of antiquity was obtained.

Till the Jugurthine war the Gætuli, according to Sallust, were ignorant of the Roman name. In that struggle they furnished a quota of cavalry to the armies of the Numidian king. Some of them afterwards served under Marius, and owned a kind of allegiance to Hiempsal. In the civil war large numbers of them sided with Cæsar; but in the time of Augustus conducted themselves in a manner so turbulent and disorderly, that they had to be kept in check by a powerful army.

GAFF, in nautical language, a spar to which the head of a fore-and-aft sail is bent. *Gaff-topsail*, a small sail set over a gaff, which serves to spread the foot of the sail.

GAGE, a pledge or pawn, given by way of security.

Gage, a challenge to combat; that is, a gauntlet, glove, cap, or the like, cast on the ground by the challenger, and taken up by the accepter of the challenge.

Gage, in nautical language, the depth of water a vessel draws, *i.e.* the number of feet she sinks in the water. In a different sense, when a ship is to windward of another, she is said to have the *weather-gage* of such vessel.

Gage, among letter-founders, a piece of hard wood variously notched, used to adjust the dimensions, slopes, &c. of the different sorts of letters. In joinery it denotes an instrument to strike a line parallel to the straight side of a board. *Sliding-gage*, among mathematical-instrument makers, a tool for measuring and setting off distances.

The term *gage*, implying *measure*, as of depth, height, force, quantity, &c., is frequently used in composition to denote particular kinds of instruments; as sea-gage, tide-gage, wind-gage, rain-gage, &c., &c.

GAILLAC, the capital of a cognominal arrondissement, department of Tarn, France, on the right bank of the Tarn, 12 miles W. of Alby. It has an agricultural society, a communal college, hospital, theatre, and manufactures of wine casks, leather, brandy, &c. The vicinity is very fertile, producing some good wines, which constitute its principal trade. Pop. (1851) 8152.

GAIN, in *Architecture*, is the workmen's term for the bevelling shoulder of a joist on other timber.

GAINAGE, Gainagium (*q.d.* wainage), in our ancient writers, signifies the draught oxen, horses, wain, plough, and their furniture, which, when a villein was amerced, were left free, that agriculture might not be interrupted. The word also denoted the land itself, or the profit derived from its cultivation.

GAINSBOROUGH, a market-town and river port of Lincolnshire, on the right bank of the Trent, 21 miles above its junction with the estuary of the Humber, and 16 miles N.W. of Lincoln. It consists chiefly of one long well-paved street running parallel with the river, which is here crossed by a fine stone bridge of three arches. It has a neat church erected in 1748, several dissenting places of worship, a town hall, and a small theatre. The old hall called John O'Gaunt's palace is a curious oak-timber framed building, forming three sides of a quadrangle, and having a tower 78 feet high. Gainsborough possesses a free grammar and other schools, an athenæum, savings-bank, dispensary, &c. Ship-building is carried on; and there are manufactures of linseed cake, ropes, malt, and tobacco. Vessels of 200 tons burden can come up to the town. The gross amount of custom duties received at the port in 1852 was L.20,637. On 31st

December 1853, 11 sailing vessels of 620 tons, and 5 steam-vessels of 356 tons, were registered at the port; while during that year 214 vessels of 13,292 tons entered, and 237 vessels of 12,725 cleared at the port. Market-day, Tuesday. Pop. (1851), 7506.

GAINSBOROUGH, Thomas, a celebrated English landscape-painter, was born in 1737, at Sudbury in Suffolk. His father was a man of humble fortune, and unable to give him any but the scantiest education. The time which he ought to have spent in the school-room, he thus passed in the woods and fields, where, at an early age, he became imbued with a taste for the quiet beauties of nature, which he afterwards reproduced with so much effect in his early landscapes. He made a habit of sketching every picturesque object that struck his fancy, and before the age of twelve had acquired great facility in drawing, and some skill in colouring. At that early age he was sent to London to master his art, and supported himself by portrait-painting till his nineteenth year, when he married a lady of fortune. After his marriage he removed to Ipswich, thence to Bath; and in 1774 returned to London, where he enjoyed an extensive practice as a portrait-painter. At the foundation of the Royal Academy, Gainsborough was appointed a member of it, but does not seem to have taken any active interest in its proceedings. During the latter years of his life he suffered much from a cancer in the neck, which ultimately proved fatal, 2d August 1788.

It is as a painter of landscapes and fancy pieces that Gainsborough will be longest remembered by posterity. Sir Joshua Reynolds, indeed, in his *Character of Gainsborough*, says, "Whether he excelled most in portraits, landscapes, or fancy-pictures, it is difficult to determine." But the difficulty has been already solved. His portraits, it is true, were very highly valued by his contemporaries, and possessed the prime merit of being always admirable likenesses. But this was often their sole merit, for they were very frequently so roughly and carelessly finished, and scumbled in a manner so peculiar, that though they looked well at a distance, they had a blurred and indistinct appearance when viewed near at hand. However, the artist himself always regarded this as a peculiar merit in his portraits, which he always requested might be hung low in the exhibition, so as to be within reach of the closest scrutiny. But Gainsborough's real fame rests on his landscapes and fancy-pieces. His early style differed greatly from his later. In the former he copied nature in all her details with the fidelity of a photographer. In the latter he aimed at producing grand impressions by the effects of great breadth, and a judicious chiaroscuro. It is perhaps too much to claim for him, as some of his admirers have done, an equality with Rubens, Claude, or Ruysdael; but no one will now refuse to accept the verdict of Sir Joshua Reynolds, who says, that if ever this nation should produce genius sufficient to acquire to us the honourable distinction of an English school, the name of Gainsborough will be transmitted to posterity as one of the very first of that rising name.

GAIUS, or Caius, a celebrated Roman jurist in the time of Antoninus Pius and Marcus Aurelius. Great use was made of his voluminous works in the compilation of the *Digest*. His *Institutiones*, an elementary treatise on Roman law, was one of his most celebrated works. This work was long the ordinary text-book for those beginning the study of Roman law; but after the compilation of the *Institutiones* of Justinian, it fell into disuse, and was finally lost. In 1816, however, this long-lost and valuable work was discovered by Niebuhr in the library of the chapter at Verona. The MS. containing "Gaius" was a palimpsest, with the new writing, in general, directly over the old. The Institutes of Gaius are composed in a terse, clear style, and seldom fail of pure Latinity.

GALACTODENDRON, or Milk-Tree (in Spanish called *Palo de Vaca*), a South American tree of the natural order *Urticaceæ*, from the stem of which, when wounded, there flows a milky and nutritious juice, which forms an important article of diet among the poor natives of the districts where it grows.

GALACZ, or Galatz, a town and port of Moldavia, on the left bank of the Danube, between the mouths of the Sereth and Pruth, in Lat. 45. 25. N., Long. 28. 1. E. The town is ill-built and dirty, but has latterly been much improved. It has a large bazaar always well filled with merchandise, and numerous warehouses for grain and other produce. Since 1834, when it was made a free port, its trade has rapidly increased, and various English and other foreigners have formed establishments here. Vessels of 300 tons can come up to the town, and regular steam communication is maintained with Vienna and Constantinople. Being the only port of Moldavia, and indeed in the best position for becoming the port of the Danube, it promises at no very distant period to become a first-rate emporium. Moldavia and Wallachia are very productive provinces, being rich both in corn and cattle. Our imports of corn from these two provinces in 1853 were, wheat 227,143 qrs., maize 373,790 qrs., and other kinds 64,173 qrs. In 1851, the exports by sea from Galacz amounted in value to L.496,368, being chiefly wheat, maize, rye, tallow, hides, wine, and timber. The chief imports were British and Austrian manufactures, colonial products, &c. Pop. estimated at 25,000. (See M'Culloch's *Commercial Dictionary*, 1854.)

GALÆSUS, or Galesus, in *Ancient Geography*, a small river of Calabria, falling into the gulf of Tarentum, a few miles W. of that city. It flowed through rich pasture-lands browsed by the sheep which produced the famous Tarentine wool. The value of this product was very great, and that none of it might be lost, the sheep were sent to feed completely enveloped in skins. Hence the force of Horace's allusion to the

> Dulce pellitis ovibus Galæsi
> Flumen.

The stream is often mentioned by the Roman poets, and has thus acquired a wider fame than many Italian rivers ten times its size. Indeed so small was the Galæsus, that it has not been identified with certainty. Swinburne, who is probably the best authority on the subject, supposes that the Cervaro is the real Galesus; and his supposition tallies better with the descriptions of Livy and Polybius than any other that has been advanced. The local antiquaries have tried, though not very successfully, to identify the Galæsus with a small stream called Le Citrezze, which falls into the Mare Piccolo, or great port of Tarentum, on its northern side.

GALAPAGOS, a group of islands in the Pacific Ocean, so called from the Spanish *Galápago*, a land tortoise, from their abounding in that animal. They consist of six principal and seven smaller islands, lying between 1 N. and 2 S. Lat., and between 89 and 92 W. Long., about 700 miles from the continent of South America. The largest, Albemarle Island, is 60 miles in length, by about 15 in breadth. The highest part is 4000 feet above the sea. They are all of volcanic origin, and along their shores black dismal-looking heaps of broken lava everywhere meet the eye. In many places the lava cliffs are very high, while close to them the water is so deep that a ship cannot anchor even in a calm. In the interior are some valleys and plains of moderate extent and of great fertility. The land tortoises, called the great elephant tortoises, their feet being like those of a small elephant, are numerous, and grow to a great size, frequently weighing several hundred pounds. A small colony has been established on Charles Island, in a plain about 1000 feet above the sea. They cultivate bananas, sugar canes, sweet potatoes and Indian corn, and supply with these articles the whalers who resort to the island. The climate is healthy and the heat moderate, considering the geographical position of these islands.

GALAROZA, a royal town of Spain, in the province of Sevilla. It is situated near the left bank of the Murtiga, about sixty miles N.E. of Huelva, among calcareous hills, and enjoys the advantage of a very copious spring, whose waters are skilfully applied to irrigate its beautiful gardens. Meat is extensively cured here for the markets of Cadiz and Seville. The population is nearly 3000.

GALASHIELS, a thriving manufacturing town of Scotland, in the counties of Roxburgh and Selkirk, and in the parishes of Galashiels and Ladhope. It stands on both sides of the Gala, about a mile above its confluence with the Tweed, and is 33 miles distant from Edinburgh by the North British Railway. Galashiels was made a burgh of barony in 1599, when it contained 400 inhabitants; but it is mentioned in history nearly three centuries before that date. Until late in the eighteenth century, however, it was a mere village standing on the side of Gala Hill. Being situated in a rich pastoral district, yielding abundance of wool, a woollen-mill was erected here in 1791, in which was placed one set of engines. Since that date the trade of the town has steadily increased, so that now more than a mile of the picturesque valley of the Gala is covered with neat modern houses and mills. There are at present (1855) fifteen of the latter, of large size, which contain 46 sets of carding engines, employing 32,200 spindles. Yarns spun in England, sufficient to employ 12 sets of engines, are also brought here for manufacture into cloths. The wool formerly used was all of home growth; but now the wools of Germany and Australia almost exclusively occupy the looms. There are about 2300 persons employed in the trade, who receive L.4600 per month in wages, and turn out annually from L.250,000 to L.300,000 worth of goods, at manufacturers' prices. These goods are chiefly Tweeds, shawls, plaids, and tartans. The drainage of agricultural lands has been found seriously to affect the water-power of the Gala, the stream being greatly swollen after rains, and nearly dry in their absence. This has led to the general introduction of steam power, and to migration to the neighbouring town of Selkirk and to the village of Innerleithen. Besides this staple manufacture, Galashiels has a tannery, a skinnery, brewery, saw-mill, bone-mill, savings-bank, four bank agencies, and one weekly newspaper, the *Border Advertiser.* The places of worship are—two parish churches, two Free churches, two United Presbyterian churches, one Episcopalian and one Roman Catholic chapel, an Independent meeting-house, a Glassite and a Baptist place of worship. There are five public schools, a town library, a public reading-room, and a mechanics' institution with library. The town is a burgh of barony; but in 1850 it adopted the provisions of the police act, 13th and 14th Vict., cap. 33, and is now governed by a chief magistrate, two junior magistrates, and five commissioners. Pop. (1851) 5918. Abbotsford is about a mile and a half from the town, on the right bank of the Tweed.

In connection with Galashiels it may be mentioned, that it was from observations made here that the salubrious nature of the employment in wool manufactures was first particularly pointed out. In working up the wool there is a large consumption of oil, with which the air becomes impregnated, and which is thus imbibed into the system. Children working in the mills are in consequence healthier and heavier than those in the town not so employed; and weakly children are purposely sent to mill employment for the strengthening and development of their bodily frames. Mr M'Dougall, surgeon in Galashiels, was the first to call attention to this fact, and his observations have been confirmed by the further investigations of Professor Simpson.

GALATA, one of the suburbs of Constantinople. See Constantinople.

GALATIA, afterwards called also Gallo-Græcia, in *Ancient Geography*, an inland division of Asia Minor, bounded on the N. by Bithynia and Paphlagonia, E. by Pontus, S. by Cappadocia and Lycaonia, W. by Phrygia. These boundaries, however, varied at different periods in the history of Galatia. The river Halys flowed in a northerly direction through the centre of the province, the eastern half of which was watered by tributaries of that stream, while the Sangarius and its affluents rose among the mountains of the western half.

According to Strabo, Galatia was occupied by three Gallic tribes: the Trocmi who dwelt in the east, the Tectosages in the centre, and the Tolistobogii in the west. Each of these tribes was subdivided into four parts; and these were each ruled over by a tetrarch of their own. The power of the tetrarchs was limited by a senate of 300, before which also all capital cases were tried. Minor offences came under the cognizance of the tetrarchs and special judges appointed by them. This system continued in force till within about fifty years B.C. The three tribes all spoke the same tongue; and though in course of time they became Hellenized, their original language was still in use among them as late as the time of Jerome.

The only towns of importance in Galatia were Tavium, the capital of the Trocmi, a small town which speedily fell into decay; Ancyra, the capital of the Tectosages, and Pessinus, the chief town of the Tolistobogii, where a splendid temple was consecrated to Agdistis, the mother of the gods. The only other place of note in Galatia was Gordium, the ancient capital of Phrygia, and the scene of Alexander's famous exploit of cutting the Gordian knot.

Galatia took its name from a body of Gauls who invaded Asia Minor about the year 279 B.C. They had formed part of the army which invaded Greece under Brennus; but having quarrelled with that commander had left his standard, and marching into Thrace under generals of their own choice, advanced to Byzantium, whence they were invited by Nicomedes, king of Bithynia, to cross into Asia and help him in his struggle against his brother Zibætas. After performing the required services, they turned their arms against their employer, and ravaged the western half of Asia Minor. Their success allured over hordes of their countrymen, who readily took service with the Asiatic kings in their wars against each other. No oriental prince was found able to check them, until Attalus king of Pergamus defeated them in a great battle B.C. 239; and compelled them to settle in that part of the country, which after them was called Galatia. They still remained independent, however, and proved a formidable foe to the Romans in their wars with Antiochus. It was found necessary to direct a special army against them, and the result of the campaign was their complete subjugation to the power of Rome. Galatia, however, was not at this time reduced to a Roman province, but the Gauls were still allowed to choose their own kings. One of the most famous of these was Deiotarus, who, in return for the assistance which he gave the Romans, was rewarded with a grant of Pontus and Armenia Minor, and styled king by the senate. On the death of his son Amyntas, B.C. 25, Galatia became a Roman province. Theodosius the Great subdivided it for purposes of government into Galatia Prima, of which Ancyra was made the capital, and Galatia Secunda, with Pessinus for its chief-town.

GALATIANS, Epistle to the. The Pauline origin of this epistle is attested not only by the superscription which it bears (i. 1), but also by the unanimous testimony of the ancient church, (Lardner, *Works*, vol. ii. 8vo.) It is corroborated also by the style, tone, and contents of the epistle, which are perfectly in keeping with those of the Apostle's other writings.

The parties to whom this epistle was addressed are described in the epistle itself as "the churches of Galatia."

Into this district the gospel was first introduced by Paul himself (Acts xvi.) Churches were then also probably formed; for on revisiting this district some time after his first visit, it is mentioned that he "strengthened the disciples" (Acts xviii.) These churches seem to have been composed principally of converts directly from heathenism, but partly, also, of Jewish converts, both pure Jews and proselytes. Unhappily, the latter, not thoroughly emancipated from early opinions and prepossessions, had been seized with a zealous desire to incorporate the rites and ceremonies of Judaism with the spiritual truths and simple ordinances of Christianity. So active had this party been in disseminating their views on this head through the churches of Galatia, that the majority at least of the members had been seduced to adopt them (i. 6; iii. 1, &c.) To this result it is probable that the previous religious conceptions of the Galatians contributed; for, accustomed to the worship of Cybele, which they had learned from their neighbours the Phrygians, and to the theosophistic doctrines with which that worship was associated, they would be the more readily induced to believe that the fulness of Christianity could alone be developed through the symbolical adumbrations of an elaborate ceremonial (Neander, *Apostol. Zeitalter*, s. 400, 2te Aufl.) From some passages in this epistle it would appear also that insinuations had been disseminated among the Galatian churches to the effect that Paul was not a divinely-commissioned apostle, but only a messenger of the church at Jerusalem; that Peter and he were at variance upon the subject of the relation of the Jewish rites to Christianity; and that Paul himself was not at all times so strenuously opposed to those rites as he had chosen to be among the Galatians. Of this state of things intelligence having been conveyed to the apostle, he wrote this epistle for the purpose of vindicating his own pretensions and conduct, of counteracting the influence of these false views, and of recalling the Galatians to the simplicity of the gospel which they had received. The importance of the case was probably the reason why the apostle put himself to the great labour of writing this epistle with his own hand (vi. 11).

Respecting the time when and the place where this epistle was written, great diversity of opinion prevails. It seems, however, probable that it was written and despatched not long after Paul had left Galatia for the second time, and perhaps while he was residing at Ephesus (comp. Acts xviii. 23; xix. 1, sqq.)

Of commentaries on this epistle the most important are the following:—Borger, *Interpretatio Ep. Pauli ad Galatas*, 8vo, Lugd. Bat. 1807; Winer, *Pauli Ep. ad Gal. perpet. Annot. illustravit*, 8vo, ed. tertia, Lipsiæ, 1829; Rückert, *Commentar. üb. d. Brief Pauli an d. Gal.*, 8vo, Leipzig, 1833; Usteri, *Commentar. üb. d. Br. Pauli an d. Gal.* 8vo, Zürich, 1833; Hermann, *De Pauli Epist. ad Gal. tribus primis capitibus*, 4to, Lips. 1832.

GALAXY, or Milky Way (Gk. Γαλαξίας), the great luminous tract which encompasses the heavens like a coronal or girdle, and which is easily perceivable in a clear night, especially when the moon does not appear. It passes between Sagittarius and Gemini, and divides the sphere into two parts. It is unequally broad, and in some parts is single, in others double. See Astronomy, vol. iv. p. 86.

GALBA, the name of a patrician family at Rome. The most noteworthy members of this family were Sulpicius Galba, who flourished at the beginning of the second century B.C., and distinguished himself in the wars with Philip of Macedon; Sergius Galba, who was prætor B.C. 151, and held Lusitania as his province, in which office he made himself notorious by his atrocious cruelties, for which he was tried on his return to Rome, and narrowly escaped punishment; and Sergius Sulpicius Galba, emperor of Rome from June A.D. 68 to January A.D. 69. (For the details of his life and reign see Roman History.)

GALBANUM, a gum-resin procured from incisions made in the stems of *Galbanum officinale*, a perennial plant growing in Africa (near the Cape of Good Hope), in Syria and Persia. It is imported into this country from the Levant, in ductile masses composed of distinct yellowish tears agglutinated together by a darker substance, and is generally much mixed with impurities. It has a strong nauseous odour, and a bitter acrid taste. It is sometimes used in medicine as a stimulant antispasmodic, but is a drug of little importance.

GALDAR, a royal Spanish town in the N.W. of the Island Gran Canaréa, beautifully situated five miles from Las Palmas, in a plain, with good air and fine temperate climate. It contains 4052 inhabitants, a church, a monastery a short distance from the town, and six hermitages, numerous ruined houses and caves of the ancient inhabitants, with the ruins of an edifice or palace of the Guanche chiefs.

GALDO, Santa Maria de, a district of Spain, in Galicia, province and bishopric of Mondoñedo, and jurisdiction of Galdo. It contains 2130 inhabitants, and stands in the valley of Vivero, which extends from N. to S. to the banks of the river Landrove. Its agricultural productions and its industry are altogether similar to those of Vivero. See Vivero.

GALENA, a city in the state of Illinois, N. America, on the Fêve, six miles above its junction with the Mississippi. It is the metropolis of the great lead region of northern Illinois, and the commercial dépôt of an extensive and fine country, the river being at all seasons navigable to this point for the largest river steamers. The Galena branch of the Illinois Central Railway passes through the city, and the Galena and Chicago Union Railway gives it access to the lakes and roads leading eastward. The city was first settled in 1826. Pop. (1850), 6500.

GALENA, native sulphuret of lead. See Mineralogy.

GALENISTS, in *Medical History*, a name given to the followers of Galen, in contradistinction to the practitioners of the chemical school. The distinction of *galenical* and *chemical* in the method of treating diseases was occasioned by a division of the practitioners of medicine into two sects, on the introduction of chemistry into medicine. The term *galenical* was applied to those medicines that were easily formed, as by infusion or decoction, in contradistinction to *chemical*, or such as required more elaborate preparation, as by calcination, digestion, fermentation, and the like.

GALENISTS, a sect of religionists, who were so named from their first teacher Galenus Abrahams de Haan, a doctor of medicine, and a minister among the Mennonites at Amsterdam. The schism in which the Galenists originated took place in 1664 in the church of the Flemings at Amsterdam, in which were the two preachers Galenus Abrahams de Haan and Samuel Apostool. Galenus was a man whom even his enemies applauded for his eloquence and penetration. His teaching was in accordance with the views of the Arminians, that the Christian religion is not so much a body of truths to be assented to as of precepts to be obeyed; and he would have admission to the church and to the title and privileges of brethren open to all persons who merely believe the books of the Old and New Testament to be divinely inspired, and lived pure and holy lives. The Galenists are equally ready with the Arminians to admit all persons into their communion who call themselves Christians, and they are the only Anabaptists in Holland who refuse to be called Mennonites. The Apostoolians admit no one to membership who does not profess to believe the doctrines contained in the public formula of their religion. *Mosheim's Hist.*, Cent. xvii., sect. ii., pt. ii., chap. v., 7; *Wagnaer*, Amsterdam, pt. ii., pp. 195 and 237; Schyn's *Plenior Deductio Historiæ Mennonit.*, cap. xv., p. 318, and cap. xviii., p. 237; *Description of the City of Amsterdam*, in Dutch, vol. i., p. 500, &c.; Stoupa, *La Religion des Hollandois*, p. 20, &c.; and Bentheim's *Holländischer Schul und Kirschenstaat*, pt. i., chap. xix., p. 830.

GALENUS, Claudius, commonly called Galen, the most celebrated of the ancient medical writers, and a man who has exercised a greater influence on medical science than any other individual author of ancient or modern times. Of his personal history little is known except what is gathered from his own works; but these are so full of personal detail as to furnish sufficient material for a life. He was born at Pergamus in Mysia towards the close of the year 130 A.D. His father, whose name was Nicon, was an architect and geometrician of that city, and is highly praised by Galen for his many good qualities both of heart and head. His mother, on the other hand, is described as a second Xanthippe, differing only from her prototype by being worse than she. No expense was spared in educating the young Galen, whose teachers were the most celebrated scientific men of his native town. Stratonicus, a disciple of the Hippocratic school; Satyrus, an eminent anatomist; and Æschrion, an empiric. After the death of his father, whom he lost in his twentieth year, Galen went to study successively at Smyrna, Corinth, and Alexandria, which last was the most famous medical school of the ancient world. He likewise seized the opportunity of travelling in various other foreign countries. In A.D. 158 he was publicly invited by his fellow-citizens to return home, and was appointed physician to the gladiatorial school. Five years later he was compelled, by civil dissensions, to quit his native city, and he then betook himself to Rome, where his unparalleled success drew down upon him the jealousy and hatred of the Roman practitioners. For some time he bore up against the ill-treatment which he met with at their hands, and wrote and lectured for a number of years with ever-growing success, but in daily dread of being poisoned by his rivals. In A.D. 167, Galen at length left, partly to avoid an introduction to the emperor M. Aurelius, partly to revisit his native city. His departure was probably hastened by the breaking out of the pestilence at Rome. He had hardly settled down at Pergamus when he received orders to join M. Aurelius in the north of Italy. Soon after he joined the emperor the plague broke out with great violence in the Roman camp, and M. Aurelius instantly returned to Rome, taking Galen in his train. It was probably about this time that he prepared for the emperor the famous medicine called "theriaca," of which the royal patient took a little every day. During his stay at Rome Galen composed two of his best known works in the leisure moments of his extensive practice. These were his treatises *De Usu Partium Corporis Humani*, and *De Hippocratis et Platonis Decretis.* After this time his history is not very clearly ascertained. He seems to have left Rome and returned to Pergamus, visiting on his way the island of Lemnos, where he learned the method of preparing the "terra lemnia" or sigillata, a medicine then much in vogue. It is not fully known whether he ever returned to Rome; but it seems probable that he did. Neither the year nor the place of his death is thoroughly ascertained. Suidas, whose testimony is generally followed, says that he died when he was seventy years of age, which would place his death in the year 201. One of his Arabian biographers, however, makes him survive till his eightieth year; and another, Abul-faraj, states that he died in Sicily at the age of eighty-eight.

Galen is, on the whole, one of the most remarkable writers of antiquity. As is frequently the case, his worth was ill appreciated during his lifetime, but after his death his native city caused medals to be struck in his honour; and he became generally known by the title of "the wonderful." During his early residence at Rome, indeed, his skill had earned for him the titles of "Paradoxologus," the wonder-speaker, and "Paradoxopæus," the wonder-worker. But it was not on his skill as a physician alone or chiefly that his fame depended. He was one of the most extensively and variously learned men of his age, and is known to have written nearly five hundred distinct treatises on different subjects, including logic, ethics, and grammar. He seems to have entertained a very justifiable respect for himself and his influence and position, and to have looked down with perhaps too great contempt on his rivals and detractors. But the bitter disgust which he felt towards them is excusable, if we remember that he lived among them in daily terror of his life. It is remarkable that though Christianity was in Galen's time spreading apace, he seems to have known no more about it than might have been picked up in ordinary conversation. At least he only alludes to the Christians in one of his works as remarkable for their self-denial, temperance, chastity, and other virtues, never indicating, however, any personal sympathy for them in the persecutions to which they were exposed. For a detailed account of Galen's influence and position in medical science, see Anatomy, vol. ii., pp. 752–754.

The works now extant, attributed to Galen, amount to 123 separate treatises. Of these only eighty-three are undoubtedly genuine; nineteen are doubtful; forty-five confessedly spurious; nineteen are mere fragments; fifteen are comments upon portions of Hippocrates; while fifty are enumerated as still lying unpublished in various European libraries. There have been numerous editions of Galen's complete works, and also of some of the individual treatises. A list of those who have edited or illustrated Galen is given by Conrad Gesner in the Basle edition of 1561. The most important of these, as well as of others who have since followed in the same track, are named in the following list:—Jo. Bapt. Opizo, A. Lacuna, Ant. Musa Brassavolus, Aug. Gadaldinus, Conrad Gesner, Sylvius, Cornarius, Joannes Montanus, Joannes Caius, Thomas Linacre, Theodore Goulston, Caspar Hoffmann, Réné Chartier, Haller, and Kühn. There have been numerous Latin translations of Galen. Altogether, according to Choulant, there was one version in the fifteenth century; twenty-two versions in the following century; and none since. There have been also four editions of the Greek text; the first by the Aldi at Venice, in 5 vols. fol., 1525; the next, also in 5 vols. fol., Basle, 1538; the third, by Réné Chartier, bears date Paris, 1679, and amounts to 13 vols. fol.; the last and best is that by C. G. Kühn, Leipzig, 1821–1833.

GALERUS, or Galerum, diminutive Galericulum (probably allied to *galea*, helmet), in *Roman Antiquity*, was originally a head-dress worn by priests, but especially by the *flamen dialis.*[1] Its shape was probably a round cap formed of leather, with its top terminating in an apex. In later times the *galerus* was any kind of cap fitting close to the head like a helmet.[2] *Galerus*, as well as *galericulum*, also came to signify a peruke, wig, or covering for the head made of hair.[3] *Flamen dialis solus album habet galerum.*[4] See Albogalerus, vol. ii., p. 449.

GALIANI, Ferdinando, an eminent political economist, was born at Chieti, in the Abruzzo, Dec. 2, 1728. At eight years of age he was sent to Naples, where he received his elementary education. He devoted himself with ardour to the study of history, antiquities, the belles-lettres, and philosophy, and more particularly to political economy. At the age of sixteen he produced a *Memoir on the Coins of the period of the Trojan War;* and this early production first inspired him with the idea of his great work on money. He also translated Locke's treatise on *Money and Interest.* At the age of eighteen he undertook a work on the *Ancient History of the Navigation of the Mediterranean;* and in his great work, we find that he there made use of part of the materials which he had collected at this early age. A *jeu d'esprit*, which had nearly been attended with serious consequences, diverted him for some time from his graver studies. Having been charged by his brother Bernard to deliver, in his absence, a discourse in an academy of which he was a member, the president, looking only at the youth of Ferdinand, and being ignorant of his talents, would not permit him to proceed. The latter resolved to revenge himself in a manner that showed more spirit than prudence. It was the custom in this academy, as in several others, that when any great personage died at Naples, all the academicians published, in his praise, a collection of pieces in prose and verse. The executioner at Naples having died, Galiani seized the opportunity of turning the academy into ridicule. With the assistance of a friend, he composed in the course of a few days, a collection of serious pieces on this event, which were ascribed to each of the members, and in which their peculiar style and manner were so well imitated, that one of them confessed he should have been himself deceived, if he had not been perfectly certain that he had not written the piece to which his name was subscribed. This malicious and witty little volume appeared in 1749, under the title of *Componimenti varj per la Morte di Domenico Jannacone, Carnefice della gran corte della vicaria, raccolti e dati in luce da Gian. Anton. Sergio Avvocato Napoletano*. This Sergio was the president of the academy. The publication was eminently successful, and excited a sensation which the authors had not foreseen; and as they became afraid of being discovered by the publisher, they went directly to the minister Tanucci, confessed the fact, and got off for the performance of some spiritual exercises.

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[1] Virgilii *Æn.* vii. 688; Suet. *Nar.* xxvi.; and Juv. viii. 208.

[2] *Ibid.*

[3] Juv. vi. 120; Mart. xiv. 50; and Suet. *Oth.* 12.

[4] Var. in Gell. x. 15.

Galiani soon effaced the impression made by this piece of youthful folly, by the publication of his *Treatise on Money*, which had employed the labour of several years. It appeared at Naples in 1750, when the author was only twenty-one. It was first published anonymously, and the author did not make himself known until the success of the work was decided. He afterwards travelled through the whole of Italy, was presented at the various courts, and admitted a member of some of the most celebrated academies. His next publication was a treatise entitled *Della perfetta Conservazione del Grano*, written, with his usual elegance, for the purpose of recommending an ingenious machine, invented by his friend Intieri, for drying and preserving grain.

Galiani was the first to form a collection of the volcanic productions of Vesuvius; and he wrote a learned treatise upon this subject, which, however, was not printed until about fifteen years afterwards. He presented the manuscript to Pope Benedict XIV. along with the collection itself, which was arranged in seven boxes, according to the order of the treatise. The collection was placed in the Museum of the Institute of Bologna, where it still remains. In presenting this collection to the pope, Galiani had written upon one of the boxes, *Beatissime Pater, fac ut lapides isti panes fiant*. His holiness, understanding the hint, gave him the prebend of Amalfi, worth 400 ducats a-year. In the lifetime of his uncle, whom he lost in 1753, he enjoyed a benefice of 500 ducats, which conferred upon him the episcopal dignity, and another living worth 600 ducats. His funeral oration, on the death of his patron, Benedict XIV., who died in 1758, procured him a high character for eloquence, and was one of his works which he himself most esteemed.

Galiani was one of the members of the academy of Herculaneum, established by King Charles III. for the purpose of illustrating the remains of ancient art discovered among the ruins of that city; and he furnished several memoirs, which were inserted in the first volume of that magnificent work, the *Antiquities of Herculaneum*. With the other academicians who were engaged in this labour, Galiani enjoyed the royal bounty, in a pension of 250 ducats.

In the month of January 1759 he was appointed secretary of state and of the royal household, and, soon afterwards, secretary to the French embassy; and he arrived at Paris in the month of June following. He applied himself with great zeal and assiduity to the acquisition of a correct French style of writing, his mastery of which he afterwards showed in his celebrated *Dialogues sur le Commerce des Blés*. The style of this work is so easy and elegant, that one would never suppose it to be the work of a foreigner. The manuscript was left in the hands of Diderot, and was published in 1770, with the date of London, and without the name of the author. The work excited great attention in France, and the best writers were loud and unanimous in praise of it. Voltaire wrote to Diderot, who had sent him a copy, in the following terms: "The powers of Plato and Molière seem to be combined in the composition of this work. I have as yet only read about two-thirds of it; and I expect the *dénouement* of the piece with great impatience." The same author again praises the work in his *Questions sur l'Encyclopédie*, in the article *Bléd ou Blé*.

Meanwhile, Galiani had returned to Naples, where, in addition to his office of member of the Council of Commerce, he received that of secretary to the same tribunal. These two situations brought him a revenue of 1600 ducats. In 1777 he was made one of the ministers of the *junto* of the royal domains, which had the charge of everything connected with the private patrimony of the king; an office which added 200 ducats to his income. His partiality for the writings of Horace inspired him with the idea of a treatise *Des instincts ou des gouts naturels et des habitudes de l'homme, ou Principes du droit de la nature et des gens, tirés des Poësies d'Horace;* a work which he left nearly complete, but which has never been published. There is a Life of Horace prefixed, much better and more complete than that which is inserted in the works of Algarotti. The project which he entertained of a dramatic academy induced him to attempt the composition of a comic opera, in a new and singular style. This was *The Imaginary Socrates*, of which he gave the plan to the poet Lorenzi, who put it into verse, and it was set to music by the celebrated Paesiello. The piece was performed with the greatest success throughout Italy, Germany, and even at St Petersburg.

A work of a different kind soon afterwards engaged his attention. In the war which broke out in 1778, between England on one side, and France and Spain on the other, Naples and some other powers had remained neutral; but their rights, as they conceived, were not sufficiently respected by the belligerent parties. Numerous writings appeared throughout Europe on the rights and duties of neutrals; and, among others, Galiani produced a treatise in Italian, *On the Duties of Neutrals towards Belligerent Powers, and of the latter towards the former*. It was published at Naples in 1782, in 4to. In the same year he was appointed first assessor to the general council of finance; a situation which he accepted the more readily, as its duties were analogous to his other studies; but he refused to touch the salary. A few months afterwards, however, the king presented him with the abbacy of Scurcoli, which was worth 1200 ducats per annum, after deducting all charges and pensions. The office of assessor of economy in the superintendence of the crown funds, to which he was appointed in 1748, added to his public duties, and likewise increased his income. Meanwhile his health, which was naturally weak, declined daily. On the 13th of May 1785 he had an attack of apoplexy; and in order to prevent a return, he travelled the following year through Puglia. In 1787 he made a longer journey, and went as far as Venice, where he was well received by all the men of letters, as he was also at Modena by Tiraboschi, and by Cesarotti at Padua. On his return to Naples his health rapidly declined; and he died Oct. 30, 1787, at the age of fifty-nine.

Besides the works already mentioned, Galiani left behind him a variety of interesting manuscripts. Among them are The Commentary on Horace, with the Life; The Lexicon of Words peculiar to the Neapolitan Dialect; A Poetical Translation of the Anti-Lucretius; A Miscellaneous Collection of Poetical Pieces; Several volumes full of facetious Letters, Novels, and Anecdotes; His Epistolary Correspondence, which would form of itself a pretty voluminous collection. A part of it was published at Paris in 1818, in two vols. 8vo. (See art. GALIANI, *Biogr. Univ.*, tom. xvi.) (J. C.)

GALICIA, the largest province of Spain, called by the Spaniards "El Reino de Galicia" (the kingdom of Galicia), and written with one *l*, although they write the name of the inhabitants with two (los Gallegos), forms the N.W. angle of the Peninsula, and is bounded by the Bay of Biscay, the Asturias, Leon, and Portugal. It contains the four modern provinces of Coruña, Lugo, Orense, and Pontevedra, with a total area of 16,000 square miles, and a population of 2,000,000.

Surface.

Mountains.

The surface of Galicia consists almost entirely of hills and mountains, which here and there embosom a small plain, and are intersected by numerous valleys, narrow, rugged, and scarcely accessible. The whole province indeed forms the western extremity of the direct course of the great Cantabrian mountain range. From the boundary of Asturias and Leon, the Sierra de Peñamarela enters Galicia, and sweeps in a northerly direction round by Mondoñedo, then turning southward, and passing by Lugo and Orense on the west, it terminates on the coast between Vigo and Tuy. The basin of the Miño and its tributaries is inclosed by this mountain range, under the names of the Sierra de Peñamarela, de Mondoñedo, de Lobo, and other local denominations, separating it from the valleys of all the other rivers entering the Atlantic or the Bay of Biscay. During the greater part of the year, many of the summits of this series of sierras are covered with snow. Another offshoot from the Cantabrian chain, after passing through the province of Leon, enters Galicia at the S.E. angle, when it extends from E. to W. to the coast, and forms the boundary between Portugal and Galicia. The basin of the Sil is shut in by this offshoot, and joined to that of the Miño, of which the Sil is the largest tributary, and hence the second river in Galicia.

Rivers.

This territory is drained and watered by innumerable mountain torrents and streams, of which no fewer than seventy are called rivers. The principal of these is the Miño (Minho), which derives its name from its ancient name *Minius*, and was so designated from the *minium* or vermilion found along its banks. It rises near Mondoñedo in the Sierra de Mondoñedo, and after a course of 170 miles in a S. and S.W. direction, it enters the Atlantic near the port of Guardia. In its course it receives numerous affluents, of which the principal is the Sil, and passes the towns of Lugo, Orense, Ribadavia, and Tuy. The Sil, which enters the Miño about ten miles above Orense, receives in its course the affluents Cabe, Bibey, and numerous smaller streams, all of which come from the mountains of Leon and Asturias. The river Tea rises on the W. flank of Monte Faro, and falls into the Miño above Tuy. The Tambre, the Ulla, and the Lerez flow in a S.W. direction, and fall into the sea by wide estuaries, which respectively bear the names of Ria de Muros y Noya, Ria de Arosa, and Ria de Pontevedra (*ria* being the Spanish of estuary).

Coast and harbours.

The coast of Galicia is everywhere bold, and may be safely approached by mariners; it is much more broken, however, than the coasts of Asturias and Biscay, being more exposed to the violent action of the strong currents of the Atlantic, which run in these latitudes at the rate of half a mile an hour. Hence many secure havens have been in the course of ages scooped out by the storms and currents, and its deep inlets thus formed with its lofty promontories give this peculiar feature to this coast. Rivadeo, on the left bank of the Miranda, has a safe and capacious harbour, with three fathoms water at ebb-tide. Vivero Bay is one mile wide, and runs three inland, affording good anchorage throughout, with from six to eight fathoms of water. Still further westward, the Bay of Stanques la Verre, or inlet of Barquero, on the E. side of the Punta de la Estaca, is an excellent harbour, three miles wide and six long, with anchorage in six fathoms. The harbour of Ferrol is said to be the best in Europe; it is ten miles in length, and from a quarter to half a mile in breadth, with sufficient depth of water to allow the largest vessels to approach the town, which stands five miles from the entrance, and frigates may pass two miles further up. The shores on both sides of this fine harbour are lofty and well-guarded by the castles of San Felipe and Palma, while the entrance, which is formed by piers, may be closed by a boom. Here are docks, arsenals, and magazines, though now in a very neglected state, which might afford ready means of equipping the largest fleet; and until a few years since there were here also marine schools and barracks for the accommodation of 6000 artificers. Ferrol is strongly fortified on the land side by a wall, on which 200 cannon might easily be mounted; and it contains a population of about 17,000, who subsist without any trade, except that which is afforded by the presence of the fleet, as foreign goods are prohibited from entering the port. A long narrow peninsula separates the bays of Betanzos and of Ayres from the harbour of Ferrol, opposite to which stands the port of Coruña. The great bay which forms the common entrance to all these inlets is the Portus Magnus of the ancients. About one mile N. of Coruña stands the famous lighthouse called the Tower of Hercules, or the Iron Tower, which was repaired in 1788. It is 92 feet high, with walls 4½ feet thick. The construction proves clearly that it was built by the Romans, and an inscription discovered near its foundation informs us that it was built by Caius Servius Lupus, architect to the town of Aqua Flavia, and that it was dedicated to Mars. The principal port on the western coast of Galicia is the deep, capacious Bay of Vigo, in which the largest vessels may ride securely one mile above the town.

Climate, soil, and productions.

Manufacture.

The climate of Galicia is variable—cold in the interior as compared with the other provinces of Spain, but temperate on the coast. The skies are cloudy, and rains very frequent. Forest trees abound on the hill slopes, and also chestnut trees, which supply much of the food of the peasantry. Large herds of cattle, mules, and asses browse on the abundant rich pasture of the valleys. The soil is generally stony, but when carefully cultivated, produces flax, maize, barley, wheat, abundance of fruit, and a considerable quantity of wine. Great numbers of pigs are reared; and the hams cured in this province are in great request. The woods abound with game in great variety, while the rivers and indented shores teem with fish, especially trout, salmon, anchovies, tunny, lampreys, and the bezugos or hog-fish—a singular species, which has no bones, and resembles the lamprey in the richness of its flavour. The fisheries on the coast are a profitable branch of industry, not only supplying food for the inhabitants, but being largely exported into Leon and the Castiles. The chief manufacture is linen, which is made in large quantities, and of good quality for domestic use.

People.

The Galicians (Gallegos) are a hardy, docile, and industrious people, resembling their neighbours, the Portuguese, much more in their habits than the other inhabitants of the

Peninsula. To most of the rest of the Spaniards, Galicians are very little known. They form their ideas of them from those who emigrate into the other parts of Spain. The district of La Coruña supplies the Castiles, as Pontevedra and Orense do Portugal. The emigrants remain absent during four or five years, after which they pay their homes a visit, and start forth again. Others only go down for the harvest time, and return like the Irish to enjoy their hardly-earned gains. Those who settle in Madrid become *reposteros* and managers in families. They are also well calculated, by their muscular frames, to do the porters' work of Spain and Portugal; hence the term *gallego* is synonymous with a boor, *ganapan*, or *mozo de cordel.* They are very numerous in Lisbon, Portugal being nearer their own homes than the Castiles.

Women.

When the men migrate, the women do all the drudgery at home, in the house and field, and painful it is to see them tugging at the plough. They are never idle; and the *rueca* or distaff is part and parcel of a Gallega as is the fan of an Andaluza. This hard work, with their bad fare, nips their beauty in the bud; few indeed are born good-looking, or even retain their good looks long. They are aged at thirty, and then seem models for witches, and even as if they never had been young. From the Gallegos a direct answer is scarcely ever obtained. In their wretched huts they seem not a whit improved since the time of Justin and Strabo. Still, now as then, they are proud of their pedigrees.

Language.

The language of Galicia is a harsh, uncouth dialect, quite unintelligible to Spaniards, who sneer at their use of *u* for *o*; and yet from it and the dialect of the Asturias the modern elegant and refined Castilian has sprung. These interesting keys to the origin of their language has never yet received the attention they deserve from the Spanish philologists.

Wild animals.

Among the woody hills there are numerous wolves and wild boars that descend into the plains, and sometimes commit great depredations among the flocks and herds.

Minerals.

Advancing northward, primitive formations begin to appear as the outline of the hills becomes bolder; and near Coruña lofty granitic ridges stretch as far as Cape Ortegal. These granites, which seem to be a continuation of those of Cornwall, contain an abundance of the common tin ore, the working of which is laborious, and not very profitable to the Galicians, who are far behind in scientific and mechanical appliances. There is strong probability that the Phœnicians visited Galicia as well as Cornwall and the Cassiterides for this tin ore. In former times, gold and silver were also among its mineral wealth; but at present lead, tin, and copper, which are found chiefly along the northern coast and along the banks of the Miño, are the only riches of which the mines of Galicia can boast.

Towns.

Galicia contains 6 cities, 70 towns, and rather more than 3000 villages. Coruña is now the capital of Galicia, and chief town of the province of Coruña. *Betanzos*, 11 miles W.S.W. from Coruña, is situated on a peninsula, formed by the junction of two streams, which flow unitedly into the Bay of Betanzos. It is an old town, and some of the narrow streets are still entered by ancient granite gateways. The population, about 5000, are mostly employed in the fisheries. *Ferrol* has already been mentioned among the harbours. *Lugo* stands 52 miles S.E. from Coruña, and is the capital of the modern province of Lugo. Under the name *Lucus Augusti*, Lugo was celebrated in Roman times for its warm sulphur baths. These *thermæ* have disappeared, but some remains of a dike against inundations testify their former magnificence. The present incommodious baths are on the left bank of the Miño, and they are beneficial in cutaneous and rheumatic disorders from the middle of June till the end of September. Close to these there is a mineral spring containing nitre and antimony. In September 1842 the *Calle de Batitales*, a Roman mosaic pavement was discovered, with designs of fish, animals, and other devices. The population of Lugo is (1855) nearly 8000. *Orense* (aquæ) *urentes*, "warm sea," was anciently celebrated for its warm baths, and those called *Las Burgas* are still frequented from July to September. They gush forth at the W. of the town from a granite rock almost boiling, and are turned to many useful purposes besides medical ones. Orense has very narrow streets, but is a clean, neat town, and the capital of the modern province of Orense. The population is about 7000. The town is pleasantly situated, encircled with hills, and rising gently from the Miño. The bridge over the river is a striking object, being 1320 feet long and 18 wide, defended by a castle on the town side. The grand arch is 156 feet span, and 135 in elevation from the bed of the stream, which is subject to sudden inundations. It was built in the year 1230 by Bishop Lorenzo, and repaired in 1449 by one of his successors, Pedro de Silva. It was in this city that the Suevi-Goths first renounced Paganism. *Pontevedra* is 80 miles S.S.W. of Coruña, and situated on the S. bank of the Lerez at its entrance into the Ria de Pontevedra. The town has its name from the long bridge which here crosses the Lerez; it signifies "old bridge." The town is well built, surrounded with walls, well paved, clean, and has a commodious harbour for small craft. It contains a population of about 5000. The *other principal towns*—Mondoñedo, Santiago de Compostola (formerly the capital of Galicia), Tuy, and Vigo—are given in their alphabetic order.

History.

The origin of the name of Galicia is very uncertain. Some suppose that it was given by the *Galli*, who, pursued by the Kymri, took refuge in Spain; while others adopt the notion that the name was given by its first inhabitants, the *Callicai* or *Gallæci.* In A.D. 408 the Suevians, Alans, and Vandals entered Spain, and became masters of several provinces, which they partitioned among them. Galicia fell to the Suevians, who chose for their chief Hermeneric (A.D. 411.) In 559 Theodomir and his son established and warmly defended Christianity in their dominions; but in 590 Luvigildus, king of the Visi-Goths, rendered himself master of Galicia, which he united to his own estates. In 713 the Moors invaded the kingdom, and were in turn driven out of it by Troïla, king of Leon and the Asturias. In 1065 Ferdinand I. erected Galicia into a separate kingdom for his second son, Don Garcia. But his tyranny and debaucheries excited the hatred of the nation so much that he was first driven from his throne in 1071, and two years afterwards deprived of all his estates by Alfonso, king of Castile. After that, the younger sons of the kings of Castile often held Galicia as an appanage, but only with the title of Count. These Counts remained independent till 1474, the date of the complete destruction of feodality by Ferdinand the Catholic. Since that time, Galicia has preserved no trace of its ancient grandeur and independence, except the name of kingdom, though only considered as a province of Spain. In 1822 the Cortés subdivided it into the present four small provinces, as already mentioned.

GALICIA, *Kingdom of,* a province of Austria, formerly constituting a part of Poland.

GALILEE (Γαλιλαία), the Greek form of the name given to one of the three principal divisions of Palestine, the other two being Judæa and Samaria. This name of the region was very ancient. It occurs in the Hebrew forms of *Galil* and *Galilah*, Josh. xx. 7; xxi. 3; 1 Kings ix. 11; 2 Kings xv. 29; and in Isa. viii. 23 we have גליל הגוים "Galilee of the nations" (Γαλιλαία ἀλλοφύλων, 1 Macc. v. 15; Matt. iv. 15.)

Galilee was the most northern of the three divisions, and was divided into Upper and Lower. The former district had Mount Lebanon and the countries of Tyre and Sidon on the north; the Mediterranean Sea on the west; Abilene, Ituræa, and the country of Decapolis on the east; and Lower Galilee on the south. This was the portion of Galilee which was distinctively called "Galilee of the nations," or of the "Gentiles," from its having a more mixed population, *i.e.* less purely Jewish than the others. Cæsarea Philippi was its principal city. Lower Galilee had Upper Galilee on the north, the Mediterranean on the west, the Sea of Galilee or Lake of Gennesareth on the east, and Samaria on the south. Its principal towns were Tiberias, Chorazin, Bethsaida, Nazareth, Cana, Capernaum, Nain, Cæsarea of Palestine, and Ptolemais. This is the district which was of all others the most honoured with the presence of our Saviour. Here he lived entirely until he was thirty years of age; and although after the commencement of his ministry he frequently visited the other provinces, it was here that he chiefly resided. Here also he made his first appearance to the apostles after his resurrection; for they were all natives of this region, and had returned hither after the sad events at Jerusalem (Matt. xxviii. 7).

Hence the disciples of Christ were called "Galileans." They were easily recognised as such; for the Galileans spoke a dialect of the vernacular Syriac different from that of Judæa, impure in comparison with that of the metropolis. The Galilean dialect (as we learn from Buxtorf, Lightfoot, and others) was of a broad and rustic tone, which affected the pronunciation not only of letters but of words. It partook much of the Samaritan and Syriac idiom; but, in the instance of Peter, it must have been the tone which bewrayed him, the words being seemingly too few for that effect.

GALILEO GALILEI, the founder of experimental science, was born at Pisa on the 15th of February 1564, being descended of a noble and ancient Florentine family, which, under the surname of Bonajuti, afterwards changed to that of Galilei, had filled distinguished offices in the state. His father, Vincenzo Galilei, was a man of considerable talent and learning, with a competent knowledge of the mathematics, and particularly devoted to the study of music, on the theory and practice of which he published several treatises. Vincenzo had three sons, Galileo, Michel Angelo, and Benedetto, and the same number of daughters, Giulia, Virginia, and Livia; but he was not opulent, and being burdened with a numerous family, was unable to provide for them expensive instructors. The subject of this notice exhibited early symptoms of an active and original mind, and even in his childhood showed a singular aptitude for mechanical contrivances, imitating with infinite address all sorts of machines, inventing new ones, or when, as often happened, he wanted the necessary materials for constructing these, adding new pieces to old ones. It is worthy of observation, that the boyhood of his great follower, Newton, whose genius in many respects closely resembled his own, was marked by a similar talent. Galileo commenced his literary studies at Florence, where his family resided; but, for the reason already stated, his masters were of the humblest kind. Knowing the disadvantages of his situation, however, Galileo resolved to supply by industry the want of better opportunities; and he applied with so much assiduity to the study of the classic models, that he soon laid the foundations of that extensive and solid literature to which he was afterwards indebted for the purity of his language and the elegance of his writings. His leisure hours were applied to the cultivation of music and drawing, in both of which arts he excelled. For the former he inherited his father's talent, which he displayed by performing skilfully on several instruments, especially the lute; and during the whole of his life this continued to be his favourite recreation amidst more serious pursuits. In the latter, which he had at one time thoughts of cultivating as a profession, he acquired so perfect a taste, that eminent contemporary artists did not scruple to own their obligations to him for his counsel and suggestions. Such was Galileo at the age of eighteen, when his father, becoming daily more sensible of the extent of his genius, determined, at whatever sacrifice, to give him the advantage of an university education. In 1581 he accordingly commenced his academical career in the university of Pisa, which he entered with the intention of studying medicine, from the profession of which his father hoped that he might one day procure an easy and honourable subsistence.[1] And, that he might not lose any kind of instruction which was to be obtained, he attended a course of peripatetic philosophy, such as it was then taught, in addition to that of medicine. But, called by the predestination of genius to unveil to mankind those wonders of nature, which their fanatical confidence in the opinions of Aristotle prevented them from seeing even when revealed, he could not bring himself to assent without conviction, nor to admit the authority of a master in questions which reason and experiment ought alone to decide. Actuated by this spirit, he several times ventured, in the academical discussions, to combat the firmest supporters of the Aristotelian dogmas, and in consequence he obtained the reputation of possessing an obstinate and contradictory disposition; for men do not easily reconcile themselves to the subversion of opinions, the stability of which they have long been accustomed to consider as incapable of being shaken; and hence the partisans of Aristotle found as great difficulty in doubting as Galileo did in admitting the authority of that master. It is not a little remarkable that, some years later, Descartes commenced in France, as Bacon did in England, the same war which Galileo had so boldly declared at Pisa; thus proving that the great regenerative efforts of the human mind are inevitably brought on by the force of circumstances and the natural progress of ideas, and that the men of genius who attach their names to these memorable revolutions, are themselves carried onward by their age, and precede it only by a few steps.

It was at this period, 1582, when he had scarcely completed his eighteenth year, that Galileo made the first and perhaps the finest of his discoveries. Happening one day to be in the metropolitan church of Pisa, he remarked the regular and periodic movement of a lamp suspended from the roof of the cathedral; he also observed the equal duration of its oscillations, whether great or small; and this he confirmed by repeated experiments. Having satisfied himself as to the phenomenon itself, he immediately perceived the use to which it might be applied for the exact measurement of time; and this idea having remained in his mind, he employed it fifty years afterwards (in 1633) for the construction of a clock intended for astronomical observations. In what manner this instrument was constructed, does not exactly appear; but it seems certain that it was employed for the purpose stated; and this, in our opinion, is sufficient to entitle Galileo to the honour of having been the first to make an application which afterwards became of so much importance to astronomy; for Huygens, who, in truth, rendered it incomparably more perfect, by employing the pendulum as the regulator of clocks, and not as the motive power alone, did not publish his researches on this subject until about the year 1658.

At the time of which we are here speaking, Galileo had no knowledge of the mathematics, nor even the least desire to learn them, not conceiving in what respect triangles and circles could conduce to the advancement of philosophy. The study of geometry was then at a very low ebb, not only in Italy, but in every country of Europe. Commandine, it is true, had recently revived a taste for the writings of Euclid and Archimedes; Vieta, Tartalea, and others had made considerable progress in algebra; and Guido Ubaldi and Benedetti had done something towards establishing the principles of statics, the only branch of mechanics as yet cultivated. But, with these exceptions, the application of mathematics to the phenomena of nature was scarcely thought of. Galileo's first inducement to acquire a knowledge of geometry arose from his partiality for music and drawing; he had heard his father repeatedly state, that these arts, of which he was passionately fond, had their principles in the relations of numbers and of position taught by the mathematics; and he now entreated to be instructed in a subject which promised to unfold to him the true theory of his favourite pursuits. But his father, apprehensive that a study which so strongly attaches those who take pleasure in it would diminish his zeal for medicine, told him to wait until he had completed his course. Galileo, however, was not satisfied; and as Ostilio Ricci, professor of mathematics in the university, frequently visited at his father's house, he besought this person to give him secretly some lessons in geometry. The professor consented, after having privately asked and obtained the consent of the father. But the young man had no sooner entered into that field of investigation for which nature had destined him, than his mind became engrossed by the pleasure he felt in the certain and entire possession of truth; from that moment medicine and philosophy were abandoned for Euclid; and all the efforts and remonstrances of his father, who desired to recall him to pursuits which he thought more useful, and even went so far as to prohibit him from holding any intercourse with Ricci, proved unavailing. The impulse had been given, and all attempts to counteract it were fortunately useless. Galileo had learned enough to study alone. He accordingly continued in secret the perusal of Euclid, at the same time keeping open beside him a Galen or an Hippocrates, in order to conceal the favourite book when his father entered. Having thus by stealth advanced as far as the sixth book, and being transported with the utility which he discovered in the science of geometry for giving force and method to the understanding, he resolved to avow his progress to his father, and entreat the latter no longer to oppose the decided bent of his mind. Vincenzo, perceiving that he was born for the mathematics, yielded to the irresistible predilection of his son, and permitted him to enter freely upon those speculations to which he thenceforward devoted all the energies of his highly-gifted intellect.

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[1] In the matriculation lists of Pisa he is styled Galileo, the son of Vincenzo Galilei, a Florentine, scholar in arts. His entry is dated the 5th November 1581.

Having thus abandoned medicine, Galileo read with avidity the works of the ancient geometers, and then proceeded to study the treatise of Archimedes on floating bodies, which greatly delighted him. He now sought to multiply the applications of the method employed by the illustrious ancient in determining the proportions of an alloy of silver and of gold by successive weighings in water and in air; and for this purpose he invented an instrument similar in its uses to that which was afterwards called the hydrostatic balance. This invention, joined to his previous discovery respecting the movement of oscillation, and his new and free method of discussing subjects in philosophy, had already procured him considerable reputation, when he formed a connection with the Marquis Guido Ubaldi, then one of the most learned mathematicians of Italy. At the suggestion of this distinguished person, Galileo applied himself to consider the position of the centre of gravity in solid bodies; a choice of subject sufficiently indicating the estimate which Ubaldi had formed of his powers, considering that the question was one on which Commandine had recently written, and which at that time engaged the attention of geometricians of the highest order. Galileo, however, discontinued his researches on meeting with Valerio's treatise upon the same subject; but Ubaldi was so much struck with the genius displayed in the essay which Galileo presented to him, that he introduced the young geometer to his brother the Cardinal del Monte, who again warmly recommended him to John de' Medici and the Grand Duke Ferdinand of Tuscany, as a person of the highest promise. These illustrious personages gave him a most favourable reception, and soon afterwards bestowed on him the chair of mathematics in the university of Pisa, although he had as yet scarcely completed his twenty-fifth year.

Excited by this distinction, Galileo neglected nothing calculated to justify the preference which had been given him; and conceiving that a knowledge of the laws of motion is the basis of all solid study of nature, he undertook to establish them, not by hypothetical reasonings, as was the practice in the schools, but by real experiments. He thus demonstrated that all bodies, whatever be their nature, are equally affected by gravity; and that, if the spaces through which they descend in equal times are different, this depends on the unequal resistance opposed to them by the air, according to their different volumes. This important proposition Galileo completed long afterwards, in a work entitled *Dialoghi delle Scienze Nuove*, in which he established the true theory of uniformly accelerated motion. The novelty and beauty of his first experiments, performed before an immense concourse of spectators, excited great enthusiasm. But they at the same time embittered the animosity of the partisans of the ancient philosophy, who, seeing their whole science attacked, sought to destroy the innovator in the opinion of persons in power, and at length succeeded in raising against him such a host of annoyances and persecutions, that, in 1592, he was obliged to resign his chair at Pisa. He returned to Florence without employment, but durst not present himself in the house of his father, who had already made so many sacrifices on his account. He had the good fortune, however, to obtain from Guido Ubaldi a letter of recommendation to an opulent gentleman of Florence, of the family of the Salviati, who received him with extreme kindness, and afforded him the means of prosecuting his discoveries, until he could find some employment. With a view to serve him, Salviati also made him known to a Venetian nobleman of the name of Sagredo; an enlightened and influential man, who soon afterwards obtained for the youthful philosopher the chair of mathematics at Padua, which was conferred on him for six years. It was in gratitude for these seasonable benefits that Galileo gave the names of Sagredo and Salviati to the two interlocutors in his dialogues who support the true philosophy.

In his new situation, where he enjoyed greater freedom than he had done at Pisa, Galileo continued, with still more brilliant success, both his public lessons and his experimental researches. He constructed, for the service of the state, various machines of great utility; and he wrote for his pupils treatises on gnomonics, mechanics, spherical astronomy, and even fortification, according to the usage of the age, when many things were united which the progress of knowledge has since separated. In 1597, he invented the thermometer[1] and the proportional compass or sector, which he called the military compass, because he had principally intended it for the use of engineers. In 1599, his commission having expired, the senate renewed it for another six years, with an increase of salary, which Galileo repaid to the republic by new discoveries. In 1604, an unknown star of extraordinary brightness having suddenly appeared in the constellation of Serpentarius, Galileo demonstrated, by his observations, that this body was placed far beyond what the peripatetics called the elementary region; nay, that it was much more remote than all the planets, contrary to the formal and infallible opinion of Aristotle, who maintains that the heavens are incorruptible and free from all mutation. He also made researches on natural magnets, and succeeded in considerably augmenting their power by means of capping or casing them. His commission as professor was renewed a second time in 1606, with additional advantages, for which he testified his gratitude, as before, by increased diligence in the prosecution of his discoveries. But envy, which had never lost sight of him, exerted herself to disturb that peace which is so necessary to the successful pursuit of science. In 1604, on the occasion of his researches respecting the new star, he had been grossly abused by one Baltasar Capra of Milan. This man had the audacity to publish a Latin treatise on the proportional compass, in which he represented himself as the real inventor of that instrument; but the calumny was so gross that nobody was deceived by it; Galileo confounded his adversary, and the work of Capra was prohibited as a defamatory libel. Nor was this the only instance in which he had to vindicate his right of property in his own inventions. He frequently found himself ill recompensed for the readiness with which he communicated the results of his investigations; but he always raised himself by new discoveries, far above these disgraceful attempts to appropriate the fruits of his genius.

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[1] The original idea of this instrument belongs to the Greek mathematician Hero; and even Santorio, who has been named by Italian writers as the inventor, and, at one time, claimed the invention as his own, refers it to him. In 1613, Sagredo, who has been

The year 1609 was signalised by a discovery on the part of Galileo, which forms one of the most solid foundations of his glory. In the month of April or of May, a rumour was circulated in Venice that a Dutchman had presented to Count Maurice of Nassau an instrument, by which means distant objects appeared as if they were near at hand. On this slight and cursory hint Galileo immediately applied himself to discover whether the thing was possible, conformably with the passage of the luminous rays through spherical glasses of various forms. Some attempts made with lenses which he had at hand produced the desired effect; and next day he gave an account of his success to his friends, which, in fact, was nothing less than the invention of the telescope. A short time afterwards he presented several of these instruments to the senate of Venice, accompanied with a description in which he unfolded the immense consequences for nautical and astronomical observations which would certainly result from the discovery; and in recompense of his ingenuity his commission as professor was continued for life, with an allowance of salary triple that which he had previously received. Galileo neglected nothing calculated to evince his gratitude, or to add to the claims which had merited these favours. Indefatigable in his researches, he invented the microscope; he also improved his telescope, and soon brought it to a state fit to be applied to the observation of the heavens. He then perceived what as yet no mortal eye had ever seen; the surface of the moon, like that of the earth, bristled with high mountains and ploughed with deep valleys; Venus, presenting, like the moon, phases which prove her rotundity; Jupiter environed with four satellites, who accompany him in his course; the milky way; the nebulæ; in a word, the whole heavens bespangled with a countless multitude of stars too small to be even perceived by the naked eye. It is more easy to conceive than describe the surprise and delight which the first view of so many wonders must have inspired him withal, as well as the admiration which they could not fail to produce when they were known. A few days having sufficed to pass them in review, he hastened to announce his observations to the world in a publication entitled *Nuncius Sidereus*, or Celestial Courier, which he dedicated to the princes of Medici, and which he continued at intervals, in proportion as he discovered new objects. He also observed that Saturn sometimes appeared under the form of a simple disc, and sometimes with two appendages which seemed two small planets; but it was reserved for another astronomer (see HUYGENS) to demonstrate that these appearances were produced by the ring with which Saturn is surrounded. Galileo also discovered moveable spots on the globe or disc of the sun, whom the peripatetics had declared incorruptible, and did not hesitate from these to infer the rotation of that planet. He remarked that feeble light which, in the first and last quarter of the moon, renders visible, by means of the telescope, the part of her disc which is not then directly enlightened by the sun; and he concluded rightly that this effect was owing to the light reflected towards the moon by the earth. The continued observation of the spots of the moon satisfied him that that planet always presents nearly the same aspect; but in these he nevertheless recognised a species of periodic oscillation, to which he gave the name of libration, the exact laws of which were afterwards made known by Dominic Cassini. In a word, not less profound in following new truths to their consequences than subtile in discovering them, Galileo perceived the use to which the motions and eclipses of the satellites of Jupiter might be turned for the measure of longitudes; and he even undertook to make a sufficient number of observations of these stars to enable him to construct tables for the use of navigators.

After so many and so admirable discoveries, we have good reason to be astonished that any one should dream of denying to Galileo the invention of the telescope, with which he had made them; as if, in such a case, the inventor was not he who, guided by certain rules and by great views, knew how to perform wonders with that which chance had thrown rude and unfashioned into incapable hands. If he who, in Holland, accidentally joined two glasses of unequal curvature, was really the inventor of the telescope, why then did he not turn it towards the heavens, the most beautiful and sublime application of that instru-

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already mentioned as the friend of Galileo, writes to him in the following terms:—"I have brought the instrument which you invented, into several convenient forms, so that the difference of temperature between two rooms is seen as far as a hundred degrees." The date of this communication, which incidentally establishes the invention of Galileo, is anterior to the claims of Santorio, and also to those of Drebbel, a Dutch physician, who obtained, and still preserves in Germany, the honour of having invented this instrument. Another testimony may be added. In 1638, Castelli wrote to Cesarini that he remembered an experiment shown to him more than thirty years before by Galileo, who took a small glass bottle, about the size of a hen's egg, the neck of which was twenty-two inches long, and as narrow as a straw. "Having well heated the bulb in his hands, and then introduced its mouth into a vessel containing water, he withdrew his hand from the bulb, on which the water rose in the neck of the bottle more than eleven inches above the level of that in the vessel; and this principle he employed in the construction of an instrument for measuring heat and cold." Galileo's thermometer, therefore, consisted merely of a glass tube ending in a bulb, the air in which, being partly expelled by heat, was replaced by water from a glass in which the open end of the tube was immersed; and the different degrees of heat were indicated by the expansion of the air which still remained in the bulb, so that the scale would be the reverse of that now in use, as the water would stand at the highest level in the coldest weather. In other words, it was a compound of the barometer and thermometer.

ment? Why did he leave to Galileo the happiness and glory of overturning, in the eyes of all, ancient prejudices, of consolidating by the clearest proofs the system of Copernicus, and of aggrandising the celestial spaces beyond all that the imagination could have conceived? But however this may be, it is easy to comprehend to what a height so many and so great discoveries must have raised the views of Galileo; he perceived all the consequences which resulted from them relatively to the constitution of the universe; and, indeed, how could they escape him who, having taken nature as his guide, had, during his whole life, preserved his mind open to her impressions?[1] He concealed none of these high consequences, which formed as it were the soul of his writings and conversation; and he considered himself as henceforth entitled to despise errors too gross to be honestly maintained.

But, unfortunately for himself, he was no longer under the protection of Venice. Yielding to the instances of the Grand Duke of Tuscany, who had named him mathematician extraordinary, and loaded him with favours, he had quitted Padua, where he enjoyed the utmost freedom, for Florence, where such a thing as liberty was scarcely known. Honoured by the senate of Venice, and united by the ties of friendship with several of the most distinguished senators, he could publish his opinions without danger to himself as long as he remained within the territories of that state. But, in the end, experience proved that he could have no such security at the court of a prince, obliged at least to keep up appearances with the court of Rome. Besides the number of envious persons whom his great merit had exasperated against him, his discoveries made to him enemies of all those who had hitherto taught the ancient doctrines; and of these persons by far the greater part were ecclesiastics. Accordingly, some spread it abroad that his discoveries in the stars were pure visions, comparable only to the voyage of Astolphus; others affirmed that they had had the telescope in their possession during entire nights, and that they had seen nothing of all that which Galileo had announced; and a preacher was found who, malicious enough to convey a dangerous allusion in a pun, took as his text the words of the Gospel, *Viri Galilæi, quid statis adspicientes in cœlum?* It was thus that the countrymen of Copernicus had publicly ridiculed him on the stage; and it was thus that, at a later period, the reformed of Holland persecuted Descartes, who had taken refuge amongst them.

But the most certain method of reaching Galileo was to begin by prohibiting the doctrine of Copernicus, which he supported and propagated with so much distinction. This was accordingly effected by representing it as contrary to Scripture, and denouncing it to the holy see. Galileo endeavoured in vain to allay the storm, by publishing, in 1616, a letter addressed to the Grand Duchess of Tuscany, in which he undertook to prove theologically, and by reasons deduced from the Fathers, that the terms of Scripture might be reconciled with his new discoveries respecting the constitution of the universe. But this production only afforded a new handle to his adversaries, who maintained that he had rested his defence on an opinion which was itself erroneous in point of doctrine. He was cited to appear personally at Rome, and constrained to repair thither to defend himself. But neither the arguments which he urged in support of his opinions, nor the justice which they were forced to render to his knowledge, his merit, and even his catholicity, could prevent an assembly of theology, named by the pope, from coming to the following conclusion: "To maintain that the sun is placed immoveable in the centre of the world, is an opinion absurd in itself, false in philosophy, and formally heretical, because it is expressly contrary to the Scriptures; to maintain that the earth is not placed in the centre of the world, that it is not immoveable, and that it has even a daily motion of rotation, is also an absurd proposition, false in philosophy, and at least erroneous in point of faith." Confounded at this deliverance, Galileo employed all the arguments which the truth suggested to him in defence of a doctrine which his observations had rendered indubitable; but his efforts were unavailing; his reasonings were disregarded; and as he had not showed sufficient deference to the decision of the holy office, he was personally interdicted from professing in future the opinion which had just been condemned.[2]

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[1] "The interpreter of the works of nature is experiment," says Leonardo da Vinci; "that is never wrong: it is our judgment which is sometimes deceived, because we expect results which experiment refuses to give. We must consult experiment, and vary the circumstances, till we have deduced general rules, for it alone can furnish us with them. But, it will be asked, what is the use of these general rules? I answer, that they may direct us in our inquiries into nature and the operations of art. They keep us from deceiving ourselves and others, by promising ourselves results which we can never obtain." (Venturi, *Essai sur les Ouvrages de Leonardo da Vinci.*)

[2] It has been contended that the treatment which Galileo experienced on this and a subsequent occasion was caused, not by his maintaining the true system of the world, which, in the above declaration, is formally condemned as "false in philosophy and erroneous in faith," but solely by his persisting in the endeavour to prove that the Scriptures were reconcilable with the Copernican theory. "Ce philosophe (Galileo)," says Bergier, "ne fut point persécute comme bon astronome, mais comme mauvais théologien. C'est son entêtement à vouloir concilier la Bible avec Copernic, qui lui donna les juges. Mais vingt auteurs, surtout parmi les Protestans, ont écrit que Galilée fut persécuté et imprisonné pour avoir soutenu que la terre tourne autour du soleil, que ce système a été condamné par l'Inquisition comme faut, erroné, et contraire à la Bible." (*Encyclopédie Méthodique*, art. *Sciences humaines*, Paris, 1790.) This is a complete misrepresentation of facts known to every one. So far was Galileo from persisting in an attempt to reconcile the Bible with Copernicus, that he regarded this as a matter altogether indifferent, and indeed beside the real question. "I am inclined to believe," says he in his letter to the Grand Duchess of Tuscany, "that the intention of the sacred Scriptures is to give mankind the information necessary for their salvation, and which, surpassing all human knowledge, can by no other means be accredited than by the mouth of the Holy Spirit. But I do not hold it necessary to believe that the same God who has endowed us with senses, with speech, and with intellect, intended that we should neglect the use of these, and seek by other means for knowledge which they are sufficient to procure us; especially in a science like astronomy, of which so little notice is taken in the Scriptures, that none of the planets, except the sun and moon, and once or twice only Venus, under the name of Lucifer, are so much as named there. This therefore being granted, I think that in the discussion of natural problems we ought not to begin at the authority of texts of Scripture, but at sensible experiments and necessary demonstrations; for from the divine word sacred Scripture and nature did both alike proceed; and I conceive that, concerning natural effects, that which either sensible experience sets before our eyes, or necessary demonstrations prove unto us, ought not upon any account to be called in question, much less condemned, upon the testimony of Scripture texts, which may under their words couch senses seemingly contrary thereto." Can any thing be more explicit than the contradiction of the assertion of Bergier contained in these words? Is there any evidence here of Galileo's alleged "entêtement à vouloir concilier la Bible avec Copernic?" But the philosopher proceeds in continuation: "Again, to command the professors of astronomy that they of themselves should see to the confuting of their own observations and demonstrations, is to enjoin a thing beyond all possibility of being done; for it is not only to command them not to see that which they do see, and not to understand that which they do understand, but it is to order them to seek for and find the contrary of that which they happen to meet with. I would entreat these wise and prudent fathers that they would with all diligence consider the difference which exists between opinionative and demonstrative doctrines; to the end that, well weighing in their own minds with what force necessary inferences urge

Galileo returned to Florence in 1617, and resumed, with what grief may be easily imagined, the course of his astronomical labours. But his love for these sublime truths, of which he considered himself as the depositary, increasing in proportion to the efforts made to extinguish it, he undertook to silence, if he could not persuade, his adversaries, by collecting into a body all the physical proofs of the motion of the earth and the constitution of the heavens; and during sixteen entire years he was engaged in this work. All that the finest genius could imagine in point of ingenuity, or the purest tāste admit in point of elegance, he employed to render the truth attractive. But it is not a learned treatise which he presents to us as the fruit of his labour and talents; it is merely a continued simple dialogue between two of the most distinguished personages of Florence and Venice, and a third interlocutor, who, under the name of Simplicius, undertakes to re-produce the "invincible arguments" of the peripatetics; and each perfectly sustains the part assigned to him. The two men of the world possess instruction, without system, and without prejudices; they discuss, examine, propose doubts, and only yield to cogent reasons. The good Simplicius, on the other hand, is altogether scholastic; he neither understands nor desires to comprehend any thing but Aristotle; he judges things true or false according as they are conformable or opposed to the assertions of his master; the least pleasantry on this subject is insupportable to him, and he yields not to any kind of conviction. The style of each of the interlocutors is also perfectly adapted to his character, without ceasing however to preserve, amidst these shades of distinction, an exquisite elegance, united with the most felicitous choice of expressions.

But if great genius was required for the composition of such a work, equal address was necessary to obtain permission to publish it; and this Galileo undertook to procure even in Rome itself. In 1630 he proceeded to that city, and having waited on the master of the sacred palace, boldly presented his work as a collection of new scientific fancies, at the same time requesting him to have the goodness to examine it scrupulously, to retrench whatever might appear to him exceptionable, and indeed to criticise it with the greatest severity. The prelate, not suspecting any thing, read it once and again; handed it to one of his colleagues for his opinion; and, not seeing any thing reprehensible in the work, set his hand to the most ample approbation of its contents. But the permission thus obtained was not sufficient; for, in order to profit by it, the work must be printed at Rome; and the numerous enemies of Galileo in that city would not have failed to explode the mine which the philosopher was himself charging to blow them up. On the pretext of some difficulty of communication between Rome and Florence, occasioned by a contagious distemper which then prevailed, Galileo accordingly wrote to the master of the sacred palace, soliciting permission to print his work at Florence, on the condition of having it again examined in that city. But the prelate, who perhaps began to suspect some deception, made difficulties; pointed out to Galileo a new censor; and demanded to see the approbation which he had previously given, in order, as he said, to revise the terms in which it had been conceived. With this request Galileo could not refuse to comply; but the prelate having once got hold of the document, refused to restore it, or to give any answer in explanation of his conduct; so that Galileo, after making every effort to recover it, and even causing it to be demanded by the ambassador of Tuscany, was compelled to abandon the pursuit as hopeless; and, contenting himself with the approbation of the censor of Florence, which he now managed to obtain, he published his work in 1632.

To shield himself as much as possible from prosecution, he however imagined the singular expedient of presenting his dialogues to the public as an apology for the judgment of Rome, by which the doctrine of Copernicus had been condemned. "Some years ago," says he, in the commencement of the introduction, which is addressed to discreet readers, "a salutary edict was promulgated at Rome, which, in order to obviate the perilous scandals of the age, enjoined an opportune silence as to the Pythagorean opinion of the earth's motion. There were not wanting persons who rashly asserted that this decree had originated, not in a judicious examination, but in ignorance and passion; and complaints were even heard that councillors unexperienced in astronomical observations should have attempted by hasty prohibitions to clip the wings of speculative minds. When I heard these rash lamentations, my zeal would not suffer me to remain silent; and being fully informed in regard to that most prudent determination, I thought it proper to appear publicly on the theatre of the world as a witness of the actual truth. I happened at that time to be in Rome; I was admitted to the audiences, and enjoyed the approbation, of the most eminent prelates of that court; nor did the publication of the decree pass without my receiving some previous intimation of the circumstance.[1] Wherefore it is my intention, in this present work, to show to foreign nations that as much is known of this matter in Italy, and particularly in Rome, as ultramontane diligence ever formed any notion of; and, collecting together all my own speculations on the Copernican system, to give them to understand that the knowledge of these preceded the Roman censures, and that from this country proceed not only dogmas for the salvation of the soul, but also ingenious discoveries for the gratification of the understanding. With this object in view, I have taken up in the dialogue the Copernican side of the question, treating it as purely a mathematical hypothesis, and endeavouring in every artificial manner to represent it as having the advantage, not over the opinion of the stability of the earth absolutely, but according to the manner in which that opinion is defended by some who indeed profess to be peripatetics, but retain only the name, and are contented without improvement to worship shadows, not philosophizing with their own reason, but only from the recollection of four

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us, they might the better assure themselves that it is not in the power of professors of demonstrative sciences to change their opinions at pleasure, and adopt first one side and then another; and that there is a great difference between commanding a mathematician or a philosopher, and the disposing of a lawyer or a merchant; and that the demonstrated conclusions touching the things of nature and of the heavens cannot be changed with the same facility as the opinions are what is lawful or not in a contract, bargain, or bill of exchange. Therefore, first let these men apply themselves to examine the arguments of Copernicus and others, and leave the condemning of them as erroneous and heretical to whom it belongs; yet let them not hope to find such rash and precipitate determinations in the judicious and holy fathers, or in the absolute wisdom of him who cannot err, as those into which they suffer themselves to be hurried by some particular affection or interest of their own. In these and such other positions, which are not directly articles of faith, no man doubts but his holiness has always an absolute power of admitting or condemning them; but *it is not in the power of any creature to make them to be true or false, otherwise than of their own nature and in fact they are.*"

[1] Delambre, whose prejudice against Galileo is as unreasonable as his partiality to Kepler is marked, quotes this sentence as an instance of mis-statement of facts on the part of Galileo. With all his acknowledged ability, the historian of astronomy does not seem to have perceived, what must be obvious to almost every reader, that the whole passage is ironical, and that in the very sentence which he has cited there lurks a bitter sarcasm. (*Histoire de l'Astronomie Moderne*, tome i. p. 666.)

principles imperfectly understood." Any one who peruses a few pages of the dialogues will be at no loss how to interpret this declaration, nor will he feel any surprise that those whom Galileo here pretended to vindicate should have evinced but little gratitude for such a justification. But what can scarcely be imagined now, is the fury which the appearance of this work excited amongst the theologians of Rome, almost all of whom were ardent peripatetics. In vain did Galileo attempt to escape by alleging that his book had been submitted to the judgment of the holy see; in vain did he, as a last resource, protest that his only object had been to expound, in a philosophical manner, the two systems of Ptolemy and Copernicus. His enemies would not suffer any such excuse to be listened to. Still there remained to him some hope, founded upon the personal esteem of Pope Urban VIII., who, on a former occasion, had given him a most gracious reception, and had even paid his astronomical discoveries the compliment of celebrating them in bad verse; but the holy father having been persuaded that Galileo had intended to represent him under the character of Simplicius, his wounded self-love rendered his severity inexorable.[1] Notwithstanding the intercession of the Grand Duke of Tuscany, and the earnest solicitations which this prince caused to be made by his ambassador, the work of Galileo was delated to the Inquisition, and the author himself ordained to appear before that formidable tribunal.

The power of Rome was then supreme; it was necessary to obey. Neither the infirmity of his health, nor the pain he suffered from a rheumatic complaint which afflicted him, could procure an exemption from that sorrowful journey. This was in 1633, Galileo being then in the sixty-ninth year of his age. "I arrived at Rome," says he, in one of his letters, "on the 10th February, and was remitted to the clemency of the Inquisition, and of the sovereign pontiff, Urban VIII. who had some esteem for me, although I could not compose epigrams or write little amatory sonnets. I was put under arrest in the delicious palace of the Trinità de' Monti, the residence of the ambassador of Tuscany. Next day I received a visit from Father Lancio, commissary of the holy office, who took me with him in his coach. By the way he put to me a number of questions, and showed a great desire that I would repair the scandal which I had given to all Italy by maintaining the opinion of the motion of the earth; and to all the mathematical reasons which I could oppose to him, he could make no other answer than this: *Terra autem in æternum stabit, quia terra in æternum stat.* In discoursing thus we arrived at the palace of the holy office. I was presented by the commissary to the assessor, with whom I found two religious Dominicans, who civilly informed me that I would be permitted to explain my reasons before the congregation, and that afterwards I should be heard as to my grounds of excuse, if I was found guilty. The Thursday following I appeared before the congregation, and applied myself to the exposition of my proofs. But, unfortunately for me, they were not apprehended; and, notwithstanding all the pains I took, I could not succeed in making myself understood. My reasonings were cut short by bursts of zeal; they spoke to me only of the scandal which I had occasioned; and always opposed to me the passage of Scripture on the miracle of Joshua as the victorious piece of my process. This brought to my recollection another passage where the language of the sacred book is evidently conformable to popular ideas, since it is said that *the heavens are solid, and polished like a mirror of brass.* This example appeared to me one in point to prove that the expression of Joshua might be similarly interpreted; and the consequence seemed to me perfectly just. But no regard whatever was paid to it; and all the answer I received consisted of shrugs of the shoulders."[2] On the 30th of April Galileo was sent back to the residence of the ambassador, with a prohibition not to go beyond the *enceinte* of the palace, but with permission to walk freely in the extensive gardens attached to it. On the 22d of June he was again brought before the tribunal to hear the sentence read, and pronounce the abjuration dictated to him, according to which the venerable philosopher was made to say, "I abjure, curse, and detest the error and heresy of the motion of the earth," &c. and to promise that he would never more in future say or assert any thing, verbally or in writing, importing "that the sun is the centre of the world, and immoveable; and that the earth is not the centre of the world, and moveable." This expiation being completed, his dialogues were prohibited; he was condemned to suffer imprisonment for an indefinite period; and, as a salutary punishment, he was ordained to recite once a week for three years, the seven penitential psalms. Such was the unworthy recompense of one of the greatest geniuses that has ever enlightened humanity.[3]

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[1] See Letter written by Galileo from Acastri, 26th June 1636, and cited by Targioni-Tozzetti in his History of the Sciences in Tuscany, tome ii. p. 147.

[2] Letter of Galileo, cited by Tiraboschi.

[3] The sentence of the Inquisition on Galileo, one of the most remarkable records of intolerant ignorance and bigoted folly to be found in the history of science, is conceived in the following terms:—"We, the undersigned, by the grace of God, cardinals of the Holy Roman Church, Inquisitors General throughout the whole Christian Republic, Special Deputies of the Holy Apostolical Chair against heretical depravity: Whereas you, Galileo, son of the late Vincenzo Galilei of Florence, aged seventy years, were denounced in 1615 to this holy office, for holding as true a false doctrine taught by many, namely, that the sun is immoveable in the centre of the world, and that the earth moves, and also with a diurnal motion; also, for having pupils whom you instructed in the same opinions; also, for maintaining a correspondence on the same with some German mathematicians; also, for publishing certain letters on the solar spots, in which you developed the same doctrine as true; also, for answering the objections which were continually produced from the holy Scriptures, by glozing the said Scriptures according to your own meaning; and whereas thereupon was produced the copy of a writing, in form of a letter, professedly written by you to a person formerly your pupil, in which, following the hypothesis of Copernicus, you include several propositions contrary to the true sense and authority of the holy Scripture: therefore this holy tribunal, being desirous of providing against the disorder and mischief which was thence proceeding and increasing, to the detriment of the holy faith, by the desire of his holiness, and of the most eminent lords cardinals of this supreme and universal Inquisition, the two propositions of the stability of the sun, and motion of the earth, were *qualified* by the *theological qualifiers* as follows: 1st, *The proposition that the sun is in the centre of the world, and immoveable from its place, is absurd, philosophically false, and formally heretical, because it is expressly contrary to the holy Scripture*; 2dly, *The proposition that the earth is not the centre of the world, nor immoveable, but that it moves, and also with a diurnal motion, is also absurd, philosophically false, and, theologically considered, at least erroneous in faith.* But whereas being pleased at that time to deal mildly with you, it was decreed in the holy congregation, held before his holiness on the 25th day of February 1616, that his eminence the Lord Cardinal Bellarmine should enjoin you to give up altogether the said false doctrine; if you should refuse, that you should be ordered by the commissary of the holy office to relinquish it, not to teach it to others, nor to defend it, nor ever mention it, and in default of acquiescence that you should be imprisoned; and in execution of this decree, on the following day, at the palace, in presence of his eminence the said Lord Cardinal Bellarmine, after you had been mildly admonished by the said lord cardinal, you were commanded by the acting commissary of the holy office, before a notary and witnesses, to relinquish altogether the said false opinion, and in future neither to defend nor teach it in any manner, neither verbally nor in writing; and upon your promising obedience you were dismissed. And in order that so pernicious a doctrine might be altogether rooted out, nor insinuate itself farther to the heavy detriment of the Catholic truth, a decree emanated from the holy congregation of the index prohi-

It is said that, after having pronounced his abjuration, Galileo, as he rose from the kneeling posture, indignant at the monstrous injustice of his age, stamped on the ground, and said in an under tone, *E pur si muove*, It moves notwithstanding. No doubt it does move, and this is the only answer which those who study nature should at all times make to their detractors and persecutors. What signifies the opinion of men when nature herself speaks? Of what value are their prejudices, or even their wisdom, in opposition to her laws? Why denounce as an impiety the observation of the works of God? Such, indeed, are now the sentiments of persons the most enlightened on the subject of theology; the motion of the earth and the immobility of the sun are no longer contrary to the words of Scripture; it is at length admitted that the Holy Spirit spoke to men in the only language which they could comprehend. It is true that this interpretation, which is now universally received, did not appear good in the time of Galileo, since we have seen that he was himself reprehended for having attempted to give it effect; but, from what we have related of the history of his life, it is evident that the persecution exercised against him was the effect, unhappily too common, of the envy which always attaches to great celebrity. There are arms peculiar to every country. Galileo was a heretic in Italy, as Descartes was an atheist in Holland. However, in denouncing to posterity the shameful injustice done to this great man, it must in fairness be admitted that the formidable tribunal by which he was condemned did not exercise towards him its extreme severity. It has been pretended, without any probability, that he was put to the question. But although it is true that, in the inquisitorial style, this seems to be indicated by the words *rigorosum examen* which are found in the text of the judgment, and although, by a singular coincidence, he began about this time to be afflicted with an intestinal hernia, the ordinary consequence of the particular species of torture (*il tormento della corda*) to which he is supposed to have been subjected; yet, for the honour of humanity, these presump-

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biting the books which treat of this doctrine; and it was declared false, and altogether contrary to the holy and divine Scripture. And whereas a book has since appeared, published at Florence last year, the title of which showed that you were the author, which title is, *The Dialogue of Galileo Galilei, on the two principal systems of the world, the Ptolemaic and Copernican*; and whereas the holy congregation has heard that, in consequence of the printing of the said book, the false opinion of the earth's motion and stability of the sun is daily gaining ground, the said book has been taken into careful consideration, and in it has been detected a glaring violation of the said order, which had been intimated to you; inasmuch as in this book you have defended the said opinion, already and in your presence condemned; although in the said book you labour with many circumlocutions to induce the belief that it is left by you undecided, and in express terms probable; which is equally a very grave error, since an opinion can in no way be probable which has been already declared and finally determined contrary to the divine Scripture. Therefore by our order you have been cited to this holy office, where, on your examination upon oath, you have acknowledged the said book as written and printed by you. You also confessed that you began to write the said book ten or twelve years ago, after the order aforesaid had been given. Also, that you demanded license to publish it, but without signifying to those who granted you this permission that you had been commanded not to hold, defend, or teach the said doctrine in any manner. You also confessed that the style of the said book was, in many places, so composed that the reader might think the arguments adduced on the false side to be so worded as more effectually to entangle the understanding than to be easily solved, alleging in excuse that you have thus run into an error, foreign (as you say) to your intention, from writing in the form of a dialogue, and in consequence of the natural complacency which every one feels with regard to his own subtilties, and in showing himself more skilful than the generality of mankind in contriving, even in favour of false propositions, ingenious and apparently probable arguments. And, upon a convenient time being given to you for making your defence, you produced a certificate in the handwriting of his eminence the Lord Cardinal Bellarmine, procured as you said by yourself, that you might defend yourself against the calumnies of your enemies, who reported that you had abjured your opinions, and had been punished by the holy office; in which certificate it is declared that you had not abjured, nor had been punished, but merely that the declaration made by his holiness, and promulgated by the holy congregation of the index, had been announced to you, which declares that the opinion of the motion of the earth, and stability of the sun, is contrary to the holy Scriptures, and therefore cannot be held or defended. Wherefore, since no mention is there made of two articles of the order, to wit, the order 'not to teach,' and 'in any manner,' you argued that we ought to believe that, in the lapse of fourteen or sixteen years they had escaped your memory, and that this was also the reason why you were silent as to the order, when you sought permission to publish your book, and that this is said by you not to excuse your error, but that it may be attributed to vain-glorious ambition rather than to malice. But this very certificate, produced on your behalf, has greatly aggravated your offence, since it is therein declared that the said opinion is contrary to the holy Scripture, and yet you have dared to treat of it, to defend it, and to argue that it is probable; nor is there any extenuation in the license artfully and cunningly extorted by you, since you did not intimate the command imposed upon you. But whereas it appeared to us that you had not disclosed the whole truth with regard to your intentions, we thought it necessary to proceed to the rigorous examination of you, in which (without any prejudice to what you had confessed, and which is above detailed against you, with regard to your said intention) you answered like a good Catholic. Therefore, having seen and maturely considered the merits of your cause, with your said confessions and excuses, and every thing else which ought to be seen and considered, we have come to the underwritten final sentence against you. Invoking, therefore, the most holy name of our Lord Jesus Christ, and of his most glorious Virgin Mother Mary, by this our final sentence, which, sitting in council and judgment for the tribunal of the reverend masters of sacred theology, and doctors of both laws, our assessors, we put forth in this writing touching the matters and controversies before us, between the magnificent Charles Sincerus, doctor of both laws, fiscal proctor of this holy office of the one part, and you, Galileo Galilei, an examined and confessed criminal from this present writing now in progress as above of the other part, we pronounce, judge, and declare, that you, the said Galileo, by reason of these things which have been detailed in the course of this writing, and which, as above, you have confessed, have rendered yourself vehemently suspected by this holy office of heresy; that is to say, that you believe and hold the false doctrine, and contrary to the holy and divine Scriptures, namely, that the sun is the centre of the world, and that it does not move from east to west, and that the earth does move, and is not the centre of the world; also that an opinion can be held and supported as probable after it has been declared and finally decreed contrary to the holy Scripture, and consequently that you have incurred all the censures and penalties enjoined and promulgated in the sacred canons, and other general and particular constitutions against delinquents of this description. From which it is our pleasure that you be absolved, provided that, first, with a sincere heart and unfeigned faith, in our presence, you abjure, curse, and detest the said errors and heresies, and every other error and heresy contrary to the Catholic and apostolic church of Rome, in the form now shown to you. But, that your grievous and pernicious error and transgression may not go altogether unpunished, and that you may be made more cautious in future, and may be a warning to others to abstain from delinquencies of this sort, we decree that the book of the Dialogues of Galileo Galilei be prohibited by a public edict, and we condemn you to the formal prison of this holy office, for a period determinable at our pleasure; and, by way of salutary penance, we order you, during the next three years, to recite once a week the seven penitential psalms, reserving to ourselves the power of moderating, commuting, or taking off the whole or part of the said punishment and penance. And so we say, pronounce, and by our sentence declare, decree, and reserve, in this and in every other better form and manner, which lawfully we may and can use. So we, the subscribing cardinals, pronounce. Felix, Cardinal di Ascoli; Guido, Cardinal Bentivoglio; Desiderio, Cardinal di Cremona; Antonio, Cardinal S. Onofrio; Berlingero, Cardinal Gessi; Fabricio, Cardinal Verospi; Martino, Cardinal Ginetti." This document is decisive as to the fallacy of the allegation, that "Galileo was not persecuted as a good astronomer, but only as a bad theologian."

tions seem completely destroyed by the conduct which was subsequently observed towards him. It is certain, from the letters of the ambassador of Tuscany, that he was not thrown into the dungeons of the holy office, although the judgment bears so. The prison assigned him was the lodging of one of the superior officers of the tribunal, with permission to walk throughout the whole palace; he was allowed to retain his domestic; and, so far from being put in solitary confinement, he was permitted to receive the visits of his friends as often as he pleased. All this is established by numerous letters of Galileo himself, dated at this period, and which, fortunately for the cause of truth and humanity, have been preserved. If he did not at once recover his entire liberty, his captivity was at least mitigated as much as it could well be, since the prison assigned him was the magnificent palace of the Archbishop of Sienna, Piccolomini, his friend and pupil, surrounded with beautiful gardens, in which he was allowed to take exercise at pleasure. In the beginning of December 1633, the pope granted him permission to reside openly in the country near Florence; and at a somewhat later period, he was allowed to enter the city as often as his infirmities required. Nevertheless, these restrictions prove that he still remained under the surveillance of the Inquisition; and the Italian writers even say that he several times received, from that tribunal, threatening letters, on account of the pursuits to which he still applied himself, and on pretence of the too intimate connection which he maintained with the learned in Germany.

It was no doubt too much thus to afflict an old man who had committed no other error than that of unfolding truths previously unknown. This treatment made a deep impression on his mind, as may be seen from the preface to his two new dialogues on the motion and resistance of solids, which he confided in manuscript to the Count de Noailles, when the latter was on his return to France from Rome, where he had been ambassador. "Confounded and afflicted with the bad success of my other works," says he, "and having resolved to publish nothing more, I have wished at least to place in sure hands some copy of my works; and as the particular affection with which you have honoured me will certainly make you desirous to preserve them, I have chosen to confide these to you." The count lost no time in communicating them to the Elzevirs, by whom they were printed at Leyden, in 1628, 4to; and it may be presumed that this publication did not occasion Galileo as much uneasiness as his disciple Viviani, writing, like himself, near Rome, would lead us to believe; a presumption confirmed by several letters, addressed to his intimate friends, which have fortunately been preserved. In these two dialogues Galileo created a science altogether new, namely, that of the resistance of solids; and he established, with admirable sagacity, the laws, not less novel, of the accelerated motion of heavy bodies, whether falling freely through space or descending on inclined planes. Nor is this the only production of Galileo which the French have had the honour of saving from his enemies. It was a Frenchman, Father Mersenne, who first published his mechanics; a book which, in a few pages, contains, among other discoveries, a demonstration of the laws of equilibrium on the inclined plane, and that other principle so fruitful in consequences, since called the principle of virtual velocities, which consists in this, that, in any machine whatsoever, the power and the weight in equilibrio are inversely proportional to the spaces which they would pass through in a time infinitely small, if the equilibrium were ever so little disturbed.

Oppressed with the weight of years and misfortunes, Galileo still pursued his observations, and worked with indefatigable courage to continue his tables of Jupiter's satellites, when the loss of sight obliged him, at the age of seventy-four, to discontinue his labours. But his faculties survived this deprivation, and he did not cease to meditate on nature though it was now concealed from his view. Surrounded by attentive and respectful pupils, and by the most distinguished persons of Florence, he lived four years in this state of blindness, after which a slow fever terminated his long and brilliant career, on the 9th of January 1642 (the same year in which Newton was born), at the advanced age of seventy-eight. His body was transported to Florence, and buried in the church of Santa Croce; but it was not until near a century later that the splendid monument was erected which now covers his remains and those of his celebrated pupil and friend Viviani.

The most masterly, and at the same time the most impartial estimate which has yet appeared of the services rendered to the cause of human knowledge by the Florentine philosopher, will be found in the Third Dissertation prefixed to this work (see particularly p. 469, 470), to which the reader is accordingly referred; more especially with respect to the preference which Biot, supported by Hume, has been pleased to assign to Galileo over Bacon in pointing out the true method of studying nature, and showing the art, if it may be so called, of interrogating her by means of experiment. On this subject Professor Playfair has left little or nothing to be said by those who come after him. The accomplishments of Galileo as a scholar were scarcely less remarkable than his discoveries in science. His style, which has been happily characterised by Hume, is so elegant and pure that it has become a classical authority; and we have already shown by what happy preparation he attained this excellence in the art of writing. He loved literature, especially poetry, and was so passionate an admirer of Ariosto that he knew the whole of the Orlando by heart. This predilection indeed he carried so far as to suffer it to betray him into injustice towards Tasso; at least if we may judge from an early composition published after his death, but which he most probably never intended to see the light. But if the manner in which he speaks of the *Jerusalem Delivered* be not always consistent with the respect due to so great a poet, something must at the same time be allowed for that freedom with which the mind gives scope to its own impressions when it converses as it were with itself alone, and is not obliged to observe any of those restraints which publication imposes. It is probable that Galileo would have softened his criticism if he had published it; and it may be believed that when his taste was formed, he would have judged it proper to suppress it entirely; for in several passages of his letters he renders justice to the merit of Tasso, although Ariosto always appeared to him superior as a poet. We have entered into this detail, because an interest attaches to all the distinctive characteristics or peculiarities of celebrated men. For the same reason, we shall add, that Galileo was a man of amiable character and agreeable appearance, particularly in his old age; that his temperament was animated, his manners cheerful, and his conversation attractive; and that he preferred living in the country, where his favourite relaxations consisted in the cultivation of his garden, and in the conversation of his friends. He was never married; but he left three natural children, a son, and two daughters, who, after his death, entered a convent, and took the veil.

Without pretending to give an accurate list of all the works of Galileo, we shall content ourselves with the following enumeration of his principal productions:—1. Nuncius Sidereus, Florence, 1610, in 4to, reprinted the same year at Venice in 4to, and at Frankfort in 8vo; 2. Il Saggiatore, nel quale, con bilancia esquisita e giusta, si ponderano le cose contenute, &c. Rome, 1623, in 4to, being a refutation of the Libra Astronomica of the Jesuit Grassini; 3. Dialogi quattro sopra i due massimi Sistemi del

Mondo, Tolemaïco e Copernicano, Florence, 1632, in 4to, translated into Latin by Bernegger, with other pieces, under the title of Systema Cosmicum; 4. Epistolæ Tres de conciliatione Sacræ Scripturæ cum Systemate Telluris mobilis, quarum duæ posteriores nunc primum cura M. Nevræi prodeunt, Lyons, 1649; 5. Considerazioni al Tasso, printed for the first time in 1793, Venice, in 12mo, and Rome, in 4to; 6. Lettere inedite di Uomini Illustri, published by Fabroni, Florence, 1773, in 8vo, in which are included several unedited letters of Galileo. His treatise on Fortification and Military Architecture is preserved in manuscript in the Bibliotheca Riccardiana, of which Lami published a catalogue in 1756. The editions of his collected works, in which is contained much that was never published separately, are, 1. Opere di Galileo Galilei, Bologna, Charles Manolessi, 1656, in 2 vols. 4to, but very incomplete; 2. Opere, &c., Florence, Bothni, 1718, in 3 vols. 4to, scarcely less so; 3. Opere, &c., Padua, 1744, in 4 vols. 4to, being the first edition of the collected works, containing the Dialogue on the System of the World, after the copy corrected and improved by the author; 4. Opere, &c., Milan, 1811, in 11 vols. 8vo, which is the most complete of all. The most extended life which has yet appeared of this illustrious philosopher is that by Louis Brenna, which has been inserted by Fabroni in the first volume of his *Vitæ Italorum*, 1778. Many precious notices are also to be found in Tiraboschi, and in the work of Targioni-Tozetti on the History of the Sciences in Tuscany. (See *Biographie Universelle*, art. Galileo Galilei, by Biot; *Saggio della Filosofia del Galileo*, by Andrès; and Drinkwater's Life of Galileo, in the *Library of Useful Knowledge.*) (J. B—E.)

GALL, in the animal economy, the same thing as bile. (See ANATOMY.) It was customary among the Jews to give gall or a bitter potion to persons suffering death under the sentence of the law, for the purpose of rendering them less sensible to pain. At our Saviour's crucifixion, according to St Matthew, "They gave him vinegar to drink, mingled with gall"—ὄξος μετὰ χολῆς; whereas in St Mark it is said to be "wine mingled with myrrh."—a very bitter ingredient. It would hence appear that the word χολή was used figuratively, or generally for whatever is exceedingly bitter.

The clarified gall of the ox is employed in the arts for several purposes. It is used by the scourers of clothes to remove spots of grease; and by painters in water-colours.

GALL or GALL-NUT (Lat. *galla*). Gall-nuts are excrescences which are formed on the *Quercus infectoria*, a species of oak that abounds in Asia Minor, Syria, Persia, &c., and on some others. They are produced by the attacks of the cynips, a small insect which deposits its eggs in the tender shoots of the tree; and when the maggot is hatched, it occasions a morbid excrescence of the surrounding parts. Galls are inodorous, and have a nauseously bitter and astringent taste. They are nearly spherical, and vary in magnitude from the size of a pea to that of a hazel-nut. When good, they are of a black or deep olive colour, and the surface is tubercular. In commerce they are distinguished into *white*, *green*, and *blue* galls. The two latter kinds are the best. The chief products of galls are tannin and gallic acid. Galls are very extensively used in dyeing, and in the manufacture of ink. (See DYEING.) They are the most powerful of all the vegetable astringents, and are frequently used in medicine. Galls are chiefly imported from Aleppo, Tripoli, Smyrna, and Said. It is not unusual to dye the white or inferior kind blue, in order to increase their value; but this fraud is easily detected by their being perforated, and lighter than the genuine blue galls. (M'Culloch's *Dict. of Com.*) The term *gall* is also applied generally to any protuberance or tumour produced on trees by the puncture of insects.

GALL OF GLASS, called also *sandiver*, is the neutral salt skimmed off the surface of crown-glass in the melting pots.

GALL, FRANCIS JOSEPH, the founder of Phrenology, as it is now called, was descended of a respectable family residing at Tiefenbrunn, two leagues distant from Pforzheim, in Suabia, and born on the 9th of March 1757. His father was a shopkeeper or merchant, and mayor of the village. His parents, who were of the Roman Catholic persuasion, originally intended him for holy orders; but his natural dispositions were adverse to such a destination. He pursued his studies first at Baden, then at Brucksal, and afterwards at Strasburg, where he completed his literary education. Having resolved to study medicine with a view to the practice of physic, he, in 1781, proceeded to Vienna, the medical school of that capital having acquired great celebrity, particularly since the times of Van Swieten and Stoll; and, after passing through the ordinary course, he took his degree.

Being early given to observation, Gall, whilst yet a boy, was struck with the fact, that each of his companions and schoolfellows possessed some peculiarity of talent which distinguished him from the others. One excelled in penmanship, another in arithmetic, a third in the acquisition of languages. The compositions of some were remarkable for elegance, whilst those of others were hard, stiff, formal, and dry; several connected their reasonings in the closest manner, and clothed their arguments in forcible language; many were devoid of the talent for logical arrangement, and incapable of expressing themselves with clearness and precision. Nor were their dispositions less various than their intellectual endowments. Not a few manifested a capacity for employments which they had not been taught, such as cutting figures in wood, or delineating them on paper; some devoted their leisure to drawing or gardening, whilst others abandoned themselves to noisy games, or traversed the woods to gather flowers, search for birds' nests, or catch butterflies. In short, each presented a character peculiar to himself, and Gall did not observe that the individual who, one year, displayed selfish or knavish propensities, became a kind and faithful friend the next. Of his schoolfellows, those with whom he experienced the greatest difficulty in competing, were the boys who committed their lessons to memory with the greatest facility; and such individuals frequently gained from him by their repetitions the places which he had obtained by the merit of his original compositions. Several years afterwards, having changed his place of residence, and still meeting with individuals possessed of the same faculty, he observed that the individuals so gifted had all prominent eyes, and he also recollected that his rivals in the first school had been distinguished by the same peculiarity. On entering the university, he accordingly directed his attention to those students who had large eyes, and, upon inquiry, he found that they all excelled in committing pieces to memory and giving correct recitations, although many of them were by no means remarkable for general talent. As the coincidence thus observed was recognised by the other students in the classes, Gall conceived that it could not be entirely accidental; and hence, from this period, he seems to have come to the conclusion that they stood in an important relation to each other. But if verbal memory was thus indicated by an external sign, it required no great effort of generalization to conceive that the other intellectual powers might have each its appropriate manifestation. Proceeding on this idea or assumption, Gall now directed his attention to individuals distinguished by any remarkable faculty; and, after a course of observation, he conceived himself to have discovered and defined the external characteristics indicative of decided talents for painting, music, and the mechanical arts. Having also become acquainted with several persons remarkable for determination of character, he observed that a particular part of their heads was largely developed, and this development he set down as the external sign or manifestation of the character referred to.

His next step was to look in the head for the indications of the moral sentiments as well as of the intellectual faculties; but here he experienced considerable difficulties. Hitherto he had been ignorant of the opinions of physiologists concerning the brain, and of metaphysicians respecting the mental faculties; and, on turning to books, he became so much perplexed by the discordance of the views therein inculcated, that, for a time, he hesitated as to the correctness of his own observations. He found that, whilst Pythagoras, Plato, Galen, Haller, and others, placed the sentient soul in the brain, Aristotle fixed its residence in the heart, Van Helmont in the stomach, Descartes in the pineal gland, and Drelincourt in the cerebellum; that, according to many philosophers and physiologists, all men are born with equal mental faculties; and that the differences observable amongst mankind are not ascribable to any original or constitutional inequality of powers, but the result partly of education, and partly of the diversified circumstances in which individuals are placed. But if all differences are accidental, it is evident that there can be no natural signs of predominating faculties, and, consequently, that the project of attempting, by observation, to discover the functions of the different portions of the brain, must be abandoned as hopeless. Sensible of this, Gall combated the difficulty by denying the truth of the doctrine of original equality on which it is founded. He contended that persons who have all received the same or very nearly the same education unfold each a distinct character, over which circumstances appear to exercise only a limited control; that individuals, whose education has been conducted with the greatest care, and on whom the labours of instructors have been most freely lavished, frequently remain far behind their companions in attainments; that many, even with the most ardent desire, followed out by the most persevering efforts, cannot, in some pursuits, attain even to mediocrity; that, in point of fact, instructors of youth do not appear to attach much faith to the system which teaches the equality of mental faculties, and think themselves entitled to exact more from one scholar and less from another; that the doctrine of Scripture, according to which, each will be required to render an account only in proportion to the gifts which he has received, serves to confirm this view, and is, moreover, in accordance with observation and experience. On these grounds, Dr Gall concluded that there is a natural and constitutional diversity of talents and dispositions amongst men; and that, supposing the exercise of the mental faculties dependent on the functions of the brain, the external signs of these faculties may be determined by observation.

Abandoning every theory and preconceived opinion, therefore, he applied himself to the discovery of those signs of the existence of which he had thus satisfied his own mind. Being physician to a lunatic asylum at Vienna, he had opportunities of making observations on the insane; he visited prisons, and resorted to the seats of learning; he was introduced to the courts of princes and the tribunals of justice; wherever he heard of an individual remarkable either for his mental endowments or defects, he studied the development of his head; and at length he conceived himself warranted in maintaining that particular mental powers are indicated by particular configurations of the shell or case in which the brain is lodged. Hitherto he had resorted only to physiognomical indications in order to discover the functions of the brain; but, being convinced that physiology is imperfect when separated from anatomy, he felt the necessity of instituting anatomical researches into the structure of the brain.[1] Accordingly, in every instance where an individual whose head he had examined whilst alive happened to die, he used every means to obtain permission to examine the brain, and frequently did so; and he states it as a general fact, that, on the skull being removed, the brain, covered by the dura mater, presented a form corresponding to that which the skull had exhibited in life. Thus, by successive steps, by first observing a concomitance between particular talents and dispositions, and particular forms of the head, and next by ascertaining that the figure and size of the brain were indicated by these external forms, Dr Gall conceived that he had determined the intellectual dispositions corresponding to about twenty organs, or, in other words, ascertained the residences of as many intellectual faculties of the first order; and these organs he named according to the faculty or propensity which he attributed to each respectively. In short, he maintained that the intellectual dispositions being innate, have their seats in the brain, where the organs of the faculties are also situated; that the more prominent any isolated point on the skull is, the greater is the activity of the faculty, the organ of which is there placed; and that the part of the brain where such faculty resides and acts, by pressing on the skull, forms, on its convex surface, a protuberance, which indicates externally the organ, and is, in fact, its invariable sign.

Dr Gall first became known as an author by the publication of two chapters of a work entitled *Philosophisch-Meicinishe Untersuchungen über Natur und Kunst im gesunden und krauken Zustande des Menschen*, Vienna, 1791. This work was not continued; but in the two chapters published, Dr Gall evinced the spirit which subsequently guided his researches into the intellectual and moral nature of man. The first written notice of his inquiries respecting the differences of form observable in the human head was contained in a familiar letter addressed to Baron Retzen, which appeared in the *Deutschen Mercur* of December 1798; but two years before this Dr Gall had commenced giving courses of private lectures at Vienna, where his doctrines soon attracted general attention; and Froriep, Martens, and Walther, were among his hearers. He continued his lectures for five years, with increasing success, when, at length, upon the 8th of January 1802, the Austrian government issued an order, interdicting them, on the ground that the doctrines therein promulgated were dangerous to religion; and, in a general regulation which accompanied the order, all private lectures were prohibited, unless specially permitted by the public authorities. Dr Gall understood the object of this regulation, and never solicited permission; but, as usually happens, the prohibition stimulated curiosity, and the doctrines thus interdicted were studied with greater zeal than before. It is difficult to perceive what object the Austrian government proposed to attain by this foolish interposition, more especially as publications on the subject continued to be permitted, provided they abstained from reflecting on the government for issuing the order above mentioned. On the 6th March 1805, Dr Gall left Vienna, in company with Dr Spurzheim, whom he had now associated with him in his pursuits, and proceeded to Berlin, where he remained a short time; he then visited all the principal towns and universities of Germany, and in November 1807 repaired to Paris, where he established himself as a medical practitioner, and remained till the time of his death. To the charge of Spinozism or atheism, which was strongly urged against him, particularly by some of the French scholars, Dr Gall replied in a work entitled *Des Dispositions innées de l'Ame et de l'Esprit, ou du Matérialisme,* Paris, 1812, in 8vo, which he seems to have intended as an authoritative exposition of the metaphysics of the new science. But a much ruder onset awaited it. In 1815, and again in 1826, craniology was attacked in able articles inserted in the *Edinburgh Review,* where the united powers of argument and ridicule were forcibly directed against it by writers possessing an equal mastery over both; but the results of Dr Gall's observations were not, in the opinion of his followers, destroyed, nor even materially affected, by the critical severity with which these had been examined in the Review; and their confidence in the truth of the system, which to the uninitiated appeared to be overthrown, gained strength from each successive shock to which it was exposed. But whatever may be thought of Dr Gall's discoveries, either in reference to the philosophy of mind, or to the moral and religious opinions of mankind, it seems to be pretty generally conceded, that, by his dissections and observations, he has considerably advanced the knowledge of the cerebral system, and that, even if he be accounted a bad philosopher, he has at least shown himself an able anatomist. He demonstrated, what before was only conjectured, that cerebral matter does not derive its origin from the brain, but from the spinal marrow; which, expanding as it proceeds, at length forms the two hemispheres into which the brain is divided. In conjunction with Spurzheim, Dr Gall published at Paris, in 1810, *Anatomie et Physiologie du Système nerveux en général, et du Cerveau en particulier;* but of this work there only appeared a volume and a half. The most elaborate of his productions, however, is *Organologie, ou Expositions des Instincts Penchans, &c. et du siège de leurs Organes,* which was completed in 1825. His *Histoire des Fonctions du Cerveau* had appeared in 1822, in two vols. 8vo. In 1828 Dr Gall died at Paris, where he had for many years practised medicine with success, leaving his mantle to Dr Spurzheim, who had been long associated with him both in the pursuit and the propagandism of phrenology. (See *Biographie des Hommes Vivants,* art. Gall; and *Transactions of the Phrenological Society,* Edinburgh, 1824; *Nécrologie,* 1828; *Edinburgh Review,* vols. xxv. and xlv.) (J. B—E.)

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[1] Having observed a woman, aged fifty-four years, who from her youth had been afflicted with water in the head, yet possessed a mind as active and intelligent as that of any other individual of her class, Dr Gall declared his conviction that the structure of the brain must be different from what it was generally supposed to be; a conclusion which Tulpius had already drawn from observing a hydrocephalic patient, whose mental faculties remained unaffected by the disease under which he was labouring. This, and other analogous cases, convinced Dr Gall of the necessity of instituting minute anatomical researches into the structure and functions of the brain.

GALL, St (German *Sankt Gallen*), a canton in the N.E. of Switzerland, occupying the fourteenth place in the Swiss confederation, and bounded on the N. by the canton of Thurgau and the lake of Constance, E. by the Rhine, which separates it from Tyrol and the principality of Liechtenstein, S. by the cantons of Grisons and Glarus, and W. by those of Schwyz and Zürich. Area 753 square miles. This canton was formed in 1798, by the union of the territories of the abbot of St Gall with the free town of St Gall, and several districts previously subject to the older cantons. As these all lay around the canton of Appenzell, that canton is wholly surrounded by the canton of St Gall. The surface is greatly diversified, and for the most part mountainous, particularly in the south, where it is almost wholly covered with Alpine ranges. The summits of some of these rise to the height of 7000 or 8000 feet, and Mount Scheibe at the S.W. extremity has an elevation of about 9000 feet. These mountain ranges inclose some extensive and fertile valleys, the principal of which are those of the Rhine and Toggenburg. Besides the Rhine, the principal rivers of this canton are the Thur, Sitter, Seez, Linth, and Tamina. St Gall includes parts of the lakes of Constance and Zürich, and the greater portion of that of Wallenstadt. The plains and valleys are in many parts well cultivated, but the produce of corn is not equal to the wants of the inhabitants. Potatoes are extensively grown, and fruits of various kinds are raised in large quantities, especially apples, from which cider, the common drink of the people, is made. Some wine is also made; and *kirschwasser* (cherry-water) is an important product of the mountainous parts of the canton. The country being generally better adapted for pasturage than tillage, the rearing of cattle constitutes the chief branch of rural industry. The forests in the south are extensive, and consist chiefly of pine and fir trees. Coal and turf are found in several districts, and iron mines are wrought in one or two places. Mineral springs are numerous,—the most celebrated being those of the Pfeffers. Manufactures constitute an important branch of industry in this canton. Its capital, St Gall, was long celebrated for its linen manufactures, but these have been in a great measure replaced by the manufacture of cotton goods, especially muslins. Cotton goods are also largely manufactured in the valley of Toggenburg and other places. The women are much employed in embroidery. There are numerous bleaching establishments, glass-works, and wax-bleaching factories; but the manufactures have generally decreased since the peace. The imports are chiefly corn and other provisions, and raw materials for the manufactures; and the chief exports are manufactured goods, cattle, and hides. The government is one of the most democratic in Switzerland. It consists of a great and a little council. The former is composed of 150 members chosen in the different districts, by citizens above 21 years of age, who hold office for two years. The little council or executive consists of seven members, chosen by the great council from among its own members, and holding office for four years. The people enjoy the right of a *veto* on any law passed by the councils, within 35 days of the time of its passing. The canton of St Gall returns eight members to the national council. The language of the people is a dialect of the German, resembling the Suabian. St Gall is the only town of importance in this canton,—none of the others having a population of above 2500 inhabitants. Pop. (1851) 169,625, of whom 105,370 were Catholics, 64,192 Calvinists, and the remainder chiefly Jews.

Gall, St, the capital of the above canton, is situated in an elevated valley on the Steinach, 7 miles S.W. of the lake of Constance. It is a well-built town, surrounded by old walls, but the ditch has been filled up and converted into gardens. Among its public buildings may be noticed the cathedral, formerly the abbey church; an orphan asylum outside the walls; the assembly-rooms; and the townhouse. It has also a Catholic and a Protestant gymnasium, several learned and benevolent societies, natural history collections, a public library, &c. The Catholic gymnasium occupies the abbey buildings, and the abbot's palace is now used for public offices. This is one of the principal manufacturing towns of Switzerland. Its manufactures are chiefly muslins and other cotton goods; and in the town and vicinity are numerous bleaching establishments. This town is said to have taken its rise from a cell founded here in the early part of the seventh century by St Gallus, a monk from Iona. Fifty years after his death was erected, under the auspices of Pepin l'Heristhal, an abbey, which between the eighth and tenth centuries was one of the most celebrated schools in Europe. About the end of the tenth century the abbey buildings were fortified, and subsequently the abbots obtained possession of considerable territory, and became princes of the empire. Early in the fifteenth century Appenzell threw off the yoke of the abbot, and the town of St Gall acquired its independence at the Reformation. The abbey was secularized after the French Revolution, and in 1805 its revenues were sequestrated. Pop. (1850) 11,234, chiefly Protestant.

Galland.

Gallas ‖ Gallia.

GALLAND, Antoine, a celebrated orientalist and numismatist, was born in 1646, at Rollat, near Montdidier in Picardy. His father died when he was a mere child; but his mother contrived to place him in the college of Noyon, where he was carefully educated. After leaving this establishment he had to contend with many difficulties and hardships, arising from the poverty of his family; but he manfully continued to prosecute his oriental studies, till in 1670 he was attached to the French embassy at Constantinople. His special duty was to procure from the Greek churches formal attestations of the articles of their faith, which then formed the subject of a grand controversy between Arnauld and Claude. He also accompanied the French ambassador to Jerusalem, and availed himself of the opportunity to copy a great number of inscriptions, and even to remove them, as often as he found it practicable to do so. Of these, Montfaucon has published some fragments in his *Palæographia Græca*. From Syria Galland returned directly to France, whence he immediately set out again for the Levant with the intention of collecting medals. In 1679 he undertook a third voyage, being charged by the India Company to collect everything calculated to enrich the cabinet of Colbert; but this commission having ceased in consequence of changes which took place in the company, Colbert, and, after his death, Louvois, instructed Galland to continue his researches, and caused the title of "antiquary to the king" to be conferred on him. On his return to Paris, Thevenot, keeper of the king's library, and D'Herbelot, the celebrated oriental scholar, availed themselves of his labours. After their death he attached himself to Bignon, and finally to Foucault, intendant of Lower Normandy, who received Galland into his house, where, in the midst of a fine library, and a numerous collection of medals, he applied himself to the composition of different works, in which he turned to account his knowledge of the Arabic, Persian, and Turkish languages, with which he had rendered himself familiar during his residence in the east. In 1701 he was admitted into the Academy of Inscriptions, although he resided at Caen. In 1706 he returned to take up his habitation in Paris; and three years afterwards he obtained the chair of Arabic in the Royal College of France. This learned man terminated his laborious, useful, and irreproachable life on the 17th of February 1715, at the age of sixty-nine.

The following is a list of his printed works:—1. Trois Lettres touchant la critique de M. Guillet, sur le Voyage de Grèce de Spon, printed in the reply of Spon, Lyons, 1679, in 12mo; 2. Paroles remarquables, bons mots, et maximes des Orientaux, traduits de leurs ouvrages Arabes, Persans, et Turcs, avec des remarques, Paris, 1694, in 12mo; 3. Lettres touchant l'Histoire des quatre Gordiens, prouvée par les Médailles, Paris, 1696, in 12mo; 4. Lettre touchant quatre médailles antiques, publiées par le P. Chamillard, Caen, 1697, in 12mo; 5. Lettre touchant la nouvelle explication d'une médaille d'or du cabinet du Roi, Caen, 1698, in 12mo; 6. Lettre sur le même sujet, printed in the Journal des Savants, 15th August 1705; 7. Observations sur quelques médailles de Tétricus le père, et d'autres tirées du cabinet de M. Ballonseaux, Caen, 1701, in 8vo; 8. De l'origine et du progrès du Caffé, translated from an Arabic manuscript in the library of the king, Caen, 1699, in 12mo; 9. Les Mille et Une Nuits, contes Arabes, traduits en Français, Paris, in 12 vols. 12mo: Relation de la Mort du Sultan Osman, et du couronnement du Sultan Mustapha, translated from the Turkish, Paris, 1678, in 12mo; 11. Several articles in the Journal de Trévoux; 12. Letters written from Smyrna and Constantinople; 13. Contributions to the Menagiana, as well as to the Bibliothèque Orientale of D'Herbelot, who died before the printing of the work was completed; 14. Ten dissertations and memoirs for the collection of the Academy of which he was a member. Since the death of Galland there have been published of his, 1. Contes et Fables Indiènnes de Pidpaï et de Lokmann, Paris, 1724, in 12mo; 2. Dissertation sur une médaille Grecque de l'Empereur Diaduménien, frappée à Ephèse, 1739; 3. Relation de l'esclavage d'un Marchand Français de la ville de Cassis à Tunis, 1809. The manuscripts left by Galland were, 1. Histoire des Princes de la lignée de Tamerlan, depuis le Sultan Abou-Saïd-Bahadur, jusqu'au Sultan Abou-Saïd-Kourkan; 2. Histoire Othomane, traduite du Turc de Naïma Effendi; 3. Vocabularium Turkico-Latinum; 4. A translation of the History of Djenguyz-Khan, extracted from the Persian History of Mirkhoud; 5. Catalogue d'écrivains Arabes, Persans, et Turcs; 6. Journal de mon séjour à Constantinople pendant l'année 1672 et 1673; 7. Dictionnaire Numismatique; 8. Relation de ses Voyages; 9. Traduction de l'Alcoran; 10. Nécrologie de la mort des Savants pour chaque jour de l'année de 1500 à 1701; 11. Relation d'un Voyage fait à Constantinople en 1679 et 1680; 12. Etat present des îles de Samos, de Nicaire, de Patmos, et du Mont Athos; 13. Description de la Ville de Constantinople en 1671 et 1672; 14. Relation des Evénemens qui se sont passés à Constantinople en 1671 et 1672. (J. B—E.)

GALLAS, a rude and savage people of Africa, who have overrun the greater part of Abyssinia from the south. See Abyssinia, and Africa.

GALLEGO, a river of Spain, in the province of Aragon. It rises in the valley of Tena, among the Pyrenees, on the mutual boundary between France and Spain, in a large fountain near Tormigal. After a course of about 100 miles it falls into the Ebro a mile below Zaragoza.

GALLEGOS, San Felices de los, a secular town of Spain, in the province of Salamanca. It contains 2000 inhabitants, and is situated 25 miles from Ciudad Roderigo, in a plain encompassed with hills, abounding in springs of excellent water and mineral wells. About six miles west of it flows the river Agueda, crossed by an excellent bridge. The industrial occupations of the inhabitants are chiefly the manufacture of oil, wine, and linseed for domestic use.

GALLEON, the name given by the Spaniards to a very large kind of ship with three or four decks, such as those formerly employed by them to transport the precious metals from the mines of Mexico and Peru.

GALLEOT, or Galliot, a small galley or large felucca, used chiefly in the Mediterranean. Galliot also denotes a peculiar kind of flat-bottomed vessel, very strongly timbered, used as a bomb-ship against forts and batteries. *Bomb-ketch* is likewise applied by the Dutch, Swedes, and other northern nations, to a strong-built trading vessel, rounded at stem and stern, and registering from 200 to 300 tons.

GALLERY, in *Fortification*, an underground passage, either cut through the soil or built of masonry. Galleries (reverse) or *niches* are sometimes constructed in the counterscarp of a ditch, so as to afford a flanking musketry fire. They are closed in front, and the men fire through loopholes.

Gallery, in the *Fine Arts*, see Exhibition.

GALLEY, a low-built long and narrow vessel, with one deck, propelled by oars and sails, and much used in the Mediterranean previous to the introduction of steamboats. Galleys of the largest size were about 166 feet by 32 in breadth, with 26 or more pairs of oars. The rowers were usually either convicts or Turkish prisoners, who were chained to the benches on which they sat. The word *galley* is from the Latin *galea*, a helmet—a designation said to be derived from a kind of basket-work at the mast-head of the vessel.

GALLI, in *Antiquity*, a name given to the priests of Cybele, and said to be derived from the river Gallus in Phrygia. See Corybantes, and Curetes.

GALLIA, in English Gaul, the country inhabited by the Galli. By the Romans the term "Gallia" was restricted in its use to those portions of Europe occupied by tribes of the Gallic name. In classical times these fell naturally into two great divisions, the one lying on the southern or Roman side of the Alps, and thence called "Gallia Cisalpina;" and the other on the northern or further side of that mountain-range, and thence called "Gallia Transalpina." Transalpine Gaul, as understood by Cæsar, comprised the whole of France and Belgium, a small part of the Netherlands, Luxemburg, Germany west of the Rhine, the greater part of Switzerland, and a part of Savoy. This country, the entire area of which was about 240,000 square miles, was bounded on the east and north-east by the Alps, extending from Genoa to Mont St Gothard, and the Rhine from its source to the sea. On the south it extended along the Mediterranean from the small river Varus (the Var), which separated it from Italy, to a short distance beyond Portus Veneris (Bellegarde), at the eastern extremity of the Pyrenees, which mountain-range separated it from Spain. The western and northern shores of Gaul were washed by the ocean.

Gallia Cisalpina extended southwards from the Alps to the confines of Etruria and Umbria. Only a small portion of this country, however, was occupied by tribes of Gallic origin, but the Romans who had at first employed the term in a somewhat vague sense to northern Italy, ended by applying it to the basin of the Po and the Alpine country north of that river, so far as it had been subdued by them. The Inalpini, or tribes that dwelt within the Alps, were not finally subdued till the times of Augustus.

The most important of the tribes inhabiting both the Gauls will be found described under their respective heads.

GALLIC ACID. See Dyeing, vol. viii. p. 281.

GALLICISM, an idiom of the French language employed in an expression, or in the construction of a sentence belonging to another language.

GALLIENUS, P. Licinius, emperor of Rome from 253 to 268 A.D. In the beginning of his reign he gave proof both of bravery and ability in his defeat of the barbarians who had invaded Italy from the north. He afterwards belied the promise of his youth, and gave himself up to excess and debauchery of every kind. Usurpers soon appeared in almost every province of the empire, and this period of Roman history came to be called the reign of the thirty tyrants. Gallienus was killed at Milan while besieging one of his refractory vassals in that city.

GALLIPOLI, anciently *Callipolis*, an important seaport town of Naples, province of Terra di Otranto, beautifully situated on a rocky islet, on the east shore of the Gulf of Taranto, and connected by a long stone bridge of twelve arches with the mainland, on which is its suburb of Lizza. The town is well-built and fortified, and has a castle erected by Charles I. of Anjou, a cathedral, and a fountain decorated by antique bas-reliefs. It is chiefly noted for its extensive cisterns cut in the solid rock for containing the olive oil collected from all parts of Puglia, and which constitutes its chief export. It has no harbour, but a bay or roadstead north-east of the town, with from ten to twelve fathoms water, but trending towards the shore so that vessels of considerable burden should not come within less than a musket shot of the land. Gallipoli has also a considerable trade in corn, fruits, &c., and a productive tunny fishery. The chief manufactures are muslins, cotton stockings, and woollen goods. Pop. upwards of 10,000.

Gallipoli, anciently *Callipolis*, a seaport town of European Turkey, province of Rumilia, on the northern shore of the Hellespont, at the entrance to the sea of Marmora, 90 miles south of Adrianople. It is situated on a peninsula, and protected by two ports, and is one of the chief stations of the Turkish fleet. Its trade is chiefly in corn, wine, and oil, and it has several extensive and well-furnished bazaars. The chief manufactures are cottons, silks, earthenware, and Morocco leather, which last is the best made in Turkey. It is the see of a bishop of the Greek Church. The houses are mean, and the streets narrow and dirty. It was once fortified, but its walls have been destroyed, and its only defence is now an old square castle with a tower, built probably by Bajazet. On the south side of the town are some tumuli, said to be the sepulchres of the ancient Thracian kings, and on the north are some undefined ruins, supposed to be the remains of the ancient city. Fragments of sculpture and architecture are to be seen in all parts of the town. A considerable improvement was effected here by the allied troops in 1854. Pop. probably about 20,000, including Turks, Armenians, Jews, and some Greeks.

GALLOIS, Jean, one of the founders of the *Journal des Savans*, was born at Paris on the 11th of June 1632. From his infancy he evinced a strong inclination for learning, which his father, an advocate in the parliament, cultivated with the greatest care. Having entered the ecclesiastical state, he turned his studies towards theology, and at the same time endeavoured to perfect himself in the knowledge of Greek and of Hebrew, that he might be able to read the sacred books in the originals; he also devoted his leisure hours to literature and the sciences; and as he was endowed with an excellent memory, as well as a sound judgment, his different acquisitions arranged themselves without confusion or disorder in his mind. To learning equally solid and various he joined the talent, then rare among scholars, of writing his vernacular with precision and elegance; and hence no one could be better qualified than he for conducting a work having for its object to make known the literary and scientific productions of other nations. Such was the object of the *Journal des Savans;* and as the privilege had been withdrawn from Sallo, on the complaints of some writers whom he had censured with too great bitterness, Colbert bestowed it on the Abbé Gallois in 1666. The latter had the sole charge of this journal till 1674, when the amount of labour which it imposed, with his other avocations, forced him to abandon it altogether. Colbert, who had appreciated the merit of Gallois, gave him at first an apartment in his hôtel, and afterwards, during his journeys to Versailles, intrusted it entirely to his care. It has been alleged that this minister desired to learn Latin, and that he retained the Abbé Gallois for the purpose of instructing him in that language. It is believed that Gallois furnished the plan of the Academy of Inscriptions, although he did not become a member; but he had been admitted into the Academy of Sciences in 1668, and in 1673 he filled the place of Bourzéis in the French Academy, being admitted the same day with Fléchier and Racine. After the death of his illustrious protector, he obtained the place of keeper of the king's library; and, some years afterwards, when he lost this situation, he was, by way of compensation, appointed professor of the Greek language in the Royal College. After the remodelling of the Academy of Sciences, he was placed in the class of geometry; and he then proposed to publish the treatise of Pappus, of which there only existed a defective Latin translation; but this design was not carried into execution. The Abbé Gallois died on the 19th of April 1707, in the seventy-fifth year of his age. Notwithstanding the extreme mediocrity of his fortune, he had collected more than twelve thousand choice volumes, a catalogue of which was printed in 1710. Besides his contributions to the *Journal des Savans*, the Abbé Gallois wrote, 1. Traduction Latine du Traité de Paix des Pyrenées, Paris, 1659, in fol.; 2. Remarques sur le projet de l'Histoire de France, dressé par Ducange, printed in the new edition of the *Bibliothèque Historique de France*, tome iii.; 3. Réponse à l'écrit de David Gregory, touchant les lignes appelées Robervalliènes, qui servent à transformer les figures, Mém. de l'Acad. des Sciences, 1692; with some others of less note. The éloge of Gallois was pronounced by Fontenelle. (J. B—E.)

GALLON, a measure of capacity both for dry and liquid articles, containing four quarts.

GALLOON, a rich kind of lace made of gold or silver, or of silk only.

GALLOWAY, a district of Scotland comprehending the stewartry of Kirkcudbright and Wigtonshire. See Kirkcudbright, and Wigtonshire.

Galloway, *Mull of.* See Wigtonshire.

Galloway, *New*, a royal and parliamentary burgh of Scotland, stewartry of Kirkcudbright, on the Ken, 19 miles

N. of Kirkcudbright. It unites with Wigton, Stranraer, and Whithorn in returning a member to parliament, and is governed by a provost and eighteen councillors. Loch Ken and Kenmure castle are in the vicinity. Pop. (1851) 447.

GALLOWAY, Thomas, a distinguished Scottish mathematician, was born at Symington in the upper ward of Lanarkshire, 26th February 1796. After receiving such education as the best schools of his own and some adjoining parishes could give, he removed in 1812 to Edinburgh, at the university of which city he distinguished himself, especially in the department of mathematical study. In 1823 he was appointed one of the teachers of mathematics at the military college of Sandhurst. On the death of Sir John Leslie in 1832, Galloway applied for the vacant chair of natural philosophy in Edinburgh, and was one of the three candidates among whom the chances of success ultimately lay. He was not the successful competitor; but in the following year was appointed actuary to the Amicable Life Assurance Office, the oldest institution of that kind in London. In this situation Galloway remained till his death, November 1, 1851.

Galloway was a voluminous though for the most part an anonymous writer, and took a leading part in the proceedings of the principal scientific societies of London. He contributed largely to the *Encyclopædia Britannica*, and other works of a similar nature. Some of his more elaborate treatises, such as that on *Probability*, have been published separately. His contributions to the *Edinburgh* and *Foreign Quarterly Reviews*, like the rest of his writings, display extensive erudition, great soundness of judgment, and fine powers of critical analysis.

GALLS. See Gall.

GALLUS, C. Cornelius, a distinguished Roman poet, orator, and politician. He was born of humble parents at Forum Julii (Fréjus) in Gaul, about the year 66 B.C. At an early age he removed to Rome, where he was taught by the same master as Virgil and Varius, with both of whom he afterwards lived on terms of the most intimate friendship. In political life he espoused the cause of Octavianus; and in reward for his services was made first prefect of Egypt. His good fortune, however, turned his head, and urged him to a course of conduct which brought him into disgrace with Augustus. The accusations of arrogance, extortion, and even cruelty, brought against him were so numerous and well supported, that Gallus, in order to escape exposure, put an end to his life by throwing himself on his sword, B.C. 26 years.

Gallus enjoyed a high reputation among his contemporaries as a man of intellect. He associated on terms of equality with all the literary notabilities of his day, Virgil, Ovid, Varius, Asinius Pollio, and others. He wrote four books of elegies, which were so good that Ovid claimed for their author the first place among the elegiac poets of Rome. His fame as an orator was hardly inferior to his renown as a poet; but as not a fragment of his composition has descended to our times, we have no means of judging the worth of his literary pretensions, and have to content ourselves with the somewhat partial estimate of his personal friends.

GALSTON, a small market-town of Ayrshire, on the left bank of the Irvine, and on the South-Western Railway, 22 miles S. by W. of Glasgow. Pop. (1851) 2538, chiefly cotton weavers.

GALT, John, a popular Scottish novelist, born in 1779 at Irvine in Ayrshire—a small town that enjoys the triple literary distinction of having been the birth-place of Galt and James Montgomery, and the residence of Burns during an interesting portion of his early career. From the same place, too, Galt derived the prototypes of some of his best Scottish characters. Having received his education at Greenock, and acquired a knowledge of mercantile affairs, Galt proceeded to London to push his fortune. He was unsuccessful in a partnership scheme, and afterwards entered himself of Lincoln's Inn, intending to study the law. He was tempted abroad, however, partly by delicate health and partly to carry out some mercantile speculations. At Gibraltar he met with Lord Byron and Mr Hobhouse, and sailed in the same packet with them to Sardinia and Malta. This accidental acquaintance, which was afterwards slightly renewed, led Galt to write a life of Byron after the decease of the noble poet, but the work did not add to his reputation. After three years' residence and wanderings in Sicily, Greece, and Turkey, during which he was engaged in several commercial enterprises of importance, though not of profit, Mr Galt returned to England, published his travels, and entered on what may be called a professional literary life. A Scottish tale, *The Ayrshire Legatees*, published in *Blackwood's Magazine*, was highly popular; and this was followed by a series of works of a similar character—*The Annals of the Parish*, *The Provost*, *The Steam-Boat*, *Sir Andrew Wylie*, *The Entail*, and *The Last of the Lairds*. In these novels Galt opened up views of Scottish life and character scarcely touched upon by Scott, yet as true to nature as the portraits of that great master. They were types of classes fast disappearing—old-fashioned ministers, magistrates, and lairds, whose oddities are portrayed in lively colours, interspersed with scenes of genuine pathos and winning simplicity. Another charm in these works was their rich and copious Scottish diction—the fine old quaint Doric, so simple yet figurative and expressive—which is now rarely heard in the same unsophisticated purity and force even among the village elders. The *Annals of the Parish* stands at the head of these works, and there is little hazard in predicting that it will form Galt's best passport to a durable fame. He wrote many other novels, several plays and poems, the life of Cardinal Wolsey, and that of Benjamin West the artist. No author was ever more unequal than Galt—extravagant improbable fictions followed some of his happiest creations, and much of what he published must be considered as mere task-work written to meet the exigencies of the day. In one other novel he was eminently successful. He was appointed agent for the Canada Land Company, and was placed among the woods and wildernesses of the new world, and amidst settlers and squatters of various descriptions. New phases of life and strange adventures were thus brought before him, and he embodied his observations in a tale entitled *Lawrie Todd*, founded on the real experiences of a pawky Scottish emigrant. This is a powerful and interesting work, resembling the fictions of De Foe in its life-like reality and teeming variety of incidents. The latter years of this ingenious writer were clouded by poverty and disease. All his splendid commercial and trading schemes had failed, his inventions, like those of most inveterate projectors, brought him only trouble or disappointment, and though his mind and pen were still as facile and ready as ever, he had exhausted his fine original vein, and had to contend with confirmed ill-health. Repeated attacks of paralysis reduced his frame to a helpless wreck, but still left his restless and energetic mind to work on its way eager and unsubdued. Having attained his sixtieth year, he died at Greenock, April 11, 1839. (R. C—S.)

GALVANI, Aloïsio, or Luigi, the celebrated discoverer of galvanism, or, as he himself called it, "animal electricity," was born at Bologna in Italy in 1737. In his youth he gave evidence of a strongly devotional cast of thought, and he was accordingly educated with a view to taking orders. He changed his plans, however, and studied medicine at the university of his native town. Shortly after graduation, he obtained a public appointment as a medical lecturer, and increased his fame by publishing his *Observations on the Organs of Hearing in Birds; Observations on* *the Urinary Organs*, and by various contributions to the transactions of the university. An event, however, apparently accidental in its origin, occurred, which directed into a new channel the study of electrical science, and identified the name of Galvani with one of the most important branches of that great department of physics. His wife was preparing frogs for soup, and having skinned the animals, had placed them near the conductor of a newly charged electrical machine. Happening to touch them with a scalpel which had been in contact with the machine, she saw to her surprise the muscles of the frogs convulsed with violent spasmodic action. Galvani repeated the experiment in a variety of forms, and came to the conclusion that there existed what he called an "animal electricity" both in nerves and muscles. To this erroneous idea he clung through life, even after it had been disproved by his countryman Volta and other experimenters. He took great pains to develop his theory in regard to the phenomena in question as fully as possible, by publishing in 1791 his *Commentarius de viribus electricitatis in motu musculari*. The purport of this work, and its influence on electrical science, are fully discussed under ELECTRICITY.

In 1797 Galvani made a tour of the shores of the Mediterranean, with a view to verifying his theory by experiments on the electric eel. Soon after returning home he lost his wife; and his affliction was enhanced by his being expelled from his chair for refusing to take the oaths of allegiance when Bologna was incorporated with the Cisalpine Republic. His health and spirits gave way under these calamities, and though he was ultimately reinstated in his professorship, his death, in 1798, prevented him from profiting by his good fortune.

GALVANISM, that branch of physical science which treats of the chemical agencies of electricity, and of its influence upon the animal frame. The chemical effects of electrical action had been previously studied by Cavendish as a branch of ordinary electricity; and it was not till the year 1790, when Galvani made the interesting discovery that muscular contractions were excited in dead frogs by the contact of metals, that the new science of Galvanism was established. The boundaries of Galvanism were widely extended by the invention of the pile in 1800, by M. Volta of Corna, in consequence of which the name of Voltaic Electricity has been very generally substituted instead of Galvanism. The subject of Galvanism, including *Animal Electricity*, is treated of under VOLTAIC ELECTRICITY.

GALVANIZED IRON, iron alloyed superficially with zinc, by plunging the metal, previously well cleaned by friction with dilute acid, into a bath of melted zinc covered with sal ammoniac, and stirring it about for some time. When iron thus treated is exposed to humidity, the zinc is said to become oxidized in consequence of galvanic action. This coating protects the iron beneath from rusting; and hence galvanized iron will retain its whiteness for a long period under circumstances that would cause ordinary tinned iron to exhibit marks of corrosion.

GALVESTON, a seaport-town of the state of Texas, North America, near the eastern extremity of Galveston Island, at the entrance of Galveston Bay, Gulf of Mexico. It is the commercial emporium of Texas, and has the best and most accessible harbour on the whole coast. Its trade is chiefly coastwise with New Orleans and New York. Galveston Island is about 36 miles in length, by an average width of 2 miles. Pop. of town 4167.

GALVEZ, a town of Spain, in the province of Toledo. It stands 15 miles south-west of Toledo, has a serge manufactory, and contains 3000 inhabitants.

GALWAY, a maritime county in the province of Connaught, in the extreme west of Ireland, bounded on the north by Mayo and Roscommon, on the east by Roscommon, King's County, and Tipperary, on the south by Clare and the Bay of Galway; extending the entire breadth of the province of Connaught from the river Shannon to the Atlantic Ocean, which forms the western boundary of the county. According to the Ordnance Survey, it comprises an area of 2447 square miles, or 1,566,354 acres, of which 742,805 are arable, 708,000 uncultivated, 23,718 in plantations, 1801 in towns, and 90,030 under water. Excepting the counties of Antrim, Clare, and Fermanagh, this county comprises, in proportion to its area, a greater quantity of land under water than any other in Ireland.

Name. The name of Galway, originally applied to the town of the same name, is generally supposed to have been derived from "*Gaelis*, or *Gailes*, 'traffic or commerce,' signifying a *merchant*, and *ibh* in Irish, signifying *tribes* or *families*, whence *Gailibh, tribes of merchants*," which name was pronounced *Gallive*, and afterwards in 1440 corrupted into Galway. In the time of Ptolemy it was inhabited by the Auterii. At a later period it was divided into the districts of Clanconow, Hy-Maine, Maghullen, Lilanchia, Hy-Fiacrin-Aidne (afterwards Clanrickard), and Hy-Tartagh. In the commencement of the sixteenth century it was portioned out amongst a number of families or septs, of which the principal were the O'Flahertys and O'Maleys in the west; the Burkes and Berminghams in the north; the O'Naghtens, O'Kellys, and O'Dalys in the east; and the O'Heynes, the O'Maddens, and the O'Shaughnessys in the north. It was made shire-ground by Elizabeth in 1569, and is now divided into eighteen baronies. These are sub-divided into 120 parishes, forming the entire diocese of Kilmacduagh and portions of the dioceses of Tuam, Clonfert, Elphin, and Killaloe. The dioceses of Kilmacduagh and Clonfert are now united with Killaloe and Kilfenora under one bishop; the former archbishopric of Tuam, together with Killala and Achonry, is a bishop's see; and Elphin is united with Kilmore and Ardagh: the county is therefore under the ecclesiastical jurisdiction of the bishops of Tuam, Killaloe, and Kilmore. It is the seat of the Poor-Law Unions of Ballinasloe, Clifden, Galway, Glennamaddy, Gort, Loughrea, Mountbellew, Oughterard, Portumna, and Tuam, but small portions of the county are comprised in the neighbouring unions of Scariff and Roscommon. Galway is within the military district of Limerick, with barrack stations at Loughrea, Dunmore, Portumna, Galway, Gort, and Oughterard. The headquarters of the constabulary force, numbering about 750 men, are at Galway for the West-Riding, and Loughrea for the East-Riding.

Divisions—Eastern. The county is naturally divided by Lough Corrib into two great divisions, differing from each other in several striking points. The eastern division, which comprehends all the county except the four western baronies, rests on a limestone base, is convertible into good tillage land, and is, generally speaking, a level champaign county, but containing large quantities of wet bog; the western has a substratum of granite, and is barren, rugged, and mountainous. The southern part of the former of these divisions is supposed by some to be a continuation of the Golden Vale of Limerick, so celebrated for its fertility, and produces the finest wheat, except in the region of the Slieveboghta Mountains, which form part of the boundary between this county and Clare. The northern part of the same division is also rich pasture and tillage ground, beautifully diversified with hill and dale. Some of the intermediate country is comparatively barren; but those parts which would not repay the expense of tillage form excellent pasturage for sheep, which is the great staple commodity of the county.

Western. The western division is divided into the three districts of Connemara, Jar-Connaught, and Joyce's Country, which correspond in boundary with the three modern baronies of Ballynahinch, Moycullen, and Ross. The name of Connemara is, however, often applied to the whole district, and signifies the Bays of the Ocean. Its highest mountains are the grand and picturesque group of Binabola, or the Twelve

Pins, which occupy a space of about 25 square miles, midway between Lough Corrib and Aghris Point, the most western projection of the county. Knockenhiggen, the highest of these, is about 2400 feet high. The vale of Glen Ina is overhung by a naked perpendicular cliff 1200 feet in elevation, over which a considerable sheet of water is precipitated. But this district, although mountainous, is not an elevated country; the surface of most of it is not 100 feet above the level of the sea, rising from the edge of Galway Bay, in a gently sloping plain, to a height of not more than 300 feet, with some hills about 700 feet high. Joyce's Country, more northwards, is an elevated tract, with flat-topped hills of from 1300 to 2000 feet high, and deep narrow valleys lying between them.

Rivers.

The rivers are few, and excepting the Shannon, which forms the south-eastern boundary of the county, are of small extent. The Suck rises in Roscommon, and forms the eastern boundary, passing by Ballinasloe, and unites with the Shannon at Shannon Bridge. This latter river then forms part of the boundary of the county, passing by Shannon harbour, Banagher, Meelick, and Portumna, and presenting little that is attractive to the eye; "the banks are chiefly wide and apparently interminable plains, unenclosed—almost level with the river—bearing luxuriant crops of herbage, and feeding innumerable herds. We see scarcely any habitations; no villages or hamlets; and no road or traffic on the banks. The meadows of which I speak extend on both sides of the river for the greater part of its course from Banagher to Portumna. These meadows are all overflowed during the winter, and are let for grazing at a very high rent. For many miles there is nothing to relieve the monotony of these vast flats, excepting an old castle called Torr Castle—no otherwise remarkable than as being the only object which breaks the level. The views on this part of the Shannon brought forcibly to my recollection the banks of the Guadalquiver, between Seville and Cadiz."—*Inglis.* After leaving Portumna, the Shannon swells into the great expanse of water called Lough Derg, which skirts the county of Galway as far as the prettily situated village of Mount Shannon. The Suck is joined by the Shevin and Ahascragh rivers. The Blackwater, a trifling stream, forms part of the northern boundary between Galway and Mayo, and discharges itself into Lough Corrib. Near Shrule it sinks into the ground through an open called a shallow, and, after a short underground course, bursts forth again through several springs. The Carnamart, a small stream, passes through the southern baronies, and falls into Galway Bay. The Ballynahinch, which is considered one of the best salmon-fishing rivers in Connaught, rises in the Twelve Pins Mountains, passes through Ballynahinch Lake, and after a short but rapid course empties itself into Birterbuy Bay.

Lakes.

The lakes are numerous. Lough Corrib extends from Galway town northwards over 30,000 acres, and embraces a coast of fifty miles in extent, affording a large scope for inland navigation. It communicates with the sea by the Galway river, but as its level is 13 feet above high-tide mark, the fall is such as to prevent a water passage by the river from the bay to the lake. A former attempt made to connect them by a canal having failed, was long pointed out under the name of Lynch's Folly; but the whole extent of Loughs Corrib and Mask are now being made navigable to the sea at Galway. The lake is studded with many islands, some of them thickly inhabited. Near it is Lake Ross, which, with some smaller lakes, receives a large supply of water from streams, but has no visible outlet. In Connemara are a number of lakes extending nearly 20 miles from Lough Corrib to the sea, besides several others in other parts. About 25 of these are more than a mile in length each, and there are upwards of 100 of smaller dimensions extending almost the whole length of Connemara. "It was impossible to cast the eye over the vast inclined plains of bog-land, skirted by fine water levels, which seemed to invite draining, without feeling a conviction of the immense capabilities of this part of Ireland; and seeing, in prospective, these vast tracts bearing abundant produce—and the chains of lochs carrying that produce—on the one side to Lough Corrib and Galway Bay, and on the other to Birterbuy Bay, or one of the other bays which lie to the westward."—*Inglis.* Lough Rea, at the town of the same name, is more remarkable for scenic beauty than extent. Besides these perennial lakes, there are several low tracts which are covered with water during a great part of the year: they are called Turloughs. The largest is Turloughmore, extending from Tuam nearly to Clare Galway. Another of large size is near Rahasane. A few sheep are grazed on them during four months in summer, but they are unprofitable in winter. They are, however, mostly of easy drainage, and some of them have already been drained, whilst others are now undergoing the process.

Coast.

Galway enjoys the advantage of a very extended line of sea-coast, indented by numerous and safe harbours, rarely used except by a few coasting and fishing vessels. Commencing at the coast of Mayo in the north are the Killeries, two bays which separate the counties of Galway and Mayo. The first bay on the western coast capable of accommodating large ships is Ballynakill, sheltered by Truchelaun or Heath Island. Next in succession is Cleggan Bay, having Ennisbofin in its offing. Streamstown is a narrow inlet, within which are the inhabited islands of Tarbert and Innisturk. Ardbear harbour divides itself into two inlets, the northern of which is terminated by the town of Clifden, with excellent anchorage opposite the castle; the southern inlet has also good anchorage within the bar, and has a good salmon-fishery. Mannin Bay, though large, is much exposed, and but little frequented by shipping. From Slyne Head the coast turns eastward to Roundstone Bay, having its entrance protected by the islands of Innisnee and Innislacken; here the whole British navy could lie in safety. Next in order is Birterbuy Bay, studded with islands, islets, and rocks, but deep and safe. Between it and Kilkerrin Bay are the islands of Mason, Mynish, and Fynish, all inhabited; Elanmaedara, and Cruanakeely which was used as a deer park by Mr Martin of Ballynahinch. Kilkerrin Bay, the largest on this coast, has a most productive kelp shore of nearly 100 miles, including its islands of Annaghvane, Garomna, Lettermore, Lettermullen, Knappagh, and Furnish, yet its mouth is but eight miles broad. Between Garonna and the main-land is Greatman's Bay, and close to it Costello Bay, the most eastern of those in Connemara. Next is the bay and harbour of Galway. At the Oranmore the coast turns southwards, and presents the harbours of Rynville, Ardfry, Ballynacourty, Stradbally, Killeen or New Arran, Kinvarra, and Duras, where the county joins that of Clare. The whole of this coast, from Greatman's Bay eastward, together with the northern shore of Clare, to Blackhead, is comprehended in the Bay of Galway, the entrance of which is protected by the three limestone islands of Arran, Innishere, Ennismain, and Arranmore, forming a distinct barony, and remarkable as well for many relics of ancient pagan and monastic institutions, as for the singular mode of life of the inhabitants, who are partly agriculturists and partly fishermen, wholly uncivilized, very ignorant and superstitious, and are occasionally reduced to great distress.

Climate.

The climate, though most variable, and exposed to frequent and violent gales from the west, is mild and salubrious. The country is subject to no diseases except those incident to a population not attentive to domestic neatness, and frequently in a state of great destitution. Frost or snow seldom remains long on the western coast, and cattle of every description continue unhoused during the winter.

Geology.

The boundary line between the limestone and granitic district is easily discernible by the diminution of the verdant hue which marks the latter. The high road from Galway to Oughterard nearly marks the division. All the country to the north and east of this limit is limestone, all to the south and west granite, excepting some detached masses of primitive limestone between Oughterard and Clifden, and some scattered portions of other minerals, of great variety of appearance. The component rock of Binabola is quartz, in general distinctly stratified, or at least schistose. The position of its beds is various. Towards the western shore they are vertical, easily splitting by intervening mica plates, and affording good building stone. Limestone occurs in some places along the foot of these mountains, where also is some green serpentine, which is conveyed to Galway and elsewhere for ornamental purposes. Round the basis of this group are also gneiss and mica slate, with bands of hornblende and primitive mica. Along the north side of Lough Corrib to Ballynakill the mica slate and hornblende rise into mountains, and the limestone disappears. From Lough Mask to the Killeries is a transition country of greenstone and grauwacke slate, covered by the old red sandstone or glomerate. The hill of Glan on the shore of Lough Corrib exhibits, in a small compass, all the formations which occur in the district. The western end is quartz; the north-eastern side mica slate; the middle is penetrated by beds of mica slate, containing hornblende and granular mica covered by thick beds of pyritous greenstone. On the south and east are granite and syenite, which runs under the sandstone, conglomerate towards Oughterard, and this again passes under the flœtz limestone, which, passing Lough Corrib, occupies the greater part of Connaught and Leinster. Along the borders of the flœtz limestone is a series of vast caverns, usually traversed by subterraneous rivers, a phenomenon which, though not of unfrequent occurrence in limestone countries, is peculiarly striking here. The succession of the stratified rocks may be distinctly seen at the water-fall at Oughterard. A fine gritstone, highly valued for making mill-stones, is raised near Dunmore. Crystalline sand, of a superior quality for scythe boards, occurs at Lough Coutra. Lead, zinc, copper, sulphur, ore, mundic, and bismuth, have been discovered in various parts of the western division of the county. Iron was raised at Woodford, and smelted until the timber was exhausted. The mountains of Slieveboghta, which separate Galway from Clare, are siliceous. A beautiful black marble, without spots or flaws, and susceptible of a high polish, is raised near the town of Galway in large quantities, particularly for chimney-pieces. **Mineral springs.** Mineral spas, mostly chalybeate, are abundant. That at Kingston was pronounced by Kirwan to be one of the best in Europe. At the village of Quose is a well which instantly kills poultry that drink of it. A spa at Oughterard draws many invalids to that town. Others at Athenry, Woodbrook, Rathglass, Killimore, and Abbert, are prized in their respective neighbourhoods.

People. The inhabitants of Galway are not distinguished by any striking peculiarities from those of the rest of the province. On the settlement of Ireland after the Restoration, such of the native Irish as had been allowed to possess property were removed from other provinces and compelled to exchange their properties for lands in Connaught supposed to be of equal value with those they were forced to surrender. They were also prohibited from settling in any of the corporate towns, or within a mile of the sea-coast, the boundary of which was called the mile-line. Thus cooped up, and debarred all opportunities of intermixing with strangers, it is not surprising that they have retained many peculiarities of appearance and manners. These peculiarities, however, are not confined to this county.

Population. The population of the county has been stated as follows by the under-cited authorities :—

1760—De Burgo	82,188
1792—Beaufort	142,000
1812—Parliamentary return	261,000
1821—Do	337,374
1831—Do	414,684

In 1841 the population was 440,198, the excess in the number of females being 1070, whilst in 1851 the total population was only 321,230, and the number of females preponderated by 7270.

Representation in parliament. Notwithstanding its great extent and proportionate population, the county sent but eight members to the Irish parliament; two for the county at large, and two each for the boroughs of Galway, Athenry, and Tuam. By the Act of Union the number of borough members was reduced to three, two for the county and one for the town of Galway. By the Reform Act this number was increased to four; the county and town now returning two members each. The constituency previously to the disfranchisement of the forty-shilling freeholders was the most numerous of any county in Ireland. The changes produced on its numbers by the Catholic Relief Act, and by the Reform Act, &c., will best appear by the following table :—

	L.50.	L.20.	L.10.	40s.	Total.
1829	828	274	950	32,055	34,107
1830	897	299	1812	...	3,008
1831	326	191	2540	...	3,057
1853	...	...	...	...	3,344

Education. From the population returns of 1821, and those of the commissioners of education in 1824–26, the state of education was as follows :—

	Boys.	Girls.	Sex not ascertained.	Total.
1821	7,690	3161	...	10,851
1824–26	11,874	6487	463	18,824

Of the number of pupils stated in the latter return, 1471 were of the Established church, and 17,090 Roman Catholics. The number of children attending public schools in 1841 was, in rudimental schools 9046 males, and 5691 females; in superior schools 424 males, and 170 females—total 15,331. In 1853 there were 174 national schools in operation, attended by 21,572 children; 10,537 males, and 11,035 females. The proportion of Protestants to Catholics, estimated from the relative numbers of the children of each persuasion receiving scholastic instruction in 1824, was as 1 to 11½ nearly.

Productions and cultivation. The eastern part of the county produces the best wheat, the growth of which requires the preparatory culture of potatoes. Oats are frequently sown after potatoes in moory soils less adapted for wheat. Manure is generally abundant, but most so in the western districts, which do not admit the growth of wheat. The flat shores of the bays there are formed of coralline sand, and the sea-weed thrown up after storms affords a copious supply of vegetable manure. Limestone, gravel, and marl is to be had in most other parts. When a sufficient quantity of manure for potatoes cannot be had, the usual practice is to pare and burn the surface. Potatoes are still planted in ridges by the small farmers, who make much use of spade culture, particularly in the upland districts, where the ruggedness of the surface is unfavourable to the application of the plough. In many places on the sea-shore fine early potatoes are raised in deep sea-sand, manured with sea-weed, and the crop is succeeded by barley. **Fences.** The fences most in use are formed of the stones collected from the surface, and raised to the height of five or six feet in dry walls, broad at the base, and narrowing upwards. According to the returns of the census commissioners of the year 1841, the county of Galway was then divided into 44,393 farms of various dimensions, viz. 28,006 of from 1 to 5 acres, 12,677 from 5 to 15 acres, 2032 from 15 to 30 acres, and 1678 of greater extent. The estimated total value of the aggregate live stock at the same period upon the whole of these farms was L.1,050,431.

Farms.

The number of holdings of each description in the county of Galway in the years 1852 and 1853 was—

	Not exceeding 1 acre.	From 1 to 5 acres.	From 5 to 15 acres.	From 15 to 30 acres.	From 30 to 50 acres.	From 50 to 100 acres.	From 100 to 200 acres.	From 200 to 500 acres.	Above 500 acres.
1852	2·373	6·010	11·996	7·191	3·051	2·059	1·126	796	185
1853	2·335	5·713	11·931	7·551	3·128	2·138	1·239	812	250
Difference in 1853,	−38	−297	−65	+360	+77	+79	+113	+16	+75

From this return it appears that 400 small holdings were absorbed in the larger description of farms, which increased in one year 720 in number. This increase, however, could not have arisen entirely out of the consolidation of 400 farms of small extent, but must have been mainly caused by the addition of tracts of mountain-land hitherto returned as "untenanted bog and waste," and shows an increase in the extent of cultivated land, which amounted in 1852 to 229·421 acres, and in 1853 to 235·257 acres, being an increase of 5836 acres brought into cultivation. The extent of each class of crops cultivated was—

	Corn, Beans, and Peas.	Potatoes.	Turnips, Mangel-Wurzel, Beet-root, Carrots, and Parsnips.	Cabbage, Vetches, and other green crops.	Flax.	Meadow, Clover, and Rape.
1852	112·684	41·366	17·450	1·966	546	55·409
1853	113·397	46·134	19·502	2·023	784	53·417
Difference in 1853,	+·713	+4·768	+2·052	+57	+238	−1·992

Cereals.

The cultivation of wheat, which in 1847 occupied 33·523 acres, had declined in 1853 to 13·731 acres; the cultivation of barley has also decreased, but a considerable increase has taken place in the amount of other crops cultivated, especially potatoes, beans, peas, and green crops. The total produce of potato, cereal, and other crops, with the proportion which they bore to the population in 1853, was as follows:—

	Corn, Beans, and Peas.	Average per head.	Potatoes.	Average per head.
	Tons.	Lbs.	Barrels.	Stones.
Galway............	86,895	605	2,449,432	152
All Ireland........	2,046,794	700	45,932,301	146

Live stock.

The quantity of live stock in the county has rapidly increased of late years, as will appear by the following return for the five years from 1849 to 1853.

Years.	Horses.	Mules and Asses.	Cattle.	Sheep.	Pigs.	Goats.	Poultry.	Total Value.
	No.	No.	No.	No.	No.	No.	No.	L.
1849	22,258	10,410	96,707	244,912	22,723	8,655	246,088	1,134,536
1850	22,220	11,237	105,803	287,324	26,373	9,419	276,528	1,246,258
1851	23,086	12,490	115,566	327,697	36,478	11,711	326,016	1,375,706
1852	24,347	13,350	127,005	386,356	38,953	15,270	355,943	1,530,051
1853	25,916	13,714	139,497	466,430	41,403	16,632	410,199	1,718,233

Markets.

The chief markets for grain are Galway, Loughrea, Tuam, Ballinasloe, Gort, Eyrecourt, and Mount Bellew. The great cattle fair of Ballinasloe is held annually in October, and large numbers of sheep and horned cattle are offered for sale; the prices obtained here exercising an extensive influence upon those in other markets throughout the kingdom. Flour-mills are numerous. Those parts of the eastern district less fitted for grain are employed in pasturage. Heathy sheep-walks occupy a very large tract between Monivea and Galway. An extensive range from Athenry, stretching to Galway Bay at Kinvarra, is also chiefly occupied by sheep.

Pastures.

Manufactures.

Manufactures are not carried beyond the demand caused by the domestic consumption of the people. Coarse friezes, flannels, and blankets are made in all parts, and sold largely in Galway and Loughrea. Connemara has been long celebrated for its woollen stockings. They are knit by the hand, and have a softness and elasticity, caused by the fineness of the wool used, superior to that of the woven article; but they are slight, and therefore stand but little wear. Coarse linen, of a narrow breadth, called bandle linen, is also made for home consumption. The manufacture of finer linens and diapers has been attempted, but with little success. The manufacture of kelp, introduced about the year 1700, was formerly one of the great sources of profit on the western shores, and is still to some extent carried on. Of the minor manufactures, marble is wrought for domestic and sepulchral purposes in Galway. Felt hats and coarse straw bonnets are made in several places. Feathers are brought in great quantities from the islands of Arran, where they are procured from the puffins and other sea-fowl that frequent the cliffs on the coasts. They are caught by men trained to the practice, who are let down at night from the projecting crags above, by means of a rope tied round their waist, to the haunts of the birds; and after supplying themselves with all they can capture, they are hauled up again in the morning. Sea fowls' eggs are collected in large quantities in the same manner.

Feather collectors and wild fowl.

Antiquities.

Amongst the relics of antiquity are the round towers of Ardrahan, Ballygaddy, Kilbannon, Kilmacduagh, Meelick, and Murrough. The last-named of these is of very small dimensions: that of Kilmacduagh, which is still fifty feet high, inclines seventeen feet from the perpendicular. Raths are numerous, and several cromlechs are still to be seen in good preservation. The ruins of monastic buildings are also numerous. That of Knockmoy, about six miles from Tuam, said to have been founded in 1180 by Cathal O'Connor, was adorned with rude fresco paintings, which are still discernible, and were considered valuable by antiquaries as being the best authentic representations existing of ancient Irish costumes. Ancient castles and square towers of the Anglo-Norman settlers are very numerous; some have been kept in repair, and are still inhabited; the greater number are in ruins. The castle of Tuam, built in 1161 by Roderic O'Connor, king of Ireland at the period of the English invasion, is said to have been the first building of this description of stone and mortar in Ireland. The remains of a round castle, a form of building very uncommon in the military architecture of the country, is to be seen between York and Kilmacduagh. (H. S—R.)

Galway town.

GALWAY, the county town, formerly designated the Liberties of Galway, and a county in itself, having an exclusive local jurisdiction, extending two miles on every side except the south. It stands on the northern shore of the Bay of Galway, on the eastern bank of the river of the same name, and is inclosed on the land side by the baronies of Clare, Dunkellin, and Moycullen. It is supposed by some to be the Nagnata of Ptolemy. It certainly was considered a position of much importance from the earliest period, as in the divisions of the island into north and south, at first made by the descendants of Heremen, and afterwards repeated by Conn and Eogan, it was fixed upon as the eastern extremity of the line of demarcation, which proceeded eastwards to Dublin. Little, however, is known of it until after the arrival of the English, at which time it was under the protection of O'Flaherty, who possessed the adjoining district to the west. On the extinction of the native dynasty of the O'Connors, the town fell into the hands of the De Burgos, the head of a branch of which, under the name of M'William Eighter, long governed it by magistrates of his own appointment. After it had been secured by walls, which began to be built in 1270, it became the residence of a number of enterprising settlers, through whom it attained a position of much commercial celebrity. Of these settlers the principal families, fourteen in number, are still known by the name of the Tribes of Galway. Their names are preserved in the following distich:—

Athy, Blake, Bodkin, Browne, Deane, Darcy, Lynch,
Joyes, Kirwan, Martin, Morris, Skerrett, French.

The tribe, whose name is not included in the rhyme, was called Ffont. With the exception of Athy and Kirwan, all these families were of Norman, Saxon, or Welsh descent. They became so closely connected by intermarriages, that dispensations were frequently requisite for the canonical legality of marriages among them. Sir Olivier St John, describing Connaught in 1641, says, that "the merchants (of Galway) are rich, and great adventurers at the sea; their commonaltie is composed of the descendants of the ancient English families of the towne, and rarelie admit any new English among them, and never any of the Irish." The town rapidly increased from this period in wealth and commercial rank, in this respect far surpassing the rival city of Limerick. Richard II. granted it a charter of incorporation with liberal privileges, which was confirmed by his successor. It had the right of coinage by act of parliament; but there is no evidence to show that it exercised the privilege. Another charter, granted in 1545, extended the jurisdiction of the port to the islands of Arran, permitted the exportation of all kinds of goods except linens and woollens, and confirmed all the former privileges. Large numbers of Cromwell's soldiers are said to have settled here; and there are many traces of Spanish blood among the population. The commercial prosperity of the town, which had been steadily advancing under the protecting favour of the government, received its first check by an unfavourable decision of the Court of Chancery respecting the prisage of wine; a toll paid by every sea-port to the head of the Ormond family, in right of his office of chief butler to the king, and from the payment of which Galway claimed exemption. Wine was the great staple of commerce. The payment of prisage, which consisted of two pipes of wine from every vessel discharging at the port, was a heavy drawback upon its profits. But soon after, its municipal privileges were extended by a charter from James I., whereby the town, and a district of two miles round in every direction, were formed into a distinct county, with exclusive jurisdiction and a right of choosing its own magistrates. During the civil wars of 1641, the town took part with the Irish, and was surrendered on articles to the parliamentary forces under Sir Charles Coote; after which the ancient inhabitants were mostly driven out, and their property was given to adventurers and soldiers, chiefly from England. On the accession of James II. the old inhabitants entertained sanguine hopes of recovering their former rights. But the successes of King William soon put an end to their expectations; and the town, after undergoing another siege, again capitulated to the force brought against it by General de Ginkle, on condition of a safe conduct for the garrison to Limerick, pardons and the protection of property and civil rights to the townsmen, and the free exercise of their religion in private. The penal statutes passed by Queen Anne against the Roman Catholics rendered the latter clause of the capitulation nugatory, and exposed that portion of the population which stood in need of protection to much persecution, particularly on the breaking out of the rebellions of 1715 and 1745 in Scotland. In the beginning of the present century the walls were thrown down, and buildings erected on their site. Several streets have also been carried out eastwards, to which the name of the New Town is given.

Galway is governed by the high sheriff, recorder, local magistrates, and a board of twenty-four commissioners, elected triennially, who have charge of the property of the town arising from tolls, amounting to about L.2000 per annum, besides harbour dues, which are chiefly applied to the repair of the pier, dock-gates, &c. The right of returning members was exercised at an early period. By the Act of Union the number of its representatives was reduced to one; but the second member was restored by the Reform Act. The population in 1821 amounted to 27,775, and in 1831 it had increased to 33,120; in 1841 it had diminished to 17,275, and in 1851 risen to 23,695.

Ecclesiastical arrangements.

In its ecclesiastical arrangements the town formed part of the ancient diocese of Enachdune or Annaghdown, which was incorporated in 1324 with the archdiocese of Tuam. But in 1458 it was erected into an exempt jurisdiction by the name of the wardenship of Galway, to be governed by a warden and eight vicars, chosen by the inhabitants under the authority of the bull of Pope Innocent. In 1486 one of the chief merchants of the town built part of the college-house for the wardens and vicars; and soon afterwards the parishes of Furanmore, Moycullen, Skreen, and Ballenclare were united to the wardenship by William Joyes, a native of the town and archbishop of Tuam. At the Reformation it was deprived of much of its property; and since that time there have been two wardens, one nominated by the Protestant members of the corporation, and a Catholic, chosen by the ancient inhabitants or tribes.

Situation.

The town, which is old-fashioned and crowded, without any good streets, and with very few good houses, is situated on the extremity of a projecting neck of land, rising with a gentle acclivity on both sides of the river Corrib, which connects Lough Corrib with the sea. The space within the walls formed an oval of about 3426 square perches. Some of the streets are very narrow, and contain some curious specimens of old buildings, chiefly in the antique Spanish fashion, being square, with a court in the centre, and a gateway opening into the street. St Nicholas' Church is the most remarkable building in the town. It is cruciform, 152 feet long by 126 broad, with a steeple rising over the nave, and the side aisles separated from the centre by Gothic pillars. There are several antique monuments in it. The exchange, or tholsel, near the church, consists of an open corridor, 90 feet long by 28 broad, with a front of arches supporting an upper story, in which are apartments for holding their own courts, and for other public purposes. The county court-house is an elegant building, with ample accommodation for all the purposes of its erection; and near it are the county and town prisons. The town also contains the county infirmary, the union workhouse, and also a fever hospital. A grammar-school, maintained by the governors of Erasmus Smith's bequest, is in the immediate neighbourhood of the town. The new Queen's College, built of beautiful gray limestone, is an elegant and extensive quadrangular structure in the Tudor Gothic style. Near the college is a new national (model) school. Immense works have long been in progress to connect the navigation of the Bay of Galway with that of the great lakes Corrib and Mask. Extensive new docks have been constructed.

Trade a
commerc

Though much reduced in the scale of mercantile importance, it is still an extensive exporting town; the chief articles exported being agricultural produce, wool, and marble. Galway is divided into the old and new towns, and the maritime suburb of Claddagh, inhabited almost entirely by fishermen and their families, who have acquired or retained peculiar usages and habits of their own. They marry among one another, and jealously resist the residence of strangers. They were formerly governed by a mayor, elected by themselves, whose only mark of office was the white sail of his boat, and a flag at its mast-head; but to him they paid implicit deference. He regulated the time of the sailing of the fishing fleet, and its movements when at sea. This usage has been discontinued, but the Claddaghites are still governed by their own laws in matters relating to fishing.

At home the women are mistresses; the moment the boats' cargoes are unloaded, the whole is transferred to them; they make the sales and spend the produce, their husbands being fully satisfied with the liberal allowance of spirits and tobacco they receive from them: but on their fishing expeditions no ardent spirits are suffered in their boats; their stock then consists solely of potatoes, oaten bread, and water. Their language is Irish, which they speak with a harsh discordant accent. The dress of the men consists of three flannel vests under a fourth of white dimity, a blue rug jacket, and blue plush breeches, blue worsted stockings, a horizontal-brimmed hat, and a red silk neckerchief. Among the women, the matron's dress is a blue mantle, a red body-gown and petticoat, and a silk handkerchief on the head. Unmarried women are known by their muslin caps trimmed with lace. The females of all ages are remarkable for attention to neatness, both in their persons and household. Their religion is almost exclusively Roman Catholic, with but one or two exceptions. The rigid exclusiveness which has hitherto retarded the civilization of this community will in all probability be broken down by the application of improved methods of fishing, together with the introduction of capital consequent upon the opening of the markets by the Midland Great Western Railway, and the operation of the Limited Liabilities Act.

The towns of chief importance after the county town are Tuam, with a population in 1851 of 4938; Loughrea, pop. 6342, situated on the borders of the lake of the same name; Gort, pop. 2405; Ballinasloe, pop. 4063; and the new and beautifully situated town of Clifden. (H. S—R.)

GAMA, Vasco da, the first European who reached India by doubling the Cape of Good Hope, was born at Sines, a small sea-port of Portugal. Of his early history so little has been recorded, that even the date of his birth is unknown. On attaining manhood, he found that the success of Columbus had given a powerful impulse to the spirit of maritime adventure. In 1487 Pedro Da Covilham had set out for India by way of Egypt and the Red Sea, accompanied by Alfonso de Payva. At Cairo the latter of these travellers separated from his companions, and went in quest of "Prester John," a Christian king who was reported to be then reigning in Abyssinia over a people in a high state of civilization. Covilham, prosecuting his voyage alone, reached Goa and Calicut, and satisfied himself of the importance of the whole country as a field of commercial enterprise. He also became convinced of the possibility of reaching India by the Cape of Good Hope, a route which he found to be quite familiar to the Indian and Arabian traders. In the same year in which Covilham had set out on his eastern voyage, Bartholomew Diaz had returned to Lisbon, after discovering that the southern coast of Africa was really bounded by a navigable sea. On the 4th July 1497, Vasco da Gama sailed from Lisbon with a small squadron of three vessels manned by sixty sailors, bent on making his way to India round the Cape of Good Hope, then known as the Cabo Tormentoso, or Stormy Cape. The hardships and dangers to be encountered were appalling, and led to a mutiny, which was with difficulty quelled by the firmness and prudence of the commander. He doubled the Cape at length, and reached in safety the small town of Melinda, where he secured the services of an Indian pilot. In twenty-three days they reached Malabar, and on the 20th May 1498 they came to anchor at Calicut. Gama was well received by the zamarin; whom, though not without difficulty, he convinced of the advantages that would accrue to his country by the establishment of a commercial treaty with Portugal. Gama then turned his prows homeward; and, having touched at various points on the Asiatic and African coasts, he once more cast anchor in the Tagus in the September of 1499, after an absence of two years and two months. Emmanuel received him with great honours, ennobled him, and gave him the title of admiral of the Indian, Persian, and Arabian seas. The effect of Gama's voyage was soon visible in the ruined trade of the Italian commercial republics, which had hitherto monopolized the traffic of the east. In prosecution of Gama's discoveries, another fleet was sent out to India, under Cabral, who accidentally discovered the Brazils, and on reaching his destination established a factory at Calicut. The natives, instigated by the Moorish merchants, who were jealous of the Portuguese, rose up in arms, and murdered all whom Cabral had left behind. To avenge this cruelty, the Portuguese fitted out a powerful armament, of which the command was given to Gama. The admiral set sail, and devastated those parts of Africa and India where he had formerly been received in a hostile spirit. He executed especial vengeance upon Calicut, which he bombarded and reduced to ashes, at the same time hanging the sailors of the vessels in the harbour which had fallen into his hands. He then sailed away to Cochin, where he established a factory, from which the power of Portugal radiated over India. In 1503 he returned home, and as before was welcomed with honours and titles, but was not immediately re-appointed to the command in India. He remained at home in inaction during nearly twenty years; but in 1524 (some years after the death of the great Albuquerque, who had been consolidating the Portuguese power in the east), Gama was appointed viceroy of Portuguese India. Not long after arriving at Cochin Gama died, in 1525, and was buried there; but thirteen years later his bones were disinterred and conveyed to Portugal by order of John III., king of that country.

Vasco da Gama was a man of great ability, courage, and enterprise; but he possessed none of these qualities in a higher degree than many others of his contemporaries who have long since passed into oblivion. He owes no small portion of his fame to the fact of his being the hero of a part of the national epic of Portugal. The moment of his doubling the Cape of Good Hope, and seeing in the clouds the Spirit of that stormy region, has been often seized by painters as a striking subject for pictorial delineation. One of the most remarkable of these pictures is that by the late David Scott, of Edinburgh.

GAMALIEL (*i.e. God is my rewarder*), a member of the Sanhedrim in the early times of Christianity, who, by his favourable interference, saved the apostles from an ignominious death (Acts v. 34). He was the teacher of the apostle Paul before the conversion of the latter (Acts xxii. 3). He bears in the *Talmud* the surname of *Hazoken*, "the old man," and is represented as the son of Rabbi Simeon, and grandson of the famous Hillel. He is said to have occupied a seat, if not the presidency, in the Sanhedrim during the reigns of Tiberius, Caligula, and Claudius, and to have died eighteen years after the destruction of Jerusalem. There are idle traditions about his having been converted to Christianity by Peter and John (Phot. *Cod.* clxxi., p. 199); but they are altogether irreconcilable with the esteem and respect in which he was held even in later times by the Jewish Rabbin, by whom his opinions are frequently quoted as an all-silencing authority on points of religious law.

GAMBEER. See Catechu.

GAMBIA, an important river of Western Africa, flowing westward through Senegambia, and falling into the ocean at Bathurst, in N. Lat. 13. 30., W. Long. 16. 40. Its sources have never been explored by Europeans, but it has been ascertained to take its rise among the lofty range of mountains which form the eastern front of Foota falls, and is estimated to have a course of upwards of 1000 miles. It is about 9 miles in width at its mouth, between Cape St Mary on the S. and the Bird's Island on the N. It is navigable for vessels of 300 tons for 60 leagues, and for smaller vessels to the falls of Barraconda 250 leagues from its mouth. In the beginning of 1851 Governor Macdonnell proceeded with a party, in open boats accompanied by a canoe, 160 miles above Barraconda. He says, "We passed a long way beyond the Nyarico, a river which flows into the Gambia from the northward, and is mentioned by me in a former report. Near it I was waited on by the inhabitants of a town called Jallacoota, who expressed a strong desire that some of our traders would penetrate to their country, as they had more corn and ground nuts than they could use, but had no means of bartering them for goods which they wanted. We did not find near the banks of the river any, or at least but few, signs of cultivation or inhabitants. Nevertheless, apart from the possibility of extending our commerce, the mere geographical question of the direction and extent of the course of the Gambia is one replete with interest, and which I hope may ere long be set at rest. It does not appear that much expense or danger would attend such an expedition if undertaken at the proper season, viz., the end of December or beginning of January. I and my party bivouacked fifteen nights in the woods after leaving the 'Dover,' and returned in perfect health. The abundance of game to be found in the country would ensure provisions, the carriage of which is in all such undertakings a great difficulty."

The British colony of Gambia consists of several trading stations on this river, and in 1851 contained 5693 inhabitants, as follow:—

	Whites.		Coloured.	
	Males.	Females.	Males.	Females.
Island of St Mary.......	167	13	2192	1890
M'Carthy's Island.......	8	0	637	526
Barra Point..............	1	0	131	74
Cape St Mary............	1	1	36	16
Total,	177	14	2996	2506

St Mary's Island lies at the mouth of the river, on the S. side, close to the continent, and is about 15 miles in length from N. to S., but of very inconsiderable breadth. The surface is a slightly elevated plain. The soil is sandy, with a small admixture of loam. Bathurst Town stands on the E. side of the island, about 12 or 14 feet above high-water mark, and is nearly surrounded on three sides by a tolerably deep and rapid river. A public hospital, church, courthouse, and public offices, are in course of construction, or have lately been finished.

M'Carthy's Island is generally said to be about 250 or 300 miles above St Mary's, and according to the Admiralty charts it is 235 miles above Bathurst, but Dr Madden says it is not more than 175 miles above it. It is about 5½ miles in length, by 1 in breadth. Like St Mary's, it is but little raised above the river, and both are in a great measure covered with water during the rainy season.

In 1852 the total value of the exports from this colony was L.217,856; of imports, L.110,174. The chief exports are ground nuts, wax, hides, ivory, timber, gold dust, palm-oil, gum-arabic, and bees'-wax.

GAMBLING or GAMING. The most important games are considered under their several heads, and therefore do not require particular notice in this place. It is here intended to treat of the department of jurisprudence and legislation, which deals with gambling as a vice. None of the practices which merge from harmless enjoyment to vice has perhaps afforded so difficult a problem to the moralist and legislator. The danger of encountering the gambling propensity with inflexible penal prohibitions has been too amply exemplified, and at the present day gambling is perhaps nowhere so rife and dangerous as in those parts of the United States where the laws for its suppression are the most peremptory and severe. Legislation encounters the double danger of suppressing harmless and genial amusements because they are offensive to morbidly austere minds, and of aggravating vicious propensities by violent suppression instead of judicious discouragement. That much evil has been done by ill-devised laws against gambling is too clear, but at the same time the most zealous advocate of civil freedom and non-intervention will hardly venture to say that penal laws against so desolating and so infectious a propensity as gambling are not necessary.

In Rome gambling was a conspicuous vice under the empire, but the civil law contains only a limited amount of legislation on this subject. Of the tenor of the few vestiges in the corpus juris, a succinct account is found in the Report of the Select Committee on Gaming, in 1844, where it is said that "All games of chance, with the exception of certain manly sports, five in number, were absolutely prohibited; and the lawful amount of the stakes were in all cases restricted to a certain sum. The loser could never be sued in case of non-payment; and an action was given for monies lost, during the space of fifty years to himself and his heirs, or, in their default, to any person who chose to prosecute. The municipal body in the town where the loss took place was specially enjoined to do so, and was to spend recovered money towards public purposes."—(P. 199.)

We have here the valuable principle of refusing legal remedy for obligations tainted with a gambling character, which has generally been tacitly adopted throughout the other countries of Europe, but was reluctantly, and as it were by force, dragged into the English law. One of the pervading technicalities of the English common law, which makes a "consideration" the most essential element of a sufficient contract, made it be "agreed that a person who wins money at gaming may establish a special *indebitatus assumpsit* for it; for the contract is not unlawful in itself, and the winner's venturing his money is a sufficient consideration to entitle him to the action."—(Bacon. Abridg.) In Scotland the position taken from the beginning, as founded on the civil law, was, that the courts of law were created to do substantial justice in the serious business of life between man and man, and were not to be occupied with the enforcement of the fanciful and capricious, if not vicious, obligations of the gaming table and the betting stand. In England, by a laborious application of specialties, the protection of the law was by slow degrees removed from this class of obligations. Wagers, however, continued to be very troublesome, and somewhat scandalous to the courts of law; and in 1844 Mr Starkie, Q.C., stated to the committee of inquiry on gaming that "The general rule of the common law is that a wager is a valid contract; but there are many exceptions to it, founded upon the principle that the wagers so excepted are against sound policy and convenience." And he says further, "In modern times the courts have gone farther than formerly in making exceptions on grounds of policy; and it is probable that several cases of wagers which formerly were held to be valid, as within the general rule, would now be deemed to fall within the principle of exception." The committee recommended the adoption in England of the broad principle followed in Scotland; and accordingly the gambling act of 1845 provided that "all contracts or agreements, whether by parole or in writing, by way of gaming or wagering, shall be null and void; and that no suit shall be brought or maintained in any court of law or equity for recovering any sum of money or valuable thing alleged to be won upon any wager, or which shall have been deposited in the hands of any person to abide the event on which any wager shall have been made." (§ 17.)

From the reign of Henry VIII. downwards, several statutes were passed for the forcible suppression of gaming in England. The earlier acts in general applied only to artificers and humble people, but subsequently legislation was professedly levelled against all classes alike. It would be difficult to say whether the rich or the poor most effectually baffled and evaded these enactments. One incident in 1844 showed how little they were respected. By the statute of the 9th of Queen Anne, when any person gained in a wager a sum exceeding L.10, the loser was entitled to pursue for repetition of the stake if he had paid it; and if he failed to take advantage of his privilege of restoration within three months, any stranger might pursue for treble the amount with costs. The provision had been forgotten, until in 1844 a body of professional informers resolved to act on it. They raised a crowd of actions against many affluent men eminent on the turf; and the alarm was so sensibly felt in parliament that an act was instantly carried through to stay the proceedings. It was fortunate that the legislature were then occupied with the whole question of the gambling laws in England, and in the following year they passed the act already alluded to (8th and 9th Vict., cap. 109), intended to furnish a complete code of the penal laws against gambling. On the narrative that "doubts have arisen whether certain houses alleged or reputed to be open for the use of the subscribers only, or not open to all persons desirous of using the same, are to be deemed common gaming houses," a definition is in this act afforded of the establishment which the law is to count a gaming house, and it is sufficient "that such house or place is kept or used for playing therein at any unlawful game, and that a bank is kept there by one or more of the players exclusively of the others, or that the chances of any gain played therein are not alike favourable to all the players, including among the players the banker or other person by whom the game is managed, or against whom the other players stake, play, or bet."

For some years the peculiarly English practice of betting on horse-races had been rising to a climax, until, on the occasion of each of the great periodical races, it became a popular frenzy in which some classes of the community lost all sense of discretion and integrity. The metropolis was filled with ephemeral establishments called betting-houses, and the daily papers swarmed with the advertisements of their keepers, who professed to have private and authentic information to impart about the horses known by adepts to be certainly successful. In addition to their dissemination of a taste for gambling among the poor and the young, there was the minor evil that when the settling time came the establishment was often found to be closed, the owner appropriating all deposits. In 1853 an act was passed (16th and 17th Vict., cap. 119) "for the suppression of betting-houses," by which every such establishment was subjected to the gambling act already referred to, and rendered liable to be dealt with as "a common nuisance, and contrary to law." The act just cited does not extend to Scotland. The old statute law of that part of the empire is directed to the extermination of the practice of gambling; but, according to a principle different from anything known in England, the provisions are modified or neutralized by disuse. The act of 1621, cap. 14, provides that any sum above 100 merks gained within 24 hours at gaming, or gained in horse-racing, shall go to the poor of the parish, but practical difficulties have interfered with the recovery of the sums thus nominally forfeited. (J. H. B.)

GAMBOGE, a concrete vegetable juice or gum-resin obtained by making incisions in the bark of the *Garcinia cambogia*, a forest tree of the same genus as that which affords the mangostein, the most exquisite fruit of the east. It is imported sometimes in orbicular masses, but generally in cylindrical rolls; is of a bright yellow colour, opaque, brittle, has a vitreous fracture, no smell, and a slightly acrid taste. It forms a beautiful yellow pigment, which is much employed by painters in watercolour; is used to stain wood in imitation of box; and the tincture enters into the composition of the gold-coloured varnish for lacquering brass. It also gives a beautiful and durable stain to marble. Medicinally it is a drastic purgative.

GAME LAWS, a term applicable to a code of laws calculated to preserve to certain qualified persons the exclusive privilege of sport in the destruction of the wild animals coming within the definition of game. It is perhaps, among all the social peculiarities of this country, that which retains in its present observance the most remarkable characteristics of its feudal origin. As the privilege of an extensive class, it appears to have no parallel in other social systems. Possibly it might be found that in many countries war against wild beasts, like war against foreign nations, was under the administration and control of the rulers of the people. It is as a well-guarded privilege of the sovereign's office that we find the earliest restraints in the pursuit of wild animals in the feudal laws. The spirit of this restrictive privilege could not be better expressed than in Manwood's definition of a forest, as "a certain territory, or circuit of woody grounds and pastures, known in its bounds, and privileged for the peaceable being and abiding of wild beasts and fowls of forest chase and warren, to be under the king's protection for his princely delight." In the Anglo-Saxon law, while the pursuit of game is treated as a mere adjunct of the possession of land, there are very special precautions against infringements of the monarch's right. In the secular ordinance of king Canute is this provision: "And I will that every man be entitled to his hunting in wood and in field on his own possession. And let every one forego my hunting: take notice where I will have it untrespassed on, under penalty of the full 'wite.'"[1] The progress made by the Norman kings in the establishment of hunting grounds, protected by cruel forest laws, is a portion of constitutional history involved in much doubt and dispute. Taking as an admitted point that pursuing wild animals was originally a royal privilege, Blackstone, in his Commentaries, gives a sketch of its extension to the landed gentry in a spirit strangely at variance with his usual laudation of existing institutions. Alluding to the royal privilege, he says,—"From this root has sprung a bastard slip known by the name of the game law, now arrived to and wantoning in its highest vigour, both founded upon the same unreasonable notion of permanent property in wild creatures, and both productive of the same tyranny to the commons; but with this difference, that while the forest laws established only one mighty hunter throughout the land, the game laws have raised a little Nimrod in every manor" (Com. iv. 416). To adjust the system to his general theory in English law, Blackstone presumed game to be property, and represented the monarch as possessed of the ultimate property in all feudal lands, retaining this right to himself, or communicating it to those whom he favoured. But all efforts to find a practical support for this subtle theory have only tended to show that the monarch arrogated to himself a monopoly in the higher class of field sports, because it was his will, and he had the power to do so; and that at a later period the landed gentry claimed a monopoly in the sports of the field for a similar reason. By the act of 13th Richard II., cap. 13 (1389), the possession of property was made a specific qualification for the privilege of killing game, and it was enacted that "no manner of artificer, labourer, nor any other layman, who hath not lands and tenements to the value of forty shillings by the year, nor any priest nor other clerk, if he be not advanced to the value of ten pounds by the year," shall keep hunting dogs, or use other methods of killing game, upon pain of one year's imprisonment.

The extent and character of the property qualification were modified from time to time during succeeding reigns. In Scotland, an act of the year 1600 (cap. 23) protests, in a true sportsmanlike spirit, against the slaughter of wild animals by the most effective means, and their sale by persons having regard to gain, and commodity to those who seek "their own inordinate appetite and gluttony." Hawking is the method of sport deemed legitimate by this act, and among the illegitimate methods of slaughter it is curious to perceive the accepted methods of the present day, by "hagbut" or fowling-piece, and "fowler dog," held as "indirect means," and "specially forbidden." The authors of this act seem to have placed their chief reliance on the withdrawal of game from legitimate commerce; but twenty-one years afterwards the English property qualification was adopted, in a very brief act, which simply enacts "that no man hunt nor hawk at any time hereafter who hath not a plough of land in heritage, under the pain of ane hundred pounds." The extent of the "plough of land" was a practical question down to very late times. In fact the "landed qualification" still exists in Scotland, so that nominally the sports of the field are a privilege exclusively enjoyed by those who possess landed property in the country. In practice, however, the offensive character of the rule, as conferring a privilege on a class, is modified by the presumption that he who has permission from a landowner to sport over his property is invested with the owner's qualification. In England the qualification from estate was abolished in 1831. Above forty years previous to that date (25th Geo. III., cap. 50) the enjoyments of the sportsman were considered a legitimate object of taxation, and the payment of a license-duty became the virtual qualification. The act of 1831 (1st and 2d Will. IV., cap. 32) is the leading statute on this subject, and contains the main substance of the English game law, enumerating the animals that come within its scope, adjusting close times and other restraints on the pursuit of game, limiting the commerce in dead game, and defining the special arbitrary powers necessary to the enforcement of the system. The general tenor of this act was followed in a general game act for Scotland (2d and 3d Will. IV., cap. 68). So lately as the year 1844 the peculiar restraints of the game law were extended by an act (7th and 8th Vict., cap. 29) directing many of the penalties of the trespassing poacher against unqualified persons pursuing game at night in the highways, and around the gates of inclosed places. A slight modification of the game laws, much solicited by farmers, was adopted in 1850, when the right of killing hares without a qualification was conceded to those who could do so without trespass or breach of contract.

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[1] Mr Thorpe's Translation in *Record Commission's Ancient Laws and Institutes*, i., 421.

As a peculiar feature in modern European jurisprudence, game laws have arisen out of the desire to preserve, in the midst of cultivation and civilization, the pursuits by which in earlier stages of society men sought their immediate subsistence, or opened the way to civilization by clearing the wilderness of its dangerous inhabitants. It has hence been an unfortunate peculiarity of such a code of laws that, directed to the support of conditions antagonistic to material progress, to produce the desired effect they require to be rendered more complex and rigid as cultivation and population advance. On the American prairie the most ardent game-preserver would scarcely dream of any restraint on the pursuit of the noblest beasts of the chase, while in highly cultivated England small birds are protected by armed bands of gamekeepers. In some of the remote parts of Scotland it has been in the present century deemed meritorious to entrap and kill a fox, while in the hunting districts of England such an act would be counted a deed of the most atrocious character, as the wanton destruction of an element of high enjoyment.

The social influence of a game law is so deeply interwoven with class prejudices and political feelings at the present day that it cannot be impartially appreciated. On the one side, it cannot be disputed that a vast amount of that punishment which should be awarded solely to guard the public from crime is inflicted for offences against the game laws, and that there are many afflictive punishments which would not have been necessary had no such laws existed. It is maintained, that in addition to the direct infliction thus imposed on society, the system is a sort of inclined plane, facilitating the progress towards other acts undoubtedly criminal. It is a necessary peculiarity of a game law that what it protects is not *property* but a *privilege.* The laws for the protection of game have their peculiar character from the impossibility of separating and appropriating the wild animals to which they apply, as ordinary common possessions are separated and appropriated. Hares, partridges, and grouse may be said to belong to the general body who are by law entitled to slay them, but no member of the class can claim any of them as his own property. The owner of extensive preserves can maintain that the birds he shoots within them are the growth of his property, and have been fed at his expense; yet he is not entitled to reclaim those which fly into his neighbour's preserves, as he might reclaim his sheep, his dogs, or his domestic fowls. Hence the principle of the law itself countenances the peasant who denies that game is property, and who, as a consequence, refuses to brand the poacher with the infamy of the thief. Thus that love of sport and adventure so much commended among the superiors whom he is taught to respect, makes the peasant suddenly find himself a criminal at war with the laws of the land, who, even if he be not directly contaminated by association in prison with thieves and housebreakers, cannot be expected to retain the same horror of the baser crimes which he may have felt before he was stamped as an offender. It is another unfortunate peculiarity of these laws, as the protection not of property but a privilege, that they cannot be enforced without arming man against man, and producing conflict and bloodshed. A piece of property which can be identified is an enduring silent witness of the crime by which it may have been removed from its owner. Hence, though it may be desirable to catch thieves and housebreakers in the act, it is not indispensable; but the produce of poaching, which is no one's property, is not thus capable of identification. The evidence of the crime is the capture of the committer of it in the act, and hence has arisen an armed game police, acting, not under public responsible authority, but commanded in each instance by their private employers and the owners of the soil. Farther still, the difficulty of proving the offence after it has been committed has suggested the necessity of attacking it in its preparatory steps. The laws for the protection of property only require to adopt this alternative in a few classes of crimes accomplished by distinct stages, as forgery and coining, where the preliminary process of preparing plates or instruments is made criminal. It has not been found necessary to punish persons for making arrangements to commit a housebreaking, or even starting on an expedition to accomplish it. But the evidence of each act of poaching is so fugitive, that a vigilant system of penal checks guards the progress towards it; and trespasses, or other actions in themselves even less culpable, become punishable as taking place with the intent to kill game. It is a farther aggravation of this necessary defect, that the fact of *intention*, so readily believed by a partial judge, but so difficult of proof to an impartial one, is decided on and punished like all other offences against the game laws by members of the class whose prejudices, if not their interests, favour a stringent application of the restrictive provisions of the code.

On the other hand, it is said that the sportsman, in the pursuit of game, experiences a legitimate enjoyment which ought to be protected, even at some cost to the community; that the sports of the field are favourable to health, strength, and high spirit, and should be encouraged by a wise legislature, looking beyond the more sordid objects of human exertion. By persons who have less sympathy with sportsmen it is sometimes held, that in a country where there is much superfluous wealth it is a sound arrangement to find some factitious occupation or exciting recreation for its owners which may divert them from pursuits more dangerous to the peace of the community. It has been suggested, that if the principle of a qualification to kill game, and the consequent penal laws, were entirely abandoned, the destruction caused by the extensive invasion of landed property which would follow the general license to extirpate game would render necessary new and stringent laws of trespass afflicting a more inoffensive class of people than those checked by the laws which suppress poaching, and tending to suppress the innocent recreations of the community. It is said farther, that the privilege of following field sports no longer conveys the stigma of feudal subjection to those who do not enjoy it, since virtually it is open to purchase, and consequently all who by their industry and prudence succeed in obtaining wealth may procure it like any other luxury. In answer to those who rail at shooting as a destructive pursuit, wasteful of the produce of the soil, it is said that the owners of sporting grounds bring them into condition for a solid rent from tenants who, after enjoying the pursuit of the game, sell it in the best market. Should the force of such reasons be admitted against the entire abolition of a game law, the question remains, how far the existing game laws of the British empire are consistent with the general welfare of the community. (J. H. B.)

GAMELIA, in *Grecian Antiquity*, the presents given to a bride on the eve of her marriage, when she was introduced by her parents or guardians to the members of the phratria to which her intended husband belonged. The ceremony of enrolling newly married women in the lists of their adoptive phratria was also called Gamelia. The object of this enrolment was to exclude strangers from participating in those rights of Greek citizenship to which they had no legal title. It also guaranteed the legitimacy of the children of persons who went through the necessary forms, and the validity of their claims to all the rights and privileges of citizens.

GAMELION, the seventh month of the ancient Athenian year, containing thirty days, and corresponding to our January; or, according to some, to the latter part of January and the begining of February. It was thus named because it was a favourite time for marriages.

GAMES, Public, in *Antiquity*, were contests and spectacles of various kinds, which in the earlier ages at least were intimately connected with religion. The Grecian games were very numerous; and they are traceable by tradition back to the earliest periods of Grecian civilization. Indeed, much of the obscurity which rests on their origin is a consequence and a sign of their high and even mythic antiquity.

Of these, the most celebrated were the Olympic, the Pythian, the Nemean, and the Isthmian games, which were distinguished by the appellation of ἱεροί, "sacred." The victors at the Olympic games were accounted the noblest and happiest of mortals, and all means were taken that could show the respect in which they were held. These games were celebrated every five years at Olympia, in Elis, on the west side of the Peloponnesus. Hence the epoch called the Olympiads.

The gymnastic exercises were laid down in a well-planned systematic series, beginning with the easier, and proceeding to the more difficult. Some of these were specially fitted to give strength, others agility; some educated the hands, others the feet. Among the lighter exercises were reckoned running, leaping, quoiting, and hurling the javelin. When skill had been obtained in these, and the consequent strength, then followed a severer course of discipline. This was twofold—simple, and compound. The simple consisted of wrestling and boxing; the compound we find in the *Pentathlon* (the five contests), and the *Pankration* (or general trial of strength). The Pentathlon was made up of the union of leaping, running, quoiting, wrestling, and hurling the spear; the Pankration consisted of wrestling and boxing.

Racing may be traced back to the earliest periods of Grecian antiquity, and may be regarded as the first friendly contest in which men engaged. Accordingly the Olympic and Pythian, probably also the other games, open with foot-races. Foot-racing, perfected by systematic practice, was divided into different kinds. When the distance was merely to the end of the course (στάδιον), it was called stadium; if thither and back, it constituted the double course (δίαυλος). The longest course was the δόλιχος, which required extraordinary speed and power of endurance. What it involved the ancients have left in no small uncertainty. It is sometimes given as seven times over the stadium; at others, twelve times; at others again, twenty; and even the number of four-and-twenty times is mentioned. These distances will give some idea of the severity of the trial. Indeed one Ladas, a victor at the Olympic games, was so exhausted by his efforts in the long race, that immediately on gaining the honour and being crowned, he fell dead. In the preparatory discipline everything was done which could conduce to swiftness and strength. The exercises were performed with the body naked and well oiled. Minute directions were established in order to prevent foul play of any kind, so that all the competitors might start and run on terms of entire equality. A passage in the *Enchiridion* of Epictetus will serve to show how rigid was the preparatory discipline: "You wish to conquer at the Olympic games? so also do I; for it is honourable; but bethink yourself what this attempt implies, and then begin the undertaking. You must subject yourself to a determinate course; must submit to dietetic discipline; must pursue the established exercises at fixed hours in heat and cold; must abstain from all delicacies in meat and drink; yield yourself unreservedly to the control of the presiding physician, and even endure flogging." It may well be supposed that the competitors employed all their ability, and displayed the greatest eagerness to gain the prize. The nearer, too, they approached to the goal, the more did they increase their efforts. Sometimes the victory depended on a final spring; happy he that retained power enough to leap first to the goal. The spectators also used every encouragement in their power, these favouring one competitor, those another:—

> "Verbaque dicentum, nunc, nunc incumbere tempus,
> Hippomene, propera. Nunc viribus utere totis."

Statius (*Theb.* vi. 587) has given a lively picture of some of the practices by which the runners endeavoured to give suppleness and agility to their limbs:

> tunc rite citatos
> Explorant, acuuntque gradus, variasque per artes
> Exstimulant docto languentia membra tumultu.
> Poplite nunc flexo sidunt, nunc lubrica forti
> Pectora collidunt plausu; nunc ignea tollunt
> Crura, brevemque fugam necopino fine reponunt.

After the competitors had been called into the lists by the herald, they sometimes tried their strength and exercised their frames by running out and back on the course. Virgil (*Æn.* v. 376) represents Dares as displaying the size and flexibility of his arms prior to his combat with Eryx:

> Ostenditque humeros latos, alternaque jactat
> Brachia protendens, et verberat ictibus auras.

Corinth was the place where the Isthmian games were celebrated; and these were so called from being held on the isthmus which joins northern with southern Greece—a spot of land most celebrated in Grecian history, alike in martial and commercial matters. In the narrowest part of this tongue of land, between Lechæum and Schœnus, stood the famous temple, sacred to the Isthmian Neptune. It was shaded by a pine grove. Here began the Isthmian games. Here also was a splendid theatre, and a race-course adorned with white marble. Other distinguished works of art adorned and hallowed the vicinity.

If we attempt to trace these games to their origin we are lost in the mists which envelope the mythical periods of the Greek national life. They were obviously connected with the worship of Neptune; the wide diffusion of which tended greatly to secure for the Isthmian games the great celebrity which they enjoyed, calling, as they did, competitors and spectators from all parts. The Persian war gave a new impulse to the Isthmian games. The Peloponnesian war, on the contrary—as being a contest of Greek against Greek—dimmed their glory, and abated their influence. Even when, at a later period, Corinth became a Roman colony, the games, so far from losing their importance, were exhibited under the Cæsars with an increased celebrity. They were held every three years, and comprised three leading divisions—musical, gymnastical, and equestrian contests. In the first the tyrant Nero carried off a crown, by destroying his too highly-gifted antagonist. The gymnastic contests were of the same kind in all these games. A few words may here be introduced as to the horse-racing, of which the same kinds prevailed at the Olympic, the Pythian, and the other sacred games. Chariot-races seem to have been practised in the earliest heroic times, since chariots were as early as this used in battle, and the notices which have come down to us refer this kind of sport to the early period now indicated. It stood pre-eminently before other games. The skill and outlay which it required prevented any but persons of distinction—the wealthy, governors, princes, and kings—from engaging in its enjoyments. The Homeric competitors made use in their games of their two-horsed war-chariots, which they occupied each one alone, and drove themselves, though in battle it was not unusual for the reins to be entrusted to a charioteer. In the heroic ages these contests opened the games. To them belonged the highest prizes. In the Olympic games horse and chariot racing gradually branched out into different kinds. So much importance was attached to these games that historians have recorded the exact time when particular kinds were first introduced, and immortal poets sung the praises alike of the victors and their horses. The four-horsed chariot-race had its origin in the 25th Olympiad. In the 93d Olympiad was held the first contest with two-horsed chariots. Foals were now made use of, as well as horses. For a time mules also were employed. Other varieties, mostly designed for a display of skill and splendour, came and went as fashion dictated. The number of chariots that might appear on the course at once cannot be accurately determined. Pindar (*Pyth.* v. 46) praises Arkesilas of Cyrene for having calmly brought off his chariot uninjured, in a contest where no fewer than forty took part. The course had to be gone over twelve times. The urgency of the drivers, the speed and exhaustion of the horses, may easily be imagined. The greatest skill was needed in turning the pillar which marked the extremity of the course, especially when the contending chariots were numerous. How to avoid the danger of collision, how to turn as near the pillar as possible, so as to save ground, were points of the greatest consequence, as Sophocles in his *Electra* intimates (West's Trans.),

Th' Athenian, with consummate art,
His course obliquely veered, and steering wide
With steady rein, the wild commotion pass'd
Of tumbling chariots and tumultuous steeds.

At the Olympic games the prize was simply a chaplet of wild olive. The crowns were laid on a tripod, and placed in the middle of the course, so as to be seen of all. On the same table there were also exposed to view palm-branches, one of which was given into the hand of each conqueror at the same time with the chaplet. The victors, having been summoned by proclamation, were presented with the ensigns of victory, and conducted along the stadium, preceded by a herald, who proclaimed their honours, and announced their name, parentage, and country. The real reward, however, was in the fame which ensued. A chaplet won in the chariot-races at Olympia was the highest of earthly honours. What congratulations from friends; how was the public eye directed to the fortunate conqueror; what honour had he conferred on his native city, and for what office was such an one unfit! What intense and deep delight must his bosom have been filled with when the full acclaim of assembled Greece fell upon his ear, coming in loud salutations and applauses from every part of the crowded course! Then came the more private attentions of individual friends. One brought a chaplet of flowers; another bound his head with ribbons. Afterwards came the triumphal sacrifice made to the twelve gods, accompanied by sumptuous feasting. The poet now began his office, gaining, in some cases, both for himself and the happy victor an unexpected immortality. Music also lent her aid, and his name was sung wherever the Greek language was spoken. In order to perpetuate the memory of these great men, their names and achievements were entered in a public register, which was under the care of suitable officers. A no less privilege was that of having a statue of themselves placed (either at the expense of their country or their friends) in the sacred grove of Jupiter. A perhaps still greater honour awaited the victor on his return home. The conquerors at the Isthmian games were wont to be received in their chariots, superbly attired, amid thronging and jubilant multitudes. One or two other privileges belonged to these victors, such as immunity from public offices, and a certain yearly stipend. If to all this be added the strict scrutiny which competitors were obliged to undergo (in the best ages), so that none could enter the lists but such as were of pure Greek blood and incorrupt in life, none but such as had undergone the required disciplinary training, and (in the case of the chariot and horse races), none but those who could afford to possess and train horses in a country in which, as in Greece, horses, particularly in the earlier ages, were very scarce and dear—it will be seen that the distinction of the prize was not over-rated when it was compared with a Roman triumph, nor that the description of Horace is too highly coloured—

palmaque nobilis
Terrarum dominos evehit ad Deos.

At the Isthmian games the prize was parsley during the mythic periods. In later ages the victor was crowned with a chaplet of pine leaves. Parsley, however, appears to have been also employed. If the conqueror had come off victorious in the three great divisions—music, gymnastics, and racing—he was in the Pythian, as well as in the other sacred games, presented also with a palm branch. The names of about seventy persons are preserved who gained honours at the Isthmian games, among which occurs that of the emperor Nero, who is recorded to have gained the victory in the character of harper and that of herald.

These games, taken in connection with the early and long training by which they were preceded, and of which they were both the natural result and reward, were a grand educational system, bearing primarily indeed in favour of the physical development, but also tending directly and powerfully to advance the intellectual and moral culture. The exercises through which the child, the youth, and the man were stage by stage conducted, each in succession becoming more difficult and more complex, as the bodily powers came into play and acquired vigour, were admirably adapted to give that union of strength and beauty in which physical perfection consists, and in which the Greek nations probably surpassed every other known people. The existence of these exercises and these games in each separate state secured the development and activity of those feelings which made his own country to each one dear and venerable; while a narrow and selfish patriotism was greatly prevented, and emotions which embraced the whole Hellenic race were enkindled and fostered by those general meetings which from time to time called together, especially at

Olympia, all who were not aliens from the Greek commonwealth, marked out by the use of that noble instrument of speech, the Greek tongue.

Aware of the importance of the training in the gymnasium, Solon took the business under his special care, laying down minute regulations as to time, place, and extent, so that nothing might be left to chance or caprice. Then the school, in general, had its president—gymnasiarch—and each separate department a separate head; as in the case of the torch-race, which had its lamparchy, or government, charged with the office of making, in connection with it, all necessary arrangements. There were, however, two officers whose names and functions strikingly serve to show how greatly these Grecian institutions had a favourable influence on character: the first was the *kosmetes*, whose name comes from a word (κόσμος) signifying order and beauty, and whose office consisted in the special superintendence of everything fitted to further these high qualities; the other officer was termed *sophronistes;* and his business was still more intimately conducive to inform the mind, since, as his designation (from σώφρων) proves, he was required to guide the pupils to σωφροσύνη, a term for which we have no English equivalent, but which may perhaps be approximately rendered by "sound-mindedness." The elder Athenians were so solicitous to give a right direction to the influence of the gymnasium, the palæstra, and the stadium, that they annually elected ten sophronists (one out of each tribe), and the honour which was attached to the office may be learnt from the fact that in some inscriptions their name stands before that of the gymnasiarchs themselves. The usual province of the sophronists extended beyond the limits of the exercise-grounds, for they exercised over the youth a general legal oversight. Even their play-hours were under the eye of the sophronist. When the young men joined in the solemn procession of the grand national Panathenæa they were under the guardianship of the sophronists. Were they present at the nocturnal festival held in honour of Hebe, they were still attended by and subject to their sophronist. That something even of a sacred character belonged to these preparatory exercises appears from the fact that the kosmetes bore also the designation of ἱερεύς (priest), having charge of certain sacrifices.

Were there no other consideration in their favour, yet the severe examination to which candidates for admission to these contests were compelled to submit, would suffice to prove that the general tendency of the games was good. Besides being questioned as to their condition—were they freemen or slaves?—and as to their blood—were they really Greeks?—they had also to satisfy their judges that their characters were free from moral stain. In the public stadium the herald, laying his hand on the head of the candidate, inquired with a loud voice, "Can any one accuse this man of any crime? Is he a robber or a slave? or wicked or depraved in his life?" If he successfully passed this ordeal, the candidate was then conducted to the altar of Jupiter, the punisher of the perjured, where with solemn rites he was required to swear (if he could with truth and safety) that he had gone through the required preparatory course of discipline, and would abstain from every breach of the laws in the contest before him. (On the subject here treated of see Krause's *Die Gymnastik und Agonistik der Hellenen;* and his *Die Pythien, Nemeen und Isthmien.* Leipzig, 1841.)

Among the Romans, the amusements of the circus did not materially differ from the Greek *agones* or contests celebrated at Olympia, Delphi, and elsewhere, and were certainly of a nobler kind than the frightful gladiatorial fights of the amphitheatres, though sometimes a circus also was polluted by these inhuman exhibitions. The θηριομαχία, or beast-fight, was a favourite species of entertainment with that people; and the persons destined to this barbarous kind of amusement were termed *bestiarii.* They were generally of two classes—1st, voluntary, that is, persons who fought either for amusement or for pay: these were clothed and provided with offensive and defensive weapons; 2d, condemned persons, who were mostly exposed to the fury of the animals unclothed, unarmed, and sometimes bound. As none but the vilest of men were in general devoted to these beast-fights, no punishment could be more ignominious and cruel than what was frequently inflicted on the primitive Christians when they were hurried away "to the lions," as the phrase was.

Of these beast-fights the Romans were passionately fond; and the number of animals which appear to have been from time to time engaged in them is extraordinary. Sylla, during his prætorship, sent into the arena no fewer than 100 lions, which were all slain. Pompey caused the destruction in this way of 600 lions. On the same occasion nearly 20 elephants perished. These numbers, however, are small compared with the slaughter which took place in later periods. Under Titus 5000 wild and 4000 tame animals, and in the reign of Trajan 11,000 animals, are said to have been destroyed. (See also AMPHITHEATRE, and CIRCUS.)

GAMMONING, among seamen, the lashing by which the bowsprit is secured to the cut-water

GAMMUT, signifies a musical scale, of which the lowest sound is G, marked by the Greek Γ, or *gamma.* Such was the scale given by the monk Guido d'Arezzo in the eleventh century, although he expressly says that it was used before his time. From *gamma* we have the French *gamme*, a *scale* in music. (G. F. G.)

GAMONEDA, a mountain-chain of Spain, on the mutual confines of Castile and Galicia, to the east of the Sierra de Marabon, from which it is separated by the river Tuela. It is a continuation of the range which extends to the E. about 12 miles under the same name, and parallel to the Sierra Segundera. The Gamoneda is very well known from its immense elevation, and its entire mass is composed of loose heaps of stones and solid rocks, interspersed with seams of slate and other minerals, exactly similar to the Sierra de Segundera.

GANDESA, a town of Spain in the province of Cataluña and bishopric of Tortosa. It is situated in an open country surrounded with elevated hills, and is encircled by a wall which is entered by four gates. It is 50 miles W.S.W. of Tarragona, and contains 2316 inhabitants.

GANDHARBA, or GANDHARVA, a species of demigods or angels, the musicians of heaven, inhabiting Indraloka, the paradise of the Hindu deities, and witnesses of the actions of men. They are 60,000,000 in number. In the creation of the second Manwantara they are called the children of Arishtá and Kashyapa (whence they are sometimes called Mauneyas, children of Muni, namely, Kashyapa). By them the Nagas, or mythological serpents in the regions below were despoiled of the jewels which decorated their heads. They applied to Vishnu, who sent Purukusta to Pátála to destroy the Gandharbas. Originally they belong to the latter Epic period, but figure more prominently in the *puránas.* [No satisfactory etymology has yet been proposed for this name. One given in the Vishnu Purána is *gan dhayantas, i.e.,* "suckling the goddess of speech;" and another equally ridiculous is that in Wilson's Sanscrit Dictionary—*ganda*, "smell," and *arb*, "go," alluding to the musk-deer for which this word is a name. Its primitive meaning was probably that of some singing bird. The sense of Koïl, or Indian cuckoo, is attributed to it in the *Medino Kosha.*]—*Bhagavad-gítá*, by J. C. Thomson, 1855.

GANDIA, HUERTA DE, a district of Spain, in the province of Valencia, and one of the most valuable not only in Spain, but in all Europe. It bears the form of a horse-shoe, bounded by a chain of beautiful hills, some of which attain a considerable elevation; and opens towards the east upon the blue waters of the Mediterranean. The two ends of the horse-shoe are, on the south, the eastern cape of Mostalla, and on the north, the Hill of Bayreut. In the immediate neighbourhood of the sea the soil is very sandy, sterile, and often inundated; but inland it becomes extremely fertile, and enjoys the finest climate imaginable, not cold in winter, and tempered during spring, summer, and autumn, by refreshing breezes from the Mediterranean. This rich district contains the city of Gandia, and twenty smaller towns, some in the plains and others along the skirts of the hills, all visible from the spire of the principal church, or the hermitage of Santa Ana.

Gandia, a secular city of Spain, in the province and archbishopric of Valencia. It is very beautifully situated in the Huerta de Gandia, and contains nearly 8000 inhabitants. It stands near the Mediterranean Sea, and contains a fine collegiate church, a college, and a palace of the duke of Gandia. It is noted for the manufacture of silk, linen, and sugar.

GANGES. This great river has its rise in the southern face of the Himalaya Mountains, and after a course of between 1500 and 1600 miles falls into the Bay of Bengal through two principal channels, widely separated from each other; the one known as the river Hooghly, which flows by Calcutta in its passage to the bay of Bengal; the other, further to the eastward, termed the Podda, or Ganges, and subsequently the Megna, which finds its way to the sea through the Sunderbunds. The remote sources of the Ganges were long imperfectly known, and afforded a fertile subject of conjecture and controversy to the geographers of Europe. Prior to the commencement of the nineteenth century this river, designated the Bhageerettee in the upper part of its course, had been traced by Hindu pilgrims to Gangootri, the point at which it issues from the Himalaya mountains; but all accounts agreed that its origin was still more remote. On the side of Thibet it was reported to have been surveyed by lamas or priests, sent for that purpose by the Emperor Camhi, whose route terminated at Rentaisse, a range of snowy mountains on the west and south of Thibet. The most general notion was that it flowed within the Himalaya chain of snowy mountains for many hundred miles from the imaginary lake of Mapama to Gangootri. In 1808 Lieutenant Webb was sent by the Bengal government to explore the sources of the Ganges. About 17 miles beyond Gangootri his further progress was stopped by the difficulties of the country, but the Moonshee who accompanied the party went forward; and as he proceeded upwards after leaving Gangootri, he occasionally perceived the river among the snow, which, a little higher up, so completely filled its bed that no trace of it could be discovered. Five hundred yards farther on it again showed itself; but in front was a steep mountain rising up like a huge wall, from an angle of which the Ganges appeared to issue, whilst all beyond was an impenetrable mass of snow. This is the furthest point to which the Ganges could then be traced. Subsequently, however, it has been clearly established that the most remote feeder of the Bhageerettee, or Ganges, derives its origin in British territory, and from a locality situate on the southern instead of the northern base of the Himalayas. Ten miles above Gangootri the Bhageerettee, or Ganges, first comes to light at a place called the Cow's Mouth. It is a large stone in the middle of the stream, the water passing it on each side, and leaving only a small piece above the surface, to which the fancy of superstition has given the form of a cow's head, an animal held sacred by the Hindus. From Gangootri the Ganges flows among the mountains from S.E. to N.W. to Bhairogathi, where it is joined by the Jahnuvi, its most distant feeder, and to which the title of originating the waters of the Ganges must now be awarded. The pretensions of the Doulee to this distinction have been asserted; but as the distance from the source of that river to its confluence with the Ganges at Deoprag falls short of the distance measured from the latter spot to the source of the Jahnuvi, the grounds upon which its rival claims have been advanced cannot but be regarded as insufficient. From Sookie, where it fairly pierces through the Himalaya Proper, the river assumes a course S.W. to Hurdwar. Here, in the latitude of 29. 57. N., it gushes through an opening in the mountains and enters the plains of Bengal. From Hurdwar to its conflux with the Jumna at Allahabad it is described as a stream of shoals and rapids, but navigable for river craft. The inland navigation of this portion of India will be materially improved by the Great Ganges Canal, now (1855) rapidly advancing to completion, and which was undertaken with the twofold object of affording increased means of irrigation to the north-western provinces, and adding to the facilities of water transit. The canal issuing from the river at Hurdwar traverses the Doab to Allyghur, whence it diverges in two channels, one leading to the parent stream at Cawnpore, and the other to Humerpore, with several offsets to other districts. The total length of this canal, with its branches, measures upwards of 800 miles, and is estimated to cost a million and a half sterling. (See also Aqueduct.) With the exception of the Ramgunga flowing from Rohilcund, the Jumna is the first large river that joins the Ganges after it debouches from the hills. From its arrival in the plains of Hurdwar, to the conflux with the Jumna, its bed is of unequal depth, and its course, compared with the latter part, tolerably straight. From hence downwards it becomes more winding, till having successively received the waters of the Goggrah, the Soane, and Gunduck, besides numerous smaller streams, its bed attains its full width, which, though very unequal, is estimated to average a mile in the dry season on its whole course through the plains, and two miles in the freshes. At the height of the inundation the breadth of the river in some parts of its course is enormous. Bishop Heber mentions that at Boglipoor, about 600 miles from the sea, including the turnings of the river, the breadth in one year at this season was 9 measured miles, and 7 in the following season. Though the Ganges be fordable in some places above the conflux of the Jumna, the navigation is never interrupted for small craft up to Hurdwar, or for river steamers conveying passengers and treasure as far up as Ghurmuktesur, a town on the river, situate about 100 miles below Hurdwar. Below the confluence the channel is increased, the additional streams bringing a greater accession of depth than breadth; yet so shallow in places is the stream during the dry season, that, according to the author of the work entitled *Steam Navigation in British India*, craft should have a draught little exceeding 18 inches to navigate safely and beneficially between Calcutta and Allahabad. At about 220 miles from the sea, or 300 reckoning the windings of the river, commences the head of the Delta of the Ganges. The two westermost branches named Cossimbazar and Jellinghy rivers unite and form what is afterwards denominated the Hooghly, which at Diamond Harbour forms the port of Calcutta. The length of course of the Ganges from its most distant source to the sea by this channel measures 1514 miles. Below the channel where the Ganges sends off these two branches to Calcutta, the main stream loses not only its name, but the greatest part of its sanctity in the eyes of the natives. The Cossimbazar river is almost dry from October to May, nor is the Jellinghy navigable during two or three of the driest months; consequently, at that period the communication by water between Calcutta and the Ganges above the Delta is maintained by a circuitous course termed the Sunderbund passage. That part of the Delta called the Sunderbunds consists of a labyrinth of rivers and creeks, measuring about 160 miles in breadth between the Hooghly and the Megna, the two principal channels of the Ganges, at their junction with the sea. This tract is covered with woods, which are infested with tigers, and its numerous canals form a complete inland navigation across the lower part of the Delta. The Ganges, like all tropical rivers, overflows periodically during the season of the rains in Bengal, on which it depends for its supplies, and not, as may be supposed, on the melting of the mountain snows. Its rise commences late in May, and reaches its maximum in September, at which period it attains the increased height (independently of the tide) of about 7 feet at Calcutta, and from 30 to 45 feet at Benares and Allahabad. In October the waters of the Ganges rapidly subside, after which scarcely a shower falls in the long dry season of Bengal. According to Rennell the quantity of water discharged by the Ganges is calculated in the dry season to amount to 80,000 cubic feet per second, and during the inundation to 405,000 cubic feet, giving a medium for the whole year of 180,000 cubic feet. Results widely differing in the extremes of both seasons have been obtained from experiments made at Benares and Sicrigally, from which it would appear that the mean discharge throughout the year averages 250,000 cubic feet at Benares, and double that quantity at Sicrigally. The descent of the river from Allahabad to Benares has been estimated at 6 inches per mile; from Benares to Colgong at 5 inches per mile; from Colgong to Jellinghy at 4 inches per mile; from Jellinghy to Calcutta at 4 inches; and from Calcutta to the sea at from 1 to 2 inches. In the dry season the current flows at the rate of 3 miles per hour; it increases during the wet season to 5 or 6 miles, and in particular situations to 7 or 8 miles. On the banks of the Ganges, where the soil is loose and the current rapid, "such tracts of land," says Major Rennell, "are swept away in one season as would astonish those who have not been eye-witnesses to the magnitude and force of the mighty streams occasioned by the periodical rains of the tropical regions." Great changes are in this manner produced in the course of the river; what is lost on one side being gained on the other by the mere operation of the stream. In its course through the plains the Ganges receives eleven rivers, some of which are larger than the Rhine, besides many others of less importance. The Jumna, Goggrah, Soane, and Coosy, are the largest of its tributary streams. The Brahmapootra has its rise near the source of the Ganges, and from hence the two rivers diverge widely asunder, but afterwards they intermix their waters before they fall into the sea, the Ganges having then performed by this channel a course, including its windings, of about 1570 miles. (E. T.)

GANGOOTRI, a celebrated place of Hindu pilgrimage, situated among the Himalaya Mountains, in the native Raj of Gurwhal, on the Ganges, which is here not above fifteen or twenty yards broad, with a moderate current, and not in general above three feet deep. The course of the river is here N. by E.; and on the bank near Gangootri there is a small temple about eight or ten feet high, in which are two images representing the Ganges and Bhageerettee rivers. The bed of the river adjoining the temple is divided off by the Brahmins into three basins, where the pilgrims bathe. One of these portions is dedicated to Brahma, the other to Vishnu, and the third to Seva. The pilgrimage to Gangootri is considered as a great achievement of Hindu piety, to be efficacious in washing away all the previous sins of the devotee, and ensuring him eternal happiness in the world to come. The water taken from this sacred spot is exported by pilgrims to India, and sold at a high price. It is drawn under the inspection of a Brahmin, to whom a trifling sum is paid for the privilege of taking it; and the vessels are then sealed. The elevation of the temple above the sea is 10,319 feet. Long. 78. 59. E., Lat. 30. 59. N.

GANGPOOR, a raj or petty native state of Hindustan, province of Gundwana, situate about the 22d degree of north latitude, and bounded on the N. by the British district of Chuta Nagpur. Area, 2493 square miles. Pop. 112,000. It is a barren, mountainous, and unproductive country, inhabited by uncivilized tribes of Hindus. The chief river is the Soank, and the principal town is Gangpur, situate in Lat. 22. 3., Long. 84. 43. (E. T.)

GANJAM, a town and seaport of Hindustan, in the Northern Circars, and capital of a cognominal district. It is situated on the N.E. bank of a river navigable only during the rainy season, when a great part of the surrounding country is inundated. It possesses a fort, which is a regular pentagon on plain ground, well fortified, and capable of making a respectable defence. This port is much frequented by country vessels. The district of which this town is the chief place is bounded S.E. by the Bay of Bengal, and on all other sides by the territory of Orissa. Area estimated at 6400 square miles: Pop. 926,930. The whole district is included within the territory called the Northern Circars, the possession of which was wrested from the French by Clive in 1759. The town of Ganjam is in Lat. 19. 23., Long. 85. 7. (E. T.)

GANNAT, a town of France, capital of a cognominal arrondissement, department of Allier, on the right bank of the Andelot, an affluent of the Allier, 33 miles S. by W. of Moulins. It was formerly surrounded by walls, and what remains of its old castle is now used as a prison. The vicinity is very pleasant, but the town itself is ill-built. It has an hospital, a tribunal of primary instance, and some trade in corn, wine, and cattle. Pop. (1851) 5349.

GANNET. See index to Ornithology.

GANTLET, or Gauntlet (Fr. *gantelet*, from *gant*, a glove), a kind of iron glove, with fingers covered with small plates; formerly worn by cavaliers when armed at all points, and which used to be thrown down as token of challenge. Gauntlets were introduced about the 13th century.

GANYMEDES, in *Grecian Mythology*, a Trojan youth of surpassing beauty, who was carried off by Jupiter to supplant Hebe in the office of cup-bearer to the gods. The king of gods and men presented Tros with two divine horses as a compensation for the loss of his son, who himself was honoured with an immortality of youth. Ganymede is generally represented in works of art as a young man in the first bloom of youth, and wearing the Phrygian cap. At other times he is in the act of being carried off by the eagle of Jove, or is feeding that royal bird from a dish.

GAOL. See Prisons.

GAOL DELIVERY. The administration of justice having been originally vested in the crown, the king in former times rode in person through the realm once in seven years, to judge and determine crimes and offences; but afterwards justices in eyre were appointed, and since that time justices of assize and gaol delivery. A commission of gaol delivery is a patent in the nature of a letter from the king to certain persons, appointing them his justices, or two or three of them, and authorizing them to deliver his gaol at a particular place of the prisoners in it; for which purpose it commands them to meet at such a place, at such time as they themselves shall appoint; and informs them, that for the same purpose the king has commanded his sheriff of the same county to bring all the prisoners of the gaol, and their attachments, before them at the day appointed.

GAONS, an order of Jewish doctors who appeared in the East after the closing of the Talmud. The word *gaons* signifies excellent or sublime; as in the divinity schools we formerly had irrefragable, sublime, resolute, angelic, and subtile doctors. The Gaons succeeded the Seburæans, about the beginning of the sixth century. Chanan Meischtia was the head of the "Excellents," and restored the academy of Pandebita, which had been shut up for thirty years.

GAP (the ancient *Vapincum*), a town of France, capital of the department of Hautes Alpes, and of a cognominal arrondissement, on the right bank of the Luie, 46 miles S.E. of Grenoble. It stands in a wide valley 2390 feet above the sea, and surrounded by an amphitheatre of hills, over which tower the snow-covered mountains of the Alps. In the vicinity are fine walnut avenues and vineyards, but the town itself is an ill-built miserable-looking place. The chief public buildings are the Gothic cathedral, containing the tomb of the celebrated Constable de Lesdiguières, the court house, town hall, bishop's palace, barracks, and theatre. It is the seat of a court of primary jurisdiction, and has a communal college, diocesan seminary, public library, and a museum of natural history. The manufactures comprise woollen, linen, and silk goods, leather and dressed skins. In the vicinity are some marble quarries, which were known to the Romans. It became the seat of a bishopric in the fourth century, and its bishops were for a long period styled princes and counts of Gap. Gap in former times suffered greatly from the devastations of the Lombards and Saracens, from earthquakes, the plague, &c., but more especially from the revocation of the edict of Nantes. Pop. of town (1851) 7726.

GARACHICO, one of the most important places in the island of Teneriffe till it was nearly destroyed by a volcanic eruption in 1705. It now contains about 2600 inhabitants.

GARAMANTES, in *Ancient Geography*, a Libyan race of North Africa, inhabiting the oases in the eastern part of the great desert, and separated from the Gætuli by the Mons Usargala. In a more limited sense, the name Garamantes was applied to the inhabitants of the great oasis of Phazania or Fezzan, a district of country which, though well sheltered against the sands of the desert, was neither well watered nor remarkable for fertility. The Garamantes were known to the Greeks, though somewhat vaguely. Herodotus describes their country as lying thirty days' journey from that of the Lotophagi, as fruitful in dates, and notable for its cattle, whose horns were so long and so bent forward that the animals had to feed walking backwards. Immediately adjoining the Garamantes, dwelt in caves a wretched negro race of wonderful swiftness of foot, whom their more powerful neighbours used to hunt down in chariots. Nothing new was ascertained about the Garamantes after the time of Herodotus till the Romans became masters of North Africa. In the year B.C. 19 Cornelius Balbus, a Roman proconsul, penetrated into their country, and overawed the towns on his line of march, which yielded a sort of temporary homage. He was rewarded with a triumph for his success, which, however, was rather nominal and temporary than real and permanent.

GARBE, in *Heraldry*, a sheaf of any kind of grain.

GARCILASO DE LA VEGA was descended from a noble family of Toledo, and was born in the year 1503. According to the romances, his father, who was counsellor of state to Ferdinand and Isabella, distinguished himself in single combat with a Moor on the Vega or *plain* of Granada; and thus was obtained, by royal appointment, the surname which distinguished the family.

The young Garcilaso gave early evidence of poetic talent, and had written several pieces in the old Castilian style, when he formed an acquaintance with Boscan, which soon ripened into friendship. Hence he was led to entertain new views of classical poetry, and to study Virgil and Petrarch with a special view to the improvement of pastoral poetry in his native language. But, though designed by his natural tastes for a rural life, it was his lot to follow the restless profession of arms; and the wars of Charles V. removed him from the home of his fathers, and dragged him from one country to another. In the year 1529 he distinguished himself as a member of the Spanish corps which repulsed the Turks in Austria. At Vienna he undertook to promote the marriage of his nephew with one of the ladies of the court, and thus drew on himself the displeasure of the emperor, whose dignity, it appears, was in some way compromised. He was, in consequence, banished to one of the islands of the Danube, and here he composed at least one of his canciones, bewailing his unhappy lot, but at the same time celebrating the praises of the majestic river, and describing the various countries watered by its streams. We hear of him again in 1535, when he was wounded in the adventurous expedition of Charles V. against Tunis. Thence he returned into Italy, and devoted himself, as far as circumstances permitted, to the composition of pastoral poetry. Bound by his profession to scenes of war which he hated, he solaced himself by employing his leisure hours in framing delightful pictures of Arcadian life, and embodying them in harmonious verse. Yet he seems to have possessed no inconsiderable share of military talent; for we find him in the command of eleven companies of infantry at the siege of Provence, when he could not have been more than thirty-three years of age. Towards the close of this partially unsuccessful campaign, he was ordered by the emperor in person to assail a fort, the garrison of which was harassing the retreat of the Spanish army. Garcilaso executed this commission with more zeal than prudence. Determined to be the first to scale the walls, he attained his object; but was struck on the head with a stone, and thrown from the ramparts. Being mortally wounded, he was removed to Nice, where he died a few weeks afterwards.

It would be difficult to discover from the works of Garcilaso that the author had spent an active and troubled life, almost constantly in the camp or the battle-field, and that he had died in the bed of military honour, the victim of his courage. He approaches even more closely than Boscan to the tenderness of Petrarch; and it is only by occasional characteristic traits that the Spaniard is recognised. It must be confessed, however, that when such passages do occur, the exaggeration is striking enough. Among his sonnets, which are thirty-seven in number, there are several in which we remark a sweetness of language and delicacy of expression which delight the ear, together with a mixture of sadness and of love, of the fear and yet the desire of death, betraying the strongest mental agitation. The translation of one of these sonnets, though it will give but a faint idea of Garcilaso's poetry, will yet afford a correct picture of Castilian love; a passion in which the fiercest warriors assumed a languishing tone and an attitude of submission:—

Si quejas y lamentos pueden tanto.

If lamentations and complaints have power
  To rein the rivers in their headlong course,
  To bow the trees as with resistless force
In lonely desert, glen, or darksome bower;
If chanted plaints of ills far less than mine
  Have charmed the savage tigers to attend,
  Have forced the rocks of hell an ear to lend,
And spell-bound Pluto stern and Proserpine;

Will not the miserable life I lead
  Move thee to pity—soften thy hard heart,
And cause my humble supplication speed?
If he who loses friend or worldly pelf
  Raises unchid his voice beneath the smart,
Oh what his claim, whose loss has been—himself!

But the reputation of Garcilaso rests chiefly on his pastoral poems, in which he has been imitated, but seldom if ever equalled by subsequent writers. The first of his eclogues, written at Naples, where he seems to have felt the inspiration of Virgil and Sanazzar, is by far the most beautiful, and has ever been considered as a masterpiece. The whole composition has the metrical form of an Italian canzone, and the plan is exceedingly simple. The author describes, with all the simplicity characteristic of genuine pastoral poetry, the meeting of two shepherds, Salicio and Nemoroso, who alternately pour forth their complaints—the one mourning the infidelity, and the other the death, of his mistress. In the strains of the former passion appears raised to the highest pitch, and then lost in an affecting self-sacrifice. In those of the latter there is even greater tenderness. In retracing his recollections, the mourner draws a series of melancholy pictures which have an indescribable charm. The beauty of the poem rises with the description of the beauty of the departed shepherdess. But the finest passage, and that which is considered to be unequalled either in ancient or modern poetry, is that in which Nemoroso relates how he carries in his bosom a lock of his Eliza's hair, with which he never parts for a moment—how, when alone, he spreads it out, wets it with his tears, dries it with his sighs, and then examines and counts every single hair. The poem, as a whole, is evidently the genuine effusion of the author's soul; and the glow of enthusiastic feeling, the happy choice of expression, and the harmony of versification to be found in almost every line of these songs of sorrow, cannot fail to gratify the admirers of elegiac poetry. There is also a purity of pastoral feeling, which appears the more remarkable, when we remember that the poet was a warrior, destined to perish in battle at no distant period.

The following are a few stanzas from this celebrated eclogue :—

Salicio. Through thee the silence of the shaded glen,
Through thee the horror of the lonely mountain
Pleased me no less than the resort of men ;
The breeze, the summer wood, and lucid fountain,
The purple rose, white lily of the lake,
Were sweet for thy sweet sake ;
For thee the fragrant primrose, gemm'd with dew,
Was sought when first it blew.
Oh how completely was I by all this
Myself deceiving ! oh the different part
That thou wert acting, covering with a kiss
Of seeming love the traitor in thy heart !
This my severe misfortune long ago
Did the soothsaying raven, sailing by
On the black storm with hoarse sinister cry,
Clearly presage. In gentleness of wo,
Flow forth, my tears—'tis meet that ye should flow !

How oft, when slumbering in the forest brown
(Deeming it fancy's mystical deceit),
Have I beheld my fate in dreams foreshown !
One day methought that from the noontide heat
I drove my flocks to drink of Tagus' flood,
And, under curtain of its bordering wood,
Take my cool siesta ; but arrived, the stream,
I know not by what magic, changed its track,
And in new channels, by an unused way,
Rolled its warpt waters back :
Whilst I, scorched, melting with the heat extreme,
Went ever following in their flight astray
The wizard waves. In gentleness of wo,
Flow forth, my tears—'tis meet that ye should flow !

* * * * *

But though thou wilt not come for my sad sake,
Leave not the landscape thou hast held so dear ;
Thou may'st come freely now without the fear
Of meeting me, for though my heart should break,
Where late forsaken, I will now forsake.
Come then, if this alone detains thee, here
Are meadows full of verdure, myrtles, bays,
Woodlands, and lawns, and running waters clear,
Beloved in other days,
To which, bedewed with many a bitter tear,
I sing my last of lays.
These scenes, perhaps, when I am far removed,
At ease thou wilt frequent
With him who rifled me of all I loved.
Enough ! my strength is spent ;
And leaving thee in his desired embrace,
It is not much to leave him this sweet place.

* * * * *

Nemoroso. As with the setting sun the shades extend,
And when its circle sinks, that dark obscure
Rises to shroud the world, on which attend
The images that set our hair on end,
Silence and shapes mysterious as the grave
'Till the broad sun sheds once more from the wave
His glorious lustre beautiful and pure ;
Such shapes were in the night, and such ill gloom
At thy departure ; still tormenting fear
Haunts, and must haunt me, until death shall doom
The so much wished for sun to reappear
Of thine angelic face, my soul to cheer,
Resurgent from the tomb.

* * * * *

Poor lost Eliza ! Of thy locks of gold
One treasured ringlet in white silk I keep
For ever at my heart, and when unrolled,
Fresh grief and pity o'er my spirit creep,
And my insatiate eyes, for hours untold,
O'er the dear pledge will like an infant weep ;
With sighs more warm than fire, anon I dry
The tears from off it ; number, one by one,
The radiant hairs, and with a love-knot tie ;
Mine eyes, this duty done,
Give over weeping, and with slight relief
I taste a short forgetfulness of grief.

WIFFEN.

The second eclogue contains a strange mixture of metres and styles : tercets are interchanged with rhymeless iambics, and the simple dialogue is suddenly abandoned for the dramatic. In the third, the genuine character of the pastoral is resumed, and the lyric dialogue in octaves harmonizes pleasingly with its tender description of amatory sorrow. But both are considered inferior to the first eclogue.

Garcilaso made essays in other kinds of poetry, but with less success. One of the most interesting is an elegy which was written at the foot of Mount Ætna, and addressed to Boscan. The mythological recollections excited in the poet by that classic ground, his mournful descriptions of the miseries of war, and his tender anxieties for a beloved object in his native land, diffuse a considerable charm over this elegant poem, which is, besides, fraught with comparisons and images at once novel and truthful.

The poems of Garcilaso, when collected, form only one small volume ; but these have secured him an immortal reputation, and obtained for him the highest rank among the lyric and pastoral poets of his country.

GARD, a department in the south of France, consisting of part of the old province of Languedoc, and bounded N. by the departments of Lozère and Ardèche, E. by the Rhone, which separates it from Vaucluse and Bouches-du-Rhône, S. by Hérault and the Mediterranean, and W. by Aveyron. It lies between 43. 27. and 44. 27. N. Lat., and between 3. 17. and 4. 50. E. Long., being about 75 miles in length from N. to S. and about 70 in breadth from E. to W. Area, 2308 square miles. The mountain range of the Cévennes skirts the department on the N.W., and hence the land gradually declines to the Rhone and Mediterranean. The southern portion, which extends to the sea, and was probably at one time covered by it, is a low plain with numerous lakes and marshes. Besides the Rhone, which bounds it on the E., and the Ardèche, the lower portion of which forms part of its boundary on the N., the principal rivers are the Cèze, Gard, Vidourle, and Hérault. The most northern of these is the Cèze, which rises in the Cévennes, and after a course of about 50 miles in an E.S.E. direction, falls into the Rhone below Bagnols. The Gard, or Gardon, also an affluent of the Rhone, and rising in the Cévennes from several sources, traverses the centre of the department, and has a course of about 60 miles in length. In the early part of its course it flows through a succession of deep mountain gorges; and from the melting of the snows on the Cévennes is subject to inundations, which often cause great damage. Its waters not unfrequently rise 18 or 20 feet in a few hours, and its bed is sometimes increased in width to nearly a mile. The Vidourle flows in a S.S.E. direction from its source near La Vigan, and falls into the shore-lake of Mauguio after a course of about 50 miles. Below Sommières it forms the western boundary of the department. The Hérault has its source and part of its course in this department. The Canal de Beaucaire extends from the Rhone at the town of that name to Aigues Mortes, which communicates with the Mediterranean by means of the *Grand-Roubine* canal. Gard is traversed by railways from Nîmes to Alais, from Nîmes to Beaucaire and thence to Marseilles, and from Nîmes to Cette, through Montpellier. This department is rich in minerals, which constitute one of the chief sources of its wealth, though the mining is carried on in an unskilful manner. Iron, coal, and argentiferous lead mines are extensively worked; and manganese, zinc, antimony, &c., are found. Great quantities of salt are obtained from the salt marshes along the coast. The gypsum and other quarries employ a considerable number of workmen. The manufactures of this department are extensive and varied. The chief of these are silk, cotton, and woollen fabrics, hats, gloves, paper, leather, earthenware, and glass. Agriculture is in a rather backward state, and the land, though generally fertile, does not produce corn sufficient for the wants of the inhabitants. The chief grain crops are wheat, oats, rye, and barley. Lentils, pease, and potatoes are grown; and immense quantities of excellent chesnuts are produced on the slopes of the Cévennes. The vine is extensively cultivated, and yields excellent red and white wines. The olive, mulberry, fig, pomegranate, and other fruit-trees are abundant. Gard contains 4 arrondissements, 38 cantons, 347 communes, and 408,163 inhabitants, as follows:—

	Cantons.	Communes.	Pop. 1851.
Nîmes	11	73	148,564
Alais	9	97	102,339
Uzes	8	98	90,011
Le Vigan	10	79	67,249
	38	347	408,163

The chief town is Nîmes, having (1851) 49,480 inhabitants.

GARDA, Lago di, the ancient *Benacus*, the largest of the Italian lakes, is in Austrian Italy, inclosed by the delegations of Mantua, Brescia, and Verona, and the circle of Roveredo in the Tyrol. It is about 35 miles in length from N. to S., and the southern portion, where widest, is 13 miles across, but it narrows towards the N., where its breadth is not more than 3 or 4 miles. At its northern extremity it receives the Sarco and numerous smaller streams; and its surplus waters are discharged by the Mincio into the Po. It is inclosed by Alpine ridges, except towards the S., where it is bounded by the great plain of Lombardy, and where the peninsula of Sirmio projects into its waters. The elevation of its surface is about 320 feet above the sea, and this is increased by 4 or 5 feet in the beginning of summer from the melting of the Alpine snows. Its greatest depth is 950 feet. Its waters are of a dark-blue colour, are subject to violent storms, and abound in fish. Near its E. shore Napoleon defeated the Austrians under Wurmser on 5th July 1796. Garda, the village from which the lake takes its name, stands on its eastern shore, and was anciently a port of some importance.

GARDANT, or Guardant, in *Heraldry*, a term applied to any beast full-faced, or looking towards the observer.

GARDELEGEN, a town of Prussian Saxony, on the right bank of the Milde, 30 miles N.N.W. of Magdeburg. Pop. (1849) 5857, chiefly engaged in the linen, woollen, and cotton manufactures.

GARDENING. See Horticulture, and Landscape-Gardening.

GARDINER, a town in the State of Maine, N. America, on the Kennebec river, 12 miles S. by E. of Augusta. It has numerous saw-mills, and contains 6486 inhabitants.

GARDINER, Colonel James, a Scottish soldier, remarkable alike for valour and piety, was born at Carriden in Linlithgowshire, Jan. 10, 1687. At the age of fourteen he entered a Scottish regiment in the Dutch service, and was afterwards present at the battle of Ramillies, where he was wounded. While in garrison during the intervals of his campaigns, he had distinguished himself by the recklessness with which he plunged into all the dissipation and excess incident to a military career. In 1719, however, a wonderful change came over him; and he was henceforth as remarkable for piety and Christian worth as he had formerly been for qualities the very opposite of these. The beautiful story of Colonel Gardiner's conversion, and the seemingly supernatural circumstances attending it, have been carefully detailed by his biographer, Dr Doddridge. He fell at the battle of Prestonpans in 1745. The circumstances of his death are described in *Waverley* with all the minuteness of historical detail, set off by the legitimate embellishment of romance.

Gardiner, *Stephen*, bishop of Winchester, and lord chancellor of England, was born at Bury St Edmunds in 1483. He is believed, on good grounds, to have been the illegitimate son of Dr Woodville, bishop of Salisbury, brother of Elizabeth Woodville, wife of Edward IV. After the usual preliminary studies, he was entered of Trinity Hall, Cambridge, where he distinguished himself as much by his knowledge of canon and civil law as by his classical attainments. In course of time he became himself Master of Trinity Hall, and made the acquaintance of Cardinal Wolsey, who introduced him to Henry VIII. Without much difficulty he gained the good-will of that monarch, who sent him in 1527 to Italy to gain the pope's consent to the divorce of Catherine of Arragon. In this mission he was not successful, but he showed such zeal and skill, that on returning home he was entrusted with the conduct of the case. He was likewise made secretary of state, and in 1531 was promoted to the bishopric of Winchester. In these high offices he distinguished himself by his constant and inflexible opposition to everything that smacked of change or progress, especially in matters of religion. Cranmer and the reformers in especial were made to feel the full weight of his hostility; and the opportune downfall of Cromwell removed a serious obstacle from the path of Gardiner's ambition. He was soon able again to testify his good-will to his royal benefactor by furthering the divorce of Anne of Clèves; but his spirit of intrigue seems to have shaken the confidence of the king, whose leanings were at this time beginning to pronounce in favour of Cranmer and the Protestants. It was not long before an opportunity occurred for Henry to show his real sympathies. Gardiner, as the representative of the Catholic party, tried to fix upon Cranmer the charge of heresy, but the attempt was defeated by the king himself, who secured the acquittal of the accused. The failure of this design did not much affect Gardiner's standing, but he damaged himself and his cause seriously by a scheme for the impeachment of Catherine Parr, which that lady had the good fortune to discover, and the skill to counterwork. On the accession of Edward VI. Gardiner experienced a serious reverse of fortune. Failing to comply with the demands of the now dominant Protestant party, he was thrown into the Tower, and kept there in close confinement till the premature death of the young king and the accession of his sister Mary completely changed the aspect of affairs. He was immediately set free, made lord chancellor, reinstated in his lost bishopric, and entrusted with the conduct of the most important affairs, both of the nation and of the queen's household. The atrocities that were perpetrated during the short but bloody reign of the new sovereign, if not directly chargeable against him, were certainly aggravated by having his sanction and countenance. Had he willed he might have prevented them, as there was no subject of the realm whose power and influence were comparable to his. He died November 12, 1555, and was buried with a more than royal magnificence.

Gardiner was a man of great practical ability. His ambition was as great as that of his quondam master Wolsey; and the height of power which he reached was inferior only to that attained by the great cardinal. In forwarding his ambitious views he made no scruple of sacrificing any thing or person that stood in the way; but as soon as he found his position secure, he was careful to advance the interests of the party on whose shoulders he had risen to power. His knowledge of men, and his tact in dealing with them, were far more remarkable than his knowledge of divinity, which, however, was far from commonplace. His cunning, that treacherous quality which formed so prominent a feature in his character, was sometimes so ill concealed as to injure rather than promote his views. Such a mind as his was constitutionally vindictive; and if he did not actually take pleasure in the sight of human suffering, he proved at least by his conduct that he did not object to the use of torture as a means for furthering the interests of the Roman Catholic Church. It is said that on his deathbed the retrospect of his life and conduct filled him with horror, and that he often repeated the words, *Erravi cum Petro, sed non flevi cum Petro,* I have sinned with Peter, but I have not wept with Peter. His principal works are—*De Vera et Falsa Obedientia,* 1534; *Palinodia dicti libri; A Necessary Doctrine of a Christian Man, set forth by the King's Majestie of England,* 1543; *An Explanation and Assertion of the true Catholic Faith, touching the most blessed Sacrament of the Altar,* 1551; *Confutatio Cavillationum quibus Sacrosanctum Eucharistiæ Sacramentum ab impiis Capernaitis impeti solet,* 1551.

GARNET, a beautiful gem of a rich red colour, passing from columbine red to cherry and brown red. Another species is the common garnet, the colour of which is of various shades of brown and green. See MINERALOGY.

GARNET, a tackle fixed to the mainstay of a ship, for hoisting cargo.

GAROFALO, BENVENUTO, whose family name was TISIO, a painter of very considerable merit, was born at Garofalo near Ferrara in 1481. After studying at his native city, at Cremona, and afterwards at Mantua, under the leading artists of these cities, he betook himself to Rome where Raphael was then at the height of his glory. The works of that great master, as was natural, affected his style very materially for the rest of his life. His works in his later manner placed him among the first painters of his day, and even now command large prices among connoisseurs. Vasari cites as his masterpieces, a "Massacre of the Innocents," a "Resurrection of Lazarus," and a "Capture of Christ." The same critic also mentions a "Martyrdom of St Peter," which he describes as nowise inferior to the famous painting by Titian on the same subject. Garofalo died in 1559.

GARONNE, the ancient *Garumna,* an important river of France, which rises in the Spanish Pyrenees, passes in succession through the departments of Haute Garonne, Tarn-et-Garonne, Lot-et-Garonne, and Gironde, and falls into the Bay of Biscay by the estuary of the Gironde after a course of about 300 miles. It has its source in the *Vallée d'Aran,* and enters France near the Pont du Roi in Haute Garonne. Hence it flows N.W. to its junction with the Neste, then N.E. to Toulouse, and afterwards in a N.W. direction to its mouth. It is navigable to Cazeres above Toulouse, and at Toulouse it is connected by the Canal du Midi with the Rhone and the Mediterranean. Its chief affluents on the right are the Salat, Ariège, Tarn, Lot, Dropt, and Dordogne; on the left, the Neste, Louge, Save, Gimoné, Gers, Baïse, and Ciron. At Bec d'Ambès, where it receives the Dordogne, it takes the name of Gironde. The Gironde presents an almost uninterrupted succession of islands and banks, which divide it into two nearly equal branches and render the navigation somewhat difficult. The valley of the Garonne is noted for its beauty and fertility.

GARONNE, *Haute,* one of the frontier departments in the south of France, bounded on the N. by the department of Tarn-et-Garonne, E. by those of Tarn, Aude, and Ariège, S. by the Pyrenees which separate it from Spain, and W. by the departments of Hautes Pyrénées and Gers. It is about 88 miles in length by 25 in average breadth; lying between 42. 40. and 43. 55. N. Lat., and between 0. 27. and 2. 3. E. Long. Area, 618,558 hectares, or 2388 English square miles. The northern portion of this department is covered by hills of moderate elevation, interspersed by broad and fertile valleys and plains. Towards the south the land gradually rises to the Pyrenees, some of the peaks of which here attain the height of upwards of 10,000 feet, while Mount Maladetta is 11,168 feet above the level of the sea. The scenery here is of the most wildly picturesque description. The mountains raising their lofty summits into the region of perpetual snow, the immense precipices, frightful chasms, and the numerous torrents and waterfalls, render this district, for savage grandeur, almost unrivalled. The lower slopes of the mountains are covered with thick forests of oak, fir, pine, &c., or are occupied as sheep walks and pasture grounds. The principal river of this department is the Garonne, from which it takes its name. The others, the principal of which are the Neste, Salat, Lers, Louge, Touque, Save, Ariège, and Tarn, are either directly or indirectly feeders of the Garonne. The navigable rivers are the Garonne, Tarn, Ariège, and Salat. The Canal du Midi traverses this department for 32 miles. The climate, except in the elevated region of the south, is temperate. The prevailing wind is the west; the south wind almost always brings rain. The mineral wealth of this department is considerable, and its mines, particularly of iron, are numerous. Copper, lead, antimony, bismuth, zinc, and coal are among its other mineral productions, and its marble quarries are extensively worked. Mineral springs are found in various places. In some of the mountain valleys, particularly in that of Luchon, cretinism is common. The arable land, which comprises more than a half of the department, is well adapted for the cultivation of wheat, maize, and other grain crops; and agriculture is in an advanced state. The produce of corn is generally nearly double what is required for home consumption. The neighbourhood of Toulouse is one of the most fertile portions of France, as well in corn as in pasture for cattle. Much fruit is produced, and vineyards are extensive, yielding wine of a medium quality, most of which is consumed at home or converted into brandy. The mountains and valleys afford excellent pasturage for cattle, which are numerous. Near Toulouse a fine breed of horses was formerly raised for the dragoon service, but it has been suffered to degenerate. The mountains abound with wood, well adapted for ship-building. The manufactures are various but not extensive, and include iron and copper utensils, earthenware, woollen, cotton, and linen goods, leather, hats, watches, mathematical instruments, &c. Haute Garonne is divided into 4 arrondissements as follows:

	Cantons.	Communes.	Pop. in 1851.
Toulouse	12	133	176,487
Villefranche	6	97	65,039
Muret	10	126	92,988
Saint-Gaudens	11	234	147,096
	39	590	481,610

The capital, Toulouse, contains 85,554 inhabitants.

GARRICK, **David**, the greatest actor of his age, and the most successful of theatrical managers, was descended from a French Protestant family (Garrique), that had settled in England on the revocation of the edict of Nantes. The father of David, Captain Peter Garrick, was on a recruiting expedition when his celebrated son was born at Hereford, and baptized there February 28, 1716-17. The captain usually resided at Lichfield on half pay, but in order to benefit his family he accepted an offer to proceed on service to Gibraltar in place of a brother officer who was desirous of returning to England. This kept him many years absent from his family, and the letters written to him by "little Davy," acquainting him with the doings at Lichfield, are highly interesting memorials of the future Roscius.[1] In his nineteenth year, after receiving a good education at the grammar-school of Lichfield, David was sent to the establishment at Edial, opened in June or July 1736 by that greatest of Lichfield men, Samuel Johnson. The Edial seminary was shut in about six months, and master and pupil, Johnson and Garrick, proceeded to London, one to commence the study of the law, and the other to try his tragedy of *Irene*. They left Lichfield on the 2d of March 1736-7. Seven days afterwards Garrick was entered of Lincoln's Inn, but he resided for some time with the Rev. Mr Colson, a distinguished teacher at Rochester. His father, who had returned from Gibraltar, died about a month after David's arrival in London, and it is worthy of note, that in his will, dated 1st January 1736-7, while he left liberal legacies to his other children, the youngest is only remembered by this bequest: "Item, to my son David, one shilling."[2] Fortunately a rich uncle, a wine merchant at Lisbon, in his will left David a sum of L.1000; and he entered into partnership with his brother as wine merchants in London and Lichfield. The concern was not prosperous, and before the end of 1741 David had spent nearly half of his thousand pounds. His passion for the stage completely engrossed him; and being acquainted with Giffard, manager of the theatre at Goodman's Fields, he accompanied that gentleman, with a party of his players, to Ipswich, where Garrick made his first essay as an actor under the name of Lyddal. His success on the provincial boards determined his future career. On the 19th of October 1741 he made his appearance at Goodman's Fields in the character of Richard III., and gained the most enthusiastic applause. His staid and sedate brother, and his sisters at Lichfield, were scandalized at this derogation from the provincial dignity of the family; and Garrick, greatly distressed at the shock they had received by the intelligence (which however he expected), hastened to give up his interest in the wine company. Each night added to his popularity on the stage. He was received by the best company in town. Glover ("Leonidas") attended every performance; Lyttelton, Pitt, and several other members of parliament, had shown him the greatest civility. Before next spring he had supped with "the great Mr Murray, counsellor," and hoped to do so with Mr Pope through Murray's introduction, while he was dining with Halifax, Sandwich, and Chesterfield. "There are a dozen dukes of a night at Goodman's Fields," writes Horace Walpole; and Garrick's farce of the *Lying Valet* being at this time brought out with success, the honours of dramatic author were added to those of the stage. His fortune was made.

Having very advantageous terms offered him for performing in Dublin during part of the summer, he went over to that city, where he found the same homage paid to his merit which he had received from his own countrymen. To the service of the latter, however, he esteemed himself more immediately bound; and therefore, in the ensuing winter, he engaged himself to Fleetwood, manager of Drury Lane. In this theatre he continued till 1745, when he again went over to Ireland, and continued there the whole season, as joint-manager with Sheridan, in the direction and profits of the theatre-royal in Smock Alley. From Dublin he returned to England, and was engaged for the season of 1746 with Rich at Covent Garden. This was his last performance as a hired actor; for in the close of that season Fleetwood's patent for the management of Drury Lane expired, and that gentleman having no inclination further to pursue a design by which, from his want of acquaintance with the proper conduct of it or some other cause, he had considerably impaired his fortune, Garrick, in conjunction with Lacy, purchased the property of the theatre, together with the renovation of the patent, and in the winter of 1747 opened it with the best actors, and especially with the famous prologue written by his old preceptor Johnson, who, though somewhat splenetic, if not envious, at Garrick's sudden rise, was glad to see

> " ——— the reign commence
> Of rescued nature and reviving sense."

The naturalness of Garrick's acting was its great charm. Booth, Quin, and the old tragedians were remarkable for a style of stately declamation, sonorous and often graceful and impressive, but wanting the versatility and rapid changes of passion that, when exhibited by Garrick, at once captivated the audience. "It seemed," said old Richard Cumberland, "as if a whole century had been stepped over in the passage of a single scene; old things were done away, and a new order at once brought forward, bright and luminous, and clearly destined to dispel the barbarisms of a tasteless age, too long superstitiously devoted to the illusions of imposing declamation." In comedy Garrick also excelled, and the variety of his acting was justly considered one of his peculiar excellences. As a manager, though he committed some grievous blunders, his career was beneficial to the stage. He purified it of much of its grossness, and introduced a correctness of costume and decoration unknown before. In 1749 Garrick was married to Mademoiselle Violette, a German lady, who had attracted the admiration of the court of Vienna as a dancer, and was patronized in England by the Countess of Burlington. The union was a happy one, and the lady survived, living in great respect, until 1822. Having sold the moiety of his theatre for L.37,000, Garrick took leave of the stage in 1776, but only enjoyed his opulent and well-earned repose for a period of less than three years, dying on the 20th of January 1779. Johnson, whose various and not always consistent criticisms on Garrick, are scattered through the pages of Boswell, spoke warmly of the elegance and sprightliness of his friend's conversation, as well as of his liberality and kindness of heart; and his death, which came upon him unexpectedly, "eclipsed," Johnson said, "the gaiety of nations, and impoverished the public stock of harmless pleasure." But the most accurate and discriminating character of Garrick, slightly tinged with satire, is that drawn by Goldsmith in his poem of *Retaliation*. As a literary man Garrick was happy in his epigrams and slight occasional poems. He had the good taste to recognise, and the spirit to make public his recognition of, the excellence of Gray's Odes at a time when they were either ridiculed or neglected. His dramatic pieces (the *Lying Valet*, *Lethe*, the *Guardian*, *Miss in her Teens*, *Irish Widow*, &c.), and his alterations and adaptation of old plays, evinced his knowledge of stage effect and his appreciation of lively dialogue and action, but he cannot be said to have added one new or original character to the drama. His correspondence, in two volumes quarto, and the notices of him in the Memoirs of Hannah More, Madame D'Arblay, and above all, in Boswell's Life of Johnson, bear testimony to his general worth and to his many fascinating qualities as a friend and companion. (R. C—S.)

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[1] Forster's *Life of Goldsmith*, 2d edition, 1854.

[2] Cunningham's edition of *Johnson's Lives*. Garrick's early life may have been wild, as Mr Cunningham assumes, but we hear nothing of it while he was with Johnson at Edial; and in Gilbert Walmsley's letter to Colson, Garrick is mentioned as a very sensible young man, and a good scholar, whom the captain, his father, hoped to send to the temple and educate for the bar. Yet the captain's will was made about this very time. The specification of the "shilling" seems undoubtedly to imply marked displeasure; but David at this period received a legacy of L.1000 left him by his uncle at Lisbon, while his brother and sisters received only L.500 each. See Davies's *Life of Garrick*, in which work, however, there is some inaccuracy and confusion as to dates.

GARRISON (Fr. *garnison*, from the low Lat. *garnisio*, ammunition, military stores), a body of troops stationed in a fort or fortified town, either to defend the place against an enemy, to keep the inhabitants in subjection, or merely to be subsisted. By military writers the term is applied indifferently to a fortress, to the guard of a citadel or fortified place. and to the soldiers quartered in a town.

GARROTE, the name given in Spain to a mode of capital punishment by strangulation. The criminal is seated on a stool with his back to a stake, and his neck is encircled with an iron collar, which the executioner suddenly forces close by means of a screw, so as to cause instantaneous death.

GARROVILLAS, a secular town of Spain, in the province of Estremadura. It contains 6000 inhabitants, and is situated in a district studded with small elevations, of which the highest is the Santa Cruz de Brozas. It is supplied with excellent water, though sometimes not in abundance, and stands about two miles from the Tagus. Woollens and linens are manufactured here in considerable quantities.

GARROW and COSSYAH HILLS, a mountainous district of Hindustan, on the N.E. frontier of Bengal, between the 25th and 26th degrees of north latitude. Its boundaries are Goalpara and Camroop on the north, Jyntea on the east, Sylhet on the south, and Mymensing on the west. The area of the whole tract is estimated at 4347 square miles, of which the Garrows contain one-half, the other moiety being included within the Cossyah Hills. The population, which amounts to 65,205, is composed of the subjects of various native chiefs, who, though taken under British protection, are exempted from the payment of tribute. The character of the country is wild, as is also that of the people; but the liberal policy of the protecting government, and the interposition of its power only when rendered indispensable by the refractory chiefs, have succeeded in maintaining tranquillity. The people are of a stout make, vigorous and athletic, but ill-looking. They are not so dark as those in Bengal. They go nearly naked; and, although calling themselves Hindus, eat all kinds of food, and drink spirituous liquors. They worship Mahadeva; and at Banjam, a pass in the hills, they worship the sun and moon. They are poor and barbarous in their habits. Their houses are of the rudest description, being raised on piles three or four feet from the ground. The houses of the better classes are more neatly executed. They are said to be cheerful in their dispositions, and mild in their manners. At the foot of the Garrow Hills reside a tribe of people called Hajins, who are more like the Hindus, and who will not kill a cow.

GARSTANG, a small market-town of Lancashire, on the right bank of the Wyre, and on the Preston and Lancaster Railway, 11 miles S. of Lancaster. Pop. (1851) 839.

GARTER, ORDER OF THE, one of the most ancient and illustrious of the military orders of knighthood, was instituted by Edward III. of England, and dates from about the year 1350, though some writers refer its institution to 1344. Its origin is variously related. The common account is, that the Countess of Salisbury happened at a ball to drop her garter, and that the king took it up and presented it to her, at the same time exclaiming, *Honi soit qui mal y pense*, in reference to the smiles which he observed the action had excited among some of the bystanders; adding, "that shortly they should see that garter advanced to so high an honour and renown as to account themselves happy to wear it." In the opinion of some authorities, however, the motto of the order has reference to Edward's claim to the kingdom of France, and means that he retorted shame and defiance upon those who should dare to think amiss of the just enterprise he had undertaken for the recovery of his lawful right to that crown; and that the bravery of those knights whom he had elected into this order would enable him to maintain the quarrel against those who thought ill of it. Camden, Fern, and others, suppose it to have been instituted on occasion of the victory obtained by the Black Prince over the French at Cressy. That prince, say some historians, ordered his garter to be displayed as a signal of battle; and in commemoration thereof he made a garter the principal ornament of the order. In Rastel's *Chronicle* it is stated that this order was devised by Richard I. at the siege of Acre, when he is said to have caused twenty-six knights to wear thongs of blue leather about their legs, and that it was perfected in the 19th year of Edward III.

The number of knights companions was originally twenty-six, including the sovereign, who is chief of the order; but in 1786 a statute was passed to the effect that this number should be irrespective of princes of the royal family, and illustrious foreigners on whom the honour might be conferred. Their total number at present (1855) is thirty-eight. This order holds the highest rank among the British orders of knighthood. Its officers are a prelate, chancellor, registrar, king-at-arms, and usher of the black rod, besides others of inferior rank. At their head is the prelate, who is always the Bishop of Winchester; next is the chancellor, who, till 1837, was the Bishop of Salisbury, but is now the Bishop of Oxford, in consequence of Berkshire, and of course Windsor, being transferred to that diocese. The Dean of Windsor is registrar *ex officio*. The fourth officer is garter and king-at-arms, which are two distinct offices united in one person. The garter carries the rod and sceptre at the feast of St George (the protector of the order) when the sovereign is present; he notifies the election of new knights, attends the solemnity of their installation, carries the garter to foreign princes and others, and he is the principal officer of the college of arms and chief of the heralds. (See KING-AT-ARMS.) All these officers, except the prelate, have fees and pensions. The chapter meet annually on St George's day (23d April) in St George's chapel, Windsor, where the installations take place, and the knights' banners are suspended. The habit and insignia are the garter, of blue velvet, and inscribed with the motto "Honi soit qui mal y pense," worn below the left knee; the mantle, of blue velvet; the hood and surcoat of crimson velvet; the hat of black velvet; the collar of gold; the george, or figure of St George, suspended from a broad dark blue riband; the star of silver. The Garter challenges pre-eminence over all the other parts of the dress, for from it the noble order received its denomination. It is the first part of the habit presented to foreign princes and absent knights, and that wherewith they and all other knights elect are first adorned. The mantle is the chief of the vestments made use of upon all solemn occasions. The length of the train of the mantle distinguishes the sovereign from the knights companions. To the collar of the mantle is fixed a pair of long strings, anciently woven with blue silk only, but now twisted round, and made of Venice gold and silk, of the colour of the robes, with knobs or buttons, and tassels at the end. The left shoulder of the mantle has from the institution been adorned with a large garter, with the device. Within this is the cross of the order, which was ordained to be worn at all times by Charles I. At length the star was introduced, which is a sort of cross irradiated with beams of silver. The collar is appointed to be composed of pieces of gold in fashion of garters, the ground enamelled blue, and the motto gold. When the knights wear not their robes, they are to have a silver star on the left side: and they commonly bear the picture of St George, enamelled on gold, and set with diamonds, suspended by a dark blue riband, crossing the body from the left shoulder.

The garter, at the time of election, is buckled upon the left leg by two of the senior companions, who receive it from the sovereign (to whom it has previously been presented upon a velvet cushion by the Garter king-at-arms), with the usual reverence, whilst the chancellor reads the admonition enjoined by the statutes. The garter being then buckled on, and the word of its signification pronounced, the knight-elect kneels before the sovereign, "who puts about his neck a dark blue riband, to which is appended, wrought in gold within the garter, the image of St George on horseback, with his sword drawn, encountering the dragon." In the mean time, the chancellor reads the following admonition: "Wear this ribbon about thy neck, adorned with the image of the blessed martyr and soldier of Christ, St George, by whose imitation provoked, thou mayest so overpass both prosperous and adverse encounters, that having stoutly vanquished thy enemies both of body and soul, thou mayest not only receive the praise of this transient combat, but be crowned with the palm of eternal victory." Then the knight elected kisses the sovereign's hand, and returns thanks for the great honour done him; after which he rises up and salutes all the companions severally, who return their congratulations.

In the beginning of the present century it was estimated that eight emperors and twenty-eight foreign kings, besides numerous sovereign princes, had been enrolled as knights companions of the Order of the Garter. Ashmole has given a very elaborate account of this order. See also the splendid work of Sir H. Nicolas on the Orders of Knighthood.

Garter, principal King-at-Arms. See King-at-Arms.

Garter is also a term in heraldry, signifying the moiety or half of a bend.

GARTH, Sir Samuel, a well-known physician and poet of the Queen Anne and early Georgian period, was a native of Yorkshire. He studied at Peterhouse, Cambridge, joined the college of physicians in London, and became a fellow in 1692. He was the leading Whig physician, as Radcliffe was that of the Tories; and in 1714 he was knighted with Marlborough's sword by George I. His social and liberal spirit made him friends among all parties, and he also enjoyed considerable reputation as author of the *Dispensary*, a popular poem on a popular subject. This appeared in 1699, and went through seven editions in the author's lifetime, each edition being corrected and enlarged. On a copy at present (1855) in the possession of Mr Rogers, Pope made some corrections, which were adopted by Garth. The object of this poem was to ridicule the company of apothecaries and certain medical men who set themselves to thwart and oppose a benevolent edict issued by the college of physicians, that the poor should have advice gratis. The subject is treated in a ludicrous allegorical style, in the heroic couplet, which Pope afterwards carried to such perfection in his *Rape of the Lock* and other works. Garth also edited a translation of Ovid's *Metamorphoses*, supplying himself the fourteenth and part of the fifteenth book. This was published in 1717, and he died in 1719. In the brilliant society of that period, as a member of the *Kit Kat Club*, and the associate of Halifax, Addison, Congreve, Swift, and Pope, Garth appears to have been a favourite. He was unfixed in his religious opinions, but Pope says he was a good Christian *without knowing it*, and that he died a Papist. A more characteristic anecdote is related by Swift's friend Alderman Barber, who writes to the Dean, "You may remember Mr Garth said he was glad when he was dying, for he was weary of having his shoes pulled off and on!" The force of *pococurante* indifference could no further go. But there was little serious feeling among the wits of that age, save with Addison and Arbuthnot, and most of them affected a sort of Roman superiority to those terrors of death which have shaken so many stronger minds. (R. C—S.)

GARVE, Christian, a distinguished German miscellaneous writer, was born at Breslau in 1742. He lost his father at an early age, but was very carefully educated under the superintendence of his mother. He studied mathematics and philosophy under Baumgarten, at Frankfort-on-the-Oder; and thence he removed successively to Halle and Leipzig, where he enjoyed the friendship of Weisse, Gellert, and other *literati.* After Gellert's death in 1769, Garve was appointed to succeed him, and his lectures on logic and mathematics were universally approved. His delicate health, however, compelled him to resign his professorship; and he retired to his native city, where he continued to teach privately for the remainder of his life. He had long suffered under a complication of painful diseases, and after much severe suffering he died in 1798.

Garve first made a name for himself by his translation of Burke's essay *On the Sublime and Beautiful*, and other works, such as the *Ethics*, *Politics*, and *Rhetoric* of Aristotle. His translations from the Greek, however, though not without certain literary merits, want that first requisite of all translations—fidelity. He was more happy in his rendering of Cicero *De Officiis*, which he edited and annotated at the request of the great Fritz of Prussia, who had been struck with some of his philosophical essays, and had invited him to Charlottenburg, where he had entertained him with unusual courtesy. These *Philosophische Abhandlungen* of Garve's consist principally of essays on ethical subjects, or subjects of general import, such as *Patience*, the *Art of Thinking*, *Irresolution*, the *Existence of God*, and such like. They are all treated in a popular style, but, though popular, are far from commonplace. They often present a worn-out theme in a guise so fresh and pleasant as to have all the attractions of novelty.

GAS, a general name for all those elastic fluids that preserve their aëriform state at ordinary temperatures. See Chemistry.

GASKET, a cord or piece of plaited stuff by which a sail, when it is furled, is secured to the yard or boom.

Gasket also denotes yarn of flax or hemp saturated with tallow. It is used as packing for the stuffing-boxes of engines, to make tight the joints of iron pipes, &c.

GAS-LIGHT.

Importance of light.

Light, whether obtained from natural or artificial sources, is so necessary for the correct and successful execution of almost every operation of human industry, that whatever is calculated to simplify the means of procuring it, or to increase its intensity, cannot fail to be attended with the most beneficial consequences to civilized society. For every purpose to which it is applied, it must be admitted that the light of day, when it can be enjoyed freely and without interruption, is by far the most suitable; but in large and crowded cities, as well as in situations less favourable in point of climate, where the sun is sometimes shrouded for days together in dense and impenetrable clouds, it becomes expedient to compensate for the absence of his rays by artificial substitutes, which, however inferior in brilliancy and general usefulness, may nevertheless answer sufficiently well in those cases where a less ample supply of light is requisite.

Phosphorescent substances.

Some substances, denominated *phosphorescent*, have the property of absorbing the solar rays, on being exposed for a short time to their influence, and of emitting the light which they thus imbibe when they are afterwards placed in the dark; but the feeble and transient illumination which they shed. though sufficient to indicate their luminous condition, is totally unfit to afford such a supply of light as is necessary for conducting any of the operations of art, which require care and precision for their performance.

Substances from which artificial light is obtained.

There are, however, a variety of inflammable substances, both of animal and vegetable origin, which, during the process of combustion, give out light as well as heat; and hence, from the earliest periods of human society, it has been customary to burn substances of that description for the purpose of obtaining artificial light. These substances, which were generally of a fatty or oleaginous nature, are composed chiefly of carbon and hydrogen. When they are exposed to a certain high temperature, they are resolved into some of the compound gases which result from the union of these elements, particularly carburetted and bicarburetted hydrogen, or olefiant gas, both of which are highly inflammable, and yield, during their combustion, a fine white light. In order to facilitate the decomposition, and to carry on the combustion with due economy, a quantity of some fibrous substance, in the form of a wick, is connected with the oleaginous matter, for the purpose of causing it to burn slowly and effectually. Accordingly, if the flame be suddenly extinguished, the inflammable gas which is formed by the decomposition of the matter in immediate contact with the wick is observed to escape from it, and may be again set on fire by the application of a lighted taper.

When it is required to convey from place to place the light obtained from these substances, no arrangement is found to be more convenient for their decomposition than that which is effected by means of the wick; but if the light is to remain in a permanent position, it will frequently be more advantageous to resolve the oleaginous matter into gas, and then to transmit it, in that state, through pipes, to the various points where it is to be consumed.

Although the different substances which have been used from the earliest times for yielding artificial light have always been actually resolved into gas before they underwent the process of combustion, that fact was entirely unknown until pneumatic chemistry unfolded the properties of the aërial bodies, which perform so many important functions in the economy of nature, as well as in the processes of the arts. It was then discovered that hydrogen, one of the component parts of water, was a highly inflammable gas, capable of being produced under a great variety of circumstances: from vegetable matter decaying in stagnant water, forming what is called light carburetted hydrogen, a stream of which, when ignited, produces the natural phenomenon known as "ignis fatuus, or Will-o'-the-Wisp:" from coal, oils, and fatty substances, when, in combination with larger proportions of carbon, it forms gases of high illuminating powers. The use of gas for the purpose of illumination is therefore of recent date; but although late in its origin, the successive improvements which the invention has received, and continues to receive, from the joint labours of chemists and practical engineers, have tended greatly to simplify the processes for producing the gas, and for improving its quality and means of distribution.

Discovery of coal-gas.

In many parts of the world there are certain deposits of petroleum or naphtha which furnish gaseous matter; and this issuing from some fissure in the earth, becomes ignited by lightning or some other cause, and continues to burn for a long period. Such a flame is regarded by an ignorant people with superstitious reverence, and has been sufficient to found a religious sect of fire-worshippers. Deposits of coal, or of bituminous schist, sometimes furnish the gaseous matter for such flames. The practical Chinese, about thirty miles from Pekin, are said to make use of this gas in the boiling and evaporating of salt brine, and for lighting their streets and houses. "Burning fountains," as they are sometimes called, are not uncommon, and their origin is the same. In 1851, in boring for water on Chat Moss, on the line of railway between Manchester and Liverpool, a stream of gas suddenly issued up the bore, floated along the surface of the ground, and caught fire on the application of flame. A pipe was inserted into the bore, and a flame eight or nine feet long was thus produced.

In 1667, Mr Shirley describes in the Philosophical Transactions of the Royal Society a burning spring in the coal district of Wigan in Lancashire: he traced its origin to the underlying beds of coal. In 1726, Dr Hales, in his work on *Vegetable Statics* gives an experiment on the distillation of coal, by which it appears that 158 grains of Newcastle coal yielded 180 cubic inches of inflammable air. In 1733, Sir James Lowther sent to the Royal Society specimens of inflammable air from a coal-mine near Whitehaven. The gas was collected in bladders, and a number of experiments were tried on it.

It appears, however, that the Rev. John Clayton had performed some experiments on the distillation of coal some years previous to the publication of Dr Hales's book; but he did not publish an account of them until 1739, and this account consists of an extract from a letter written by Clayton to the Hon. Robert Boyle, who died in 1691, and was probably written some time before this year. It is inserted in the Transactions of the Royal Society for the year 1739; and is probably the earliest evidence of the possibility of extracting from coal, by means of heat, a permanently elastic fluid of an inflammable nature. We shall therefore give the account of the discovery in his own words: Having introduced a quantity of coal into a retort, and placed it over an open fire, he states that "at first there came over only phlegm, afterwards a black oil, and then likewise a spirit arose which I could noways condense; but it forced my lute, or broke my glasses. Once when it had forced my lute, coming close thereto in order to try to repair it, I observed that the spirit which issued out caught fire at the flame of the candle, and continued burning with violence as it issued out in a stream, which I blew out and lighted again alternately for several times. I then had a mind to try if I could save any of this spirit; in order to which I took a turbinated receiver, and putting a candle to the pipe of the receiver whilst the spirit arose, I observed that it catched flame, and continued burning at the end of the pipe, though you could not discern what fed the flame. I then blew it out and lighted it again several times; after which I fixed a bladder, squeezed and void of air, to the pipe of the receiver. The oil and phlegm descended into the receiver, but the spirit still ascending, blew up the bladder. I then filled a good many bladders therewith, and might have filled an inconceivable number more; for the spirit continued to rise for several hours, and filled the bladders almost as fast as a man could have blown them with his mouth; and yet the quantity of coals I distilled were inconsiderable.

"I kept this spirit in the bladders a considerable time, and endeavoured several ways to condense it, but in vain. And when I had a mind to divert strangers or friends, I have frequently taken one of these bladders, and pricking a hole therein with a pin, and compressing gently the bladder near the flame of a candle till it once took fire, it would then continue flaming till all the spirit was compressed out of the bladder; which was the more surprising, because no one could discern any difference in the appearance between these bladders and those which are filled with common air."[1]

Experiments of Mr Murdoch.

It is evident from this narrative, related with so much simplicity, that an accident which happened to Mr Clayton's apparatus was the means of leading to the discovery of coal-gas; but it does not appear that he or any other individual thought of applying the discovery to any practical purpose until the year 1792, when Mr Murdoch, who then resided at Redruth, in Cornwall, commenced a series of experiments upon the properties of the gases contained in different substances. In the course of his researches he found that the gas obtained by distillation from coal, peat, wood, and other inflammable substances, yielded a fine bright light during its combustion; and it occurred to him, that by confining it in proper vessels, and afterwards expelling it through pipes, it might be employed as a convenient and economical substitute for lamps and candles.

Progress of gas-lighting.

Mr Murdoch's attention to the subject having been interrupted for some time by his professional avocations, he resumed the consideration of it in 1797, when he exhibited publicly the results of his more matured plans for the preparation of coal-gas. The following year (being then connected with Messrs Boulton and Watt's engineering workshop), he constructed an apparatus at the Soho foundery for lighting that establishment, with suitable arrangements for the purification of the gas; and these experiments, Dr Henry states, "were continued with occasional interruptions until the epoch of the peace in 1802, when the illumination of the Soho manufactory afforded an opportunity of making a public display of the new lights; and they were made to constitute a principal feature in that exhibition."

In this brief sketch of the progress of gas-lighting, it may be noticed that the Lyceum theatre in London was lighted with gas in the course of the years 1803–4, under the direction of Mr Winsor, who is entitled to no small commendation for the warm interest which he took in drawing the public attention to the subject; and in 1804–5 Mr Murdoch had an opportunity of carrying his plans into effect on a still larger scale, by means of the apparatus erected under his superintendence in the extensive cotton mills of Messrs Philips and Son of Manchester.

When first used in France.

It has been alleged that gas-lights were used in France before they were known in this country; but as the earliest exhibition of these lights, on which the claim of priority of discovery is founded, took place at Paris in 1802, it is evident, from the foregoing statements, that the exhibition alluded to was ten years subsequent to the first experiments of Mr Murdoch on the subject.

Gas-works in London.

The practicability of lighting by means of coal-gas having been demonstrated by Mr Murdoch, a number of scientific men applied their talents to the further development of the art. Dr Henry, the celebrated chemist, lectured on the subject in 1804 and 1805, and furnished many hints for the improvement of the manufacture. Mr Clegg, an engineer in the employment of Boulton and Watt, was a worthy successor of Murdoch, and for many years was the most eminent gas-engineer of this country. A good deal of the machinery of the gas-house in its present form was contrived by Mr Clegg, and to him also we are indebted for the ingenious wet gas-meter. In 1813 Westminster bridge was first lighted with gas, and in the following year the streets of Westminster were thus lighted, and in 1816 gas became common in London. So rapid was the progress of this new mode of illumination, that in the course of a few years after it was first introduced, it was adopted by all the principal towns in the kingdom, for lighting streets as well as shops and public edifices. In private houses it found its way more slowly, partly from an apprehension, not entirely groundless, of the danger attending the use of it; and partly, from the annoyance which was experienced in many cases, through the careless and imperfect manner in which the service-pipes were at first fitted up. These inconveniences have been in a great measure, if not wholly, removed by a more enlarged knowledge of the management of gas; and at present there are few private houses in large towns which are not either partially or entirely lighted up by it. As the demand for gas increased, various improvements were from time to time introduced both in the mechanical arrangements, and in the chemical operations of the manufacture. The rapid increase in the population of the metropolis, and of all large towns, has naturally led to an increased consumption of gas, and the application of gas to the purposes of warming and cooking has also further increased the demand for it. Hence it has been not only necessary that new gas-works should be erected for the supply of new districts, but that the resources of old works should be enlarged. It is only a few years ago that a gas-holder, capable of storing 250,000 cubic feet of gas was regarded as of enormous size; at the present time, gas-holders are made of double that capacity, and we occasionally hear of them of the capacity of upwards of a million cubic feet. There is one such at Philadelphia; it is 140 feet in diameter and 70 feet in height. Nor will such dimensions as these be regarded as superfluous when it is stated that some of the large metropolitan works send out each from a million to a million and a half cubic feet of gas in one night in midwinter.[2] The Westminster gas-works alone are accustomed to supply as much as five millions cubic feet of gas in one night from their three stations.

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[1] Mr Clayton also alludes to the discovery of the gas which he obtained from coal, in a letter to the Royal Society, dated May 12, 1688.

[2] The manufacture of gas has now become of such vast extent and importance, and so many persons are interested in it commercially, practically, and theoretically, that a journal devoted to its details has been found necessary. The *Journal of Gas-Lighting* is published twice a-month, and reports the progress of the art. It also publishes a share list of gas companies for the United Kingdom, which will give some idea of the extent of the manufacture. Many of the continental cities are also lighted with gas by English companies. A few years ago Mr Hume, in the House of Commons, moved for a return, which has been published under the following title:—"Return or statement from every gas company established by act of parliament in the United Kingdom, stating the several acts of parliament under which established, the rates per 1000 cubic feet at which each company or corporation have supplied gas in each of the three years since 1846 to 1849, and the average prices of the coals used by the company in each year for the same period; also stating the amount of fixed capital invested by each gas company, and the rate per cent. of dividend to the shareholders or proprietors on their shares in each year since that date (in continuation of Parliamentary Paper No. 734 of Session 1847)." It appears from this document that the fifteen

Of the Site and general Arrangement of the Apparatus for the Production and Purification of Coal-Gas.

Site and general arrangements.

In describing the site and general arrangements of a gas establishment, it is not easy to give directions respecting points which must be regulated in every case by circumstances of a local nature; but when a choice of ground is in our power, a spot ought to be selected having a central situation with regard to the buildings, streets, &c. which are to be supplied with light, and standing as nearly as possible on a medium level with them. When the manufactory is placed considerably below that level, the gas is apt to be propelled with too much velocity through the burners; and when above it, an opposite inconvenience is experienced, the gas being in that case necessarily subjected to an extra pressure, by which the chance of its escape through any imperfection of the pipes is proportionally increased. Of the two evils, therefore, the least objectionable is that in which the situation of a gas-work is below the mean level of the streets.

But besides the conditions favourable to an equable and uniform distribution of the gas at the different points to which it may be conducted, there are other considerations scarcely less important, which in selecting a proper site for the erection of the establishment ought not to be disregarded. Among these may be reckoned a regular supply of water for the various manipulations of the work; and facility of access for the delivery of coal and the removal of the coke, tar, and other products of the distillation. Railways are now so common that they are often as valuable to a gas-work as the vicinity of navigable water. In the Central Gas-consumer's works at Bow Common, which were laid out under the skilful scientific direction of Mr Croll, a branch railway is connected with the lines which supply the coal, and is actually continued into the retort-house, so that the coal waggons only arrive at their final destination at the mouths of the retorts which are to be fed. But in fixing the situation of an establishment which is professedly erected for the public benefit, the comfort or the interest of individuals ought not to be entirely overlooked; for although a gas-work may not prove, under proper management, a nuisance, it can never be considered to be any advantage to the neighbourhood in which it is placed.

Apparatus for the production and purification of gas.

The apparatus for the production and purification of coal gas consists, in the first place, of suitable vessels for decomposing by heat the coal from which the gas is to be procured; secondly, of a series of pipes for conveying off the gas, and conducting it into proper receptacles, where it may be separated from the grosser products, which tend to impair the brilliancy of the light; thirdly, of the condensing apparatus, for removing more effectually the tar and other condensible substances that come over with the gas; fourthly, of the purifying apparatus, for abstracting the sulphuretted hydrogen, carbonic acid, &c. by which the gas is contaminated, and which if allowed to remain, would be injurious to the gas-fittings, to the books and furniture of rooms, or to the health of the consumer; and, fifthly, of the gasometer or gas-holder, with its tank, into which the gas is finally received in a purified state.

Of the Retorts, or Vessels for decomposing the Coal.

The vessels employed for the decomposition of coal and other substances capable of yielding carburetted hydrogen, by their destructive distillation, are formed of cast iron, of clay, of brick, or of wrought iron, and are termed *retorts*. Various shapes have been adopted in the construction of these vessels; nor have their forms been more varied than the modes in which they have been disposed in the furnaces erected for their reception. In many instances they have been constructed of a cylindrical shape, varying in length and diameter. Those first employed were placed with their axis in a vertical direction, but experience soon showed that this position was extremely inconvenient, on account of the difficulty which it occasioned in removing the coke, and other residuary matters, after the coal had been carbonized. Attempts were made to remedy this inconvenience, by enlarging the size of the retort, and introducing the coal inclosed in a proper grating of iron, having the form of a cage. The increased dimensions of the retort, from which the principal advantage to be derived from this arrangement was expected, were found, however, to present great obstacles to the complete carbonization of the coal; for although the disengagement of gas during the first stages of the process was sufficiently copious, it diminished rapidly the longer the distillation was continued, in consequence of a crust of coke being formed next to the heated metal, which not only opposed the transmission of the heat to the internal mass of coal, but gradually prevented, by its accumulation, the extrication of the gas from the undecomposed portion of it.

Modes of heating the retorts.

The retorts were, therefore, next placed in a horizontal position, as being not only more favourable to the most economical distribution of the heat, but better adapted to the introduction of the coal, and the subsequent removal of the coke, after the carbonization was carried to a due extent. At first the heat was applied directly to the lower part of the retort, but it was soon observed that the high temperature to which it was necessary to expose it, for the perfect decomposition of the coal, proved destructive to it, and rendered it useless long before the upper part had sustained much injury. The next improvement was, accordingly, to interpose an arch of brickwork between it and the furnace, and to compensate for the diminished intensity of the heat by a more diffused distribution of it over the surface of the retort. This was effected by causing the flue of the furnace to return towards the mouth of the retort, and again conducting it in an opposite direction, till the heated air finally escaped into the chimney.

Form of retorts.

This arrangement continued for a long time in use, and seemed to admit of little improvement, unless with respect to the shape and dimensions of the retorts. The cylindrical form *a*, fig. 1, has the advantage of possessing great durability, but it is not so well fitted for rapid decomposition of the coal (on which depends much of the good qualities of the gas) as the elliptical shape *b*. Flat-bottomed, or D-shaped retorts, *d*, have also been long in use: the small London D is about 12 inches wide by 12½ inches deep, while the York D varies from 20 to 30 inches in width, and from 9 to 14 inches in height. Retorts are also made of a rectangular section, with the corners rounded and the roof arched. Elliptical retorts are varied into what are called *ear-shaped* or *kidney-shaped*, *c*, and it is not unusual to set retorts of different forms in the same bench, for the convenience of filling up the haunches of the arch which incloses them. The length of retorts formerly varied from 6 to 9 feet: they are now in some cases made 19½ feet in length

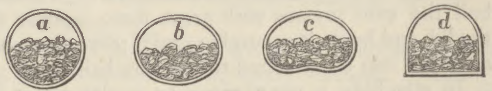

Fig. 1.

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companies in London charged at the rate of 6s. per 1000 cubic feet of gas, with the exception of the City of London Company, which charged only 4s. with coals at 15s. 9d. per ton. The highest rate is 10s. per 1000 feet, charged at Inverness, with coals at 24s. 4d. per ton. Bury St Edmunds charged 8s. 4d., with coals at 10s. 6d. Birmingham has rates of 6s. and 3s. 4½d., with coals at 15s. per ton.

and 12½ inches in internal diameter, and are charged at both ends.

Iron retorts of from 6 to 9 feet in length carry a charge of from 120 to 200 lb. of coal, which is usually renewed every six hours. Instead of the old method of charging with the shovel, which occupied at least half an hour, and entailed a great loss of gas, the whole charge is now deposited in an iron scoop, with a cross handle at the end, and it is lifted by three men, pushed into the retort, turned over, and the whole charge deposited at once, a contrivance which does not occupy more than 30 or 40 seconds. Indeed it is not uncommon for a bench of 7 retorts to be emptied and recharged in the brief space of 20 minutes. When square-backed retorts are used, the backs are apt to wear much more quickly than any other part, in consequence of the fierce heat which plays upon them; it is therefore sometimes usual to throw in a few shovels-full of coal to the extreme end before depositing the charge with the scoop. This occupies more time in the charging, but it has the effect of preserving the backs. The objection does not apply to retorts with circular ends.

Every retort is furnished with a separate mouthpiece, usually of cast iron, with a socket *b*, fig. 2, for receiving the stand-pipe, and there is a moveable lid attached to the mouth, together with an ear-box cast on each side of the retort for receiving the ears which support the lid. Fig. 2 shows the mouthpiece attached to the retort *a*, and also the method of screwing the lid to the mouthpiece. The ears hold a cross-bar through which is passed a screw which presses on the lid, and secures it to the mouthpiece. That part of the lid which comes in contact with the edge of the mouthpiece has applied to it a lute of lime mortar and fire-clay, and when the lid is screwed up, a portion of this lute oozes out round the edges and forms a gas-tight joint.

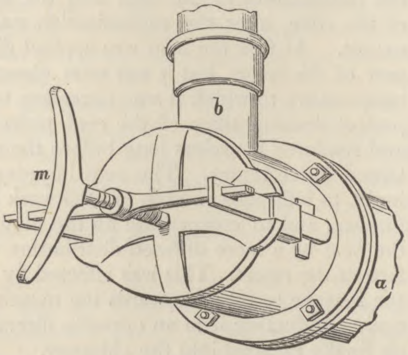

Fig. 2.

In some cases the screw is got rid of by a more expeditious contrivance, shown in figs. 4 and 5, in which the ears support an axis, which carries a lever formed at one end into a sort of cam, and bearing at the other end a ball of cast iron about 4 inches in diameter. On lowering this ball the cam presses with great force against the back of the lid, and holds it securely; and if more force be required, a weight can be attached to the iron ball.

In attaching a mouthpiece to a clay retort, the end is notched with grooves for the purpose of holding the binding cement more securely. The mouthpiece is attached by means of bolts with ⊤ heads let into the body of the retort. Iron cement is used, in which fire-clay takes the place of sulphur; this being spread over the joint, the mouthpiece is attached and screwed up.

Mode of setting retorts.

The temperature best suited for the production of gas from coal, being what the workmen term a *bright red*, was found to be very destructive to the retorts when they were exposed to the direct action of the fuel; and accordingly means were employed to protect them from the rapid oxidation which they suffered under these circumstances, by interposing between them and the furnace a partition of fire tiles or arched bricks, with side flues for the admission of the heated air.

With the view of occupying less room, and saving the expense of fuel, several retorts are sometimes set together in an oven of brickwork, and heated by a smaller number of furnaces than there are retorts. By this arrangement the fuel is certainly economized; but the plan is liable to the objection, that when any one of the retorts is worn out, those connected with it cannot be used till the faulty one is replaced; and though various expedients have been proposed for obviating that inconvenience, none of them can be said to have effectually answered the purpose. Figs. 4 and 5 represent an arrangement of the oven plan. A is the retort, *g* the furnace, *f f* the flues. Mr Croll's arrangement is represented in fig. 3.

Fuel for carbonization.

The fuel required for carbonizing a given quantity of coal may be stated to be, in general, from one-third to one-fourth of its weight for Newcastle coal. It is stated, that under Mr Croll's method of setting, the carbonization is carried on by the combustion of only 12 per cent. of fuel, or that 100 tons of coal are carbonized by 12 tons of coke.

Varieties of retorts.

Various attempts have been made to render the retorts more independent of the labourers. In Mr Brunton's retort, a hopper containing the charge of coal is attached to the mouthpiece. The charge is introduced by removing a slide, and a piston is then advanced for the purpose of pushing forward the coal, and ejecting the coke, the latter falling through a shoot at the further end of the retort, and thence into a cistern of water into which the lower end of the shoot dips. This retort is not of equal section throughout: it is 15 inches in diameter at the mouth, and 21 inches at the other end, the length being 4½ feet. The advantages of this arrangement, independently of the saving of labour, are said to be an increased production of gas, and a consequent diminution in the amount of tar, naphtha, and ammoniacal liquor, this diminution being stated at 50 per cent. less than the ordinary yield of those secondary products. Moreover, a good deal of bituminous vapour, and minutely divided carbon, which, under the usual arrangement, go to swell the increase of tar, become decomposed under the higher temperature of Mr Brunton's retorts by passing over the red-hot coke, and forming illuminating gas. Indeed, it is now generally admitted as an axiom in gas-making, that the most productive yield of gas is under a high temperature; for it is possible under low heats to distil off the volatile parts of the coal as bituminous vapour only, without any production of carburetted hydrogen gas. By exposing the coal in a thin layer to a very high heat, the distillation is effected most rapidly and most profitably. Mr Clegg describes a retort into which the coal is introduced by means of an endless web formed of iron plates, each 2 feet long, and 14 inches wide, and linked together by iron rods. The coal, broken small, is placed in a hopper, to which is attached a feeder with six radial projections. Each of the six partitions thus formed supplies sufficient coal to cover one plate of the web, with about 120 cubic inches of coal to the depth of ⅜ths of an inch. The hopper, which contains 24 hours' charge of coal, is luted after each charge. The endless web is moved by passing over drums, one revolution of which every 15 minutes conveys the web through the retort, and effects the distillation of the coal. The coal is carried on the upper surface of the web, and as the web turns over the second drum the coke is discharged by a pipe into a vessel below, and the empty portion of the web returns to the hopper, and passing over the surface of the first drum receives another charge. The charge is so regulated, that about 100 squares inches of heated surface in the retort is allowed for every pound of coal, which is said to yield 5·36 cubic feet of gas, or 12,000 cubic feet per ton of Wallsend coal. The charge for each retort is about 18 cwt. of coal for 24 hours, or about double the quantity under the old plan in retorts of similar dimensions. The coke is also said to be in much greater quantity. In the course of time the plates of the iron web become converted into steel, the value of which is sufficient for the purchase of a new web. Mr Lowe has also introduced an arrangement for increasing the yield of gas by making the products of a new change pass over the portion of the retort which is already at a red heat. For this purpose the *reciprocating retort*, as it is called, is made of thrice the usual length, and is charged at both ends; but the dip pipe at one end is made to enter to a greater depth into the tar of the hydraulic main than at the other end; so that supposing both the dip pipes to be open, the products of distillation will of course be discharged into the main by the shorter pipe, where there is less pressure to be overcome. This pipe, however, is furnished with a cup-valve, which can be closed at pleasure; and when so closed, the products of distillation must escape by the longer dip-pipe. When the charge has been half worked off in one-half of the retort, a fresh charge is introduced into the other half, and the products of distillation of the new charge are made to pass over the incandescent coal, or that which has been about three or four hours under distillation. This is readily effected by closing or opening the shorter dip-pipe, according to the end of the retort last charged. The principle of the reciprocating retort has been adopted at different works, with variations in the practical details.

Of late years clay retorts have been largely introduced into gas works, and they are said to be more durable, and to stand a higher temperature than iron retorts, the latter working best at a cherry-red heat, and the former at a white heat, which is more favourable to the increased production of gas than the lower temperature. It is stated, that where a clay retort has yielded a million and a half cubic feet of gas, an iron one has furnished only 800,000 cubic feet. Clay retorts appear, from their greater porosity, to leak more than iron ones; but after working some months, the pores become clogged with carbon, and the porosity is thus greatly diminished, and the leakage is even less than in iron retorts working under the same pressure.[1] As the demand for clay retorts increased, the manufacture of them improved, an example of which improvement is well illustrated in the case of the retorts in the Great Exhibition of 1851, exhibited by Messrs Cowen of Blaydon Burn, near Newcastle-on-Tyne. When this firm first manufactured retorts about twenty years ago, each retort was made in ten pieces, which number was reduced to four, then to three, and then to two; and in 1844 the retort was made complete in one piece of the dimensions of 10 feet in length, and 3 feet in internal width. The clay of which these retorts are manufactured is exposed to the weather for some years, and is frequently turned over, and the fragments of fossils picked out, by which means most of the iron is got rid of, which in other fire-clays is so injurious. Some of these retorts are stated to have continued in active use for 38 months, thus exhibiting four times the durability of iron ones.

Brick retorts, or rather *ovens*, have also been introduced, and are said to be very durable, and to work satisfactorily. In one case the charge is 5 or 6 cwt. of coal every twelve hours, and the yield 9000 cubic feet of gas for one ton of Welsh coal, and from 10,000 to 12,000 cubic feet from one ton of Newcastle coal. The fuel required for the carbonization of the coal is said to be unusually large. Wrought-iron retorts, made of thick boiler plates firmly riveted together, have also been tried to a limited extent.

When clay retorts came into general use, the circumstance that they required a much higher heat than iron retorts suggested the economical plan of heating the clay retorts by the direct action of the furnace, and arranging the iron retorts in a separate oven, heated by the same furnace, or within a system of return flues, where they would be submitted to a less intense heat. By this means Mr Croll has found that with two furnace grates of 252 square inches in each, he has been able to carbonize in 24 hours five tons of coal in the clay retorts of one bench, and three tons and a half in the iron retorts of the same bench, with such an economy of fuel, that only 12 per cent. of all the coke made is required for the furnaces; whereas, in most of the London works, nearly one-third of the coke made is consumed in heating the retorts.

Fig. 3 represents one form of Mr Croll's method of combining iron and clay retorts. In this cross section *cc* are the clay retorts; the two uppermost are elliptical in form, and 16 inches by 12 in dimension; four are circular, each being 15 inches in inside diameter. Each clay retort is made in four pieces jointed with fire-clay. The furnaces are at each end of the retorts, one such furnace being shown at *g*, with its ash-pit *a*, and the retorts are arranged so as to receive an equal share of the radiated heat; *ii* are iron retorts in the lower oven, which receives the hot air through openings 14 inches by 10, in the lower arch, which separates the two ovens; *ff* are openings from the lower oven into the horizontal flues, which extend along the whole length of the retorts, and they are furnished with tile-dampers for the adjustment of the draught.

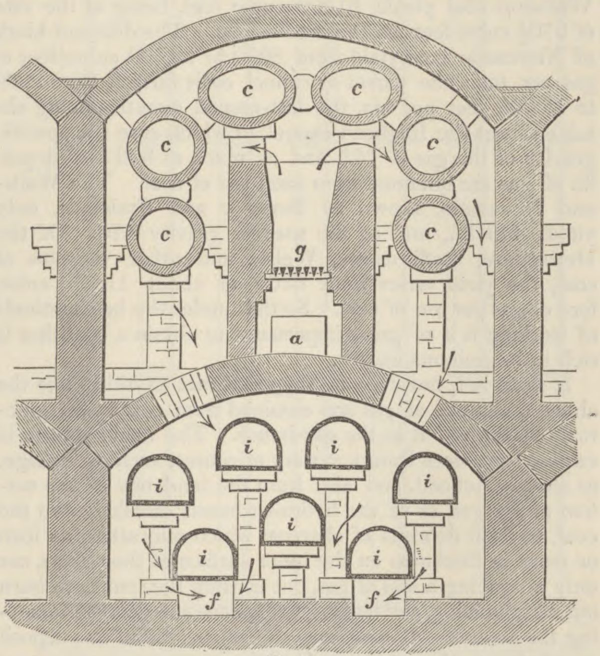

Fig. 3.

Quantity of gas yielded by coal.

The quantity of gas produced during the time the coal is undergoing decomposition is extremely variable. From a small retort, exposed for eighty-five minutes to a bright red heat, which was kept up with the utmost possible uniformity, the following results were obtained from eight pounds of the Wemyss coal:—

	Cub. Ft.	Cub. In.
In 1st ten minutes	6	235
2d do	8	980
3d do	8	1254
4th do	5	784
5th do	4	1450
6th do.	3	313
Last twenty-five minutes	6	1660
	43	1492

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[1] One of the greatest sources of loss in the manufacture of gas arises from the leakage, not only of the retorts and other apparatus within the works, but also of the mains, a loss amounting to from 10 to 30 and upwards per cent. Mr Croll estimates the loss at one-sixth of the gas sent out. The porosity of cast-iron pipes, not at their joints merely, but throughout their whole length, is evident from the saturation of the soil with gas in the immediate vicinity of the mains. Not only does the gas escape by exosmose into the air, but, by the reverse process of endosmose, air enters the pipes in some cases, as Professor Graham has found, to the extent of 25 per cent. Professor Brande thinks that the fetid odour of the soil in contact with the gas mains is due to the exosmose of ammonia, rather than of tar and naphtha, to which the ill odour is generally attributed.

At the time the process was terminated the extraction of aëriform matter had nearly ceased, so that the quantity of gas yielded by a pound of the coal was about five and a half cubic feet. The same coal carbonized on the large scale yielded, when the process was carried on for four hours, at the rate of four and one-third cubic feet of gas per pound. The weight of the coke in the above experiment was 32,050 grains; and as the weight of the gas, the specific gravity of which was ·65, must have been 15,026 grains, the tar and other residuary products, including the sulphuretted hydrogen abstracted by the process of purification, must have amounted to 8924 grains.

Quantity of gas obtained from different kinds of coal.

When the decomposition is effected on the large scale, the quantity of gas is found to vary with the quality of the coal, and the manner in which the operation is conducted. According to Mr Peckston, a chaldron of Newcastle Wallsend coal yields 10,000 cubic feet, being at the rate of $370\frac{1}{3}$ cubic feet per hundredweight. The different kinds of Newcastle coal yield from 8000 to 12,500 cubic feet of gas per ton; the parrot or cannel coals furnish from 9000 to 15,000 feet per ton, the last-named quantity being obtained from the Boghead cannel, in which case the specific gravity of the gas is ·752, and as much as 866 avoirdupois lb. of gas are obtained from each ton of coal. The Wallsend Newcastle, known as Berwick and Craister's, only yields 449 lb., and of the specific gravity ·470. Of the Derbyshire, Staffordshire, Welsh, and other varieties of coal, the yield varies from 6500 to about 11,000 cubic feet of gas per ton of coal. So that under the best methods of working it is of great importance to obtain a coal that is rich in bituminous matter.

It must not, however, be supposed that anything like the above quantities of gas are obtained from coal in the practical working of it in the gas-house. The manufacturer is exposed to losses from a variety of causes, such as leakage. as already noticed, and also from the tendency of the carbon of the gas, or of the hydro-carburets distilled from the coal, to form deposits of charcoal which may attain an inch or more in thickness on the inner surface of the retorts, not only producing a loss of gas, but causing the retorts to burn out more quickly, and leading to expense and delay in removing the deposit. It was formerly supposed that this deposit was owing to the overheating of the retort, or to an excess of heating surface. It was found. however. by Mr Grafton that the pressure to which the gas is subjected in the retort is the cause of the deposit. It is scarcely necessary to remark, that when an elastic body is generated in a close vessel, the pressure which it exerts upon such vessel depends greatly upon the resistance to which it is exposed in seeking to escape. In endeavouring to force its way by the dip-pipe through several inches of tar into the hydraulic main, the resistance thus offered produces a considerable pressure on the inner surface of the retorts. The passage of the gas through the washing vessels and lime purifiers increases this pressure, thereby promoting the deposit complained of, and causing an increased production of tar at the expense of the gas. Mr Grafton found that by working the retorts under a pressure of 14 inches of water, a deposit of carbon one inch in thickness was formed within the retorts in one week, and in the course of two months it filled up nearly one-fourth of the retort. On working the retorts with no other pressure than that produced by the insertion of the dip-pipe half an inch into the fluid of the hydraulic main, little or no deposit took place in the retorts in four months with the same kind of coal. It is now common at many gas works to introduce some kind of pumping apparatus, known under the name of the *exhauster* or *extractor*, between the hydraulic main and the condenser, or between this and the lime purifiers, by which means the pressure of the gas within the retorts can be reduced to any amount. It is, however, found desirable not to carry this reduction too far, lest atmospheric air should find its way into the retorts, and thus form an explosive mixture with the gas.

Quality of gas during different stages of the carbonization.

The quality of the gas yielded by coal varies greatly at different periods of the carbonizing process. The first products, when the coal has not been previously well dried, consist almost entirely of aqueous vapour and carbonic acid; these are succeeded by light carburetted hydrogen, olefiant gas, and sulphuretted hydrogen, which gradually diminish in quantity till towards the close of the process, when almost the only products are carbonic oxide and hydrogen. Hence, if the process be carried on too long, the gases obtained in the latter stages of it will not only be useless for the purpose of yielding light, but the fuel employed for their production will be expended in wasting the retorts to produce substances which are calculated to impair the illuminating power of the gases with which they are mixed. In the case of cannel coal, the interval between the charges of the retorts should not exceed three and a half or four hours; nor in the case of the Newcastle coal, which is not so easily decomposed, ought that interval to extend beyond six hours.

The Condensing Main and Dip Pipes.

Use of the condensing main and dip pipes.

From the retorts the gas, after its production, ascends by means of pipes, called *stand*-pipes, BB, figs. 4 and 5, into what is termed the *condensing main*, HH, which is a large cast-iron pipe, about twelve or fifteen inches in diameter, placed in a horizontal position, and supported by columns in front of the brickwork which contains the retorts, A. Wrought-iron hydraulic mains are now coming into use, and are preferable on account of their superior lightness and strength. This part of a gas apparatus is intended to serve a twofold purpose: First, to condense the tar and grosser products of distillation; and, secondly, to allow each of the retorts to be charged singly without permitting the

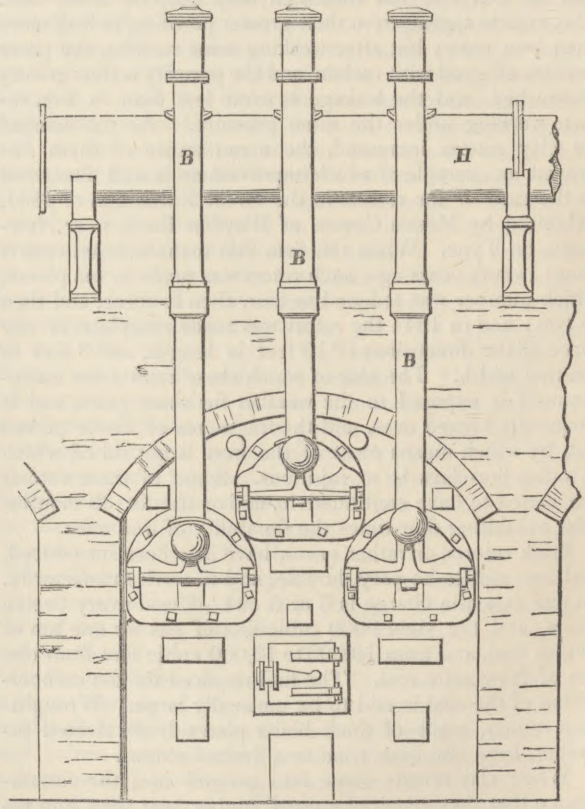

Fig. 4.

gas produced from the rest, at the time that operation is going on, to make its escape. To accomplish these objects, one end of the condensing main is closed by a flanch; and the other, where it is connected with the pipes for conducting the gas towards the tar vessel and purifying apparatus, has, crossing it, in the inside, a semi-flanch or partition, occupying the lower half of the area of the section, by which the condensing vessel is always kept half full of liquid matter.

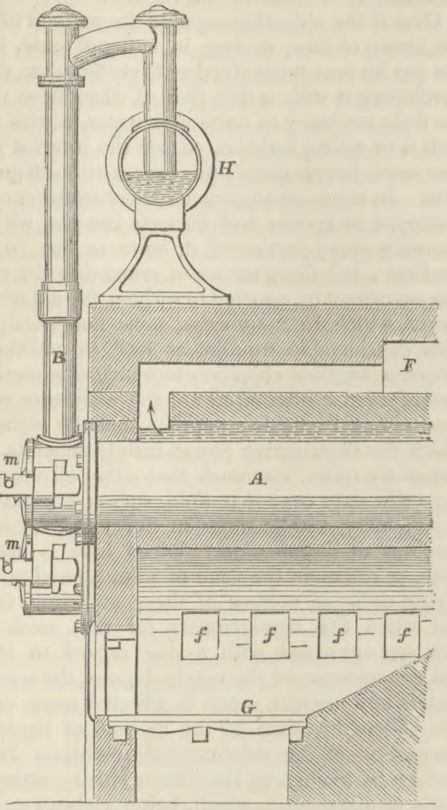

Fig. 5.

The stand-pipes, BB, are connected by a flanch with a branch-pipe rising from the upper side of the condensing main HH; and as the lower end of it dips about two inches below the level of the liquid matter, it is evident that no gas can return and escape, when the mouthpiece *m* of the retort is removed, until it has forced the liquid matter over the bend, a result which is easily prevented by making it of a suitable length. The upper part of the branch of the dip-pipe is generally furnished with a ground plug to allow the removal of the tarry matter, which is apt to accumulate in a concrete state at the lower part of the pipe where it is nearest the furnace. The dip-pipes vary in diameter from 3½ to 4 inches.

Of the Tar Apparatus.

Importance of the right construction of the tar apparatus.

After emerging from the lower end of the dip-pipe, the gas, now bereft of a considerable portion of the vapour of water, tar, and oleaginous matter, which ascends with it from the retort, is conveyed by pipes, for the purpose of being completely freed from these impurities, into contrivances where a more perfect condensation takes place. As the subsequent purification of the gas depends, in no small degree, upon the perfect separation of the tar and other condensible products by which it is accompanied, the construction of the vessels best calculated for attaining that end is a matter of the utmost importance; and indeed it may be justly affirmed, that unless that separation be effectually accomplished, the action of the chemical agents to which the gas is afterwards exposed, must be limited and imperfect.

The first contrivances employed for the purpose of condensation were all constructed on the supposition that the object would be best attained by causing the gas to travel through a great extent of pipes, surrounded by cold water, and winding through it like the worm of a still, or ascending upwards and downwards in a circuitous manner. An improvement on this form of condenser, and the one now in general use, is represented in fig. 6. It consists of a series of upright pipes connected in pairs at the top by semicircular pipes *ee*, and terminating at the bottom in a trough X Y containing water, and divided by means of partitions in such a way that as the gas enters the trough from one pipe it passes up the next pipe and down into the next partition, and so on to the end of the condenser. The cooling power of this air-condenser, as it is called, is sometimes assisted by allowing cold water to trickle over the outer surface of the pipes. In passing through these pipes the gas is considerably reduced in temperature, and the tar and ammoniacal liquor condense, the tar subsiding to the bottom, and the ammoniacal liquor floating on the surface. In the course of time the water in the trough is entirely displaced by these two gaseous products, and as these accumulate they pass off into a tar-tank, from which either liquor can be removed by means of a pump adapted to the purpose.

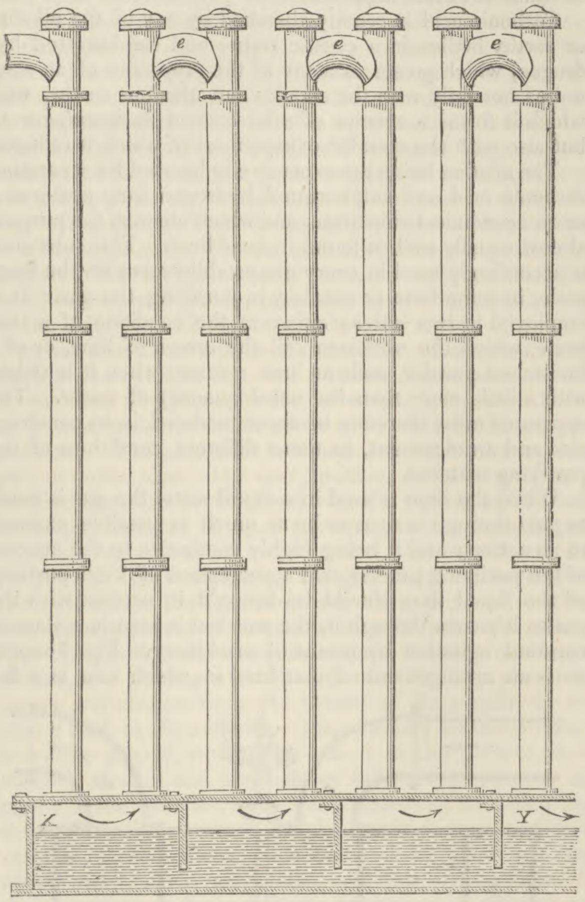

Fig. 6.

Of the purifying Apparatus for separating the Gases unfit for the purposes of Illumination.

Impurities of coal-gas.

With the two compounds of hydrogen and carbon, viz., olefiant gas and light carburetted hydrogen, which are yielded by coal during its destructive distillation by heat, several other products are obtained, which are not only useless for the purpose of illumination, but are calculated to diminish the brilliancy of the light which is afforded by these gases, and even to prove a source of serious nuisance during their combustion. Among these products of a deleterious nature are carbonic acid and sulphuretted hydrogen; and, in smaller quantity, carbonic oxide, nitrogen, and hydrogen. The first two are by far the most objectionable of these impurities; and fortunately their separation can be effected more easily than that of the others, the presence of which is of less importance.

How separated.

Carbonic acid is readily absorbed by any of the alkalies or earthy bodies in a caustic state; and sulphuretted hydrogen, which possesses many of the properties of an acid, unites not only with the alkalies and alkaline earths, with which it forms a species of salts termed *hydrosulphurets*, but also with the metallic oxides, most of which it reduces.

Different states in which lime is used for the purpose.

The alkalies being too expensive to be used for separating carbonic acid and sulphuretted hydrogen from coal-gas, a more economical substitute, and which answers the purpose almost equally well, is found in quicklime. This substance is accordingly used in every gas establishment on the large scale, in some form or another, in purifying the gas. It is employed in two states; either in the condition of a thin paste, which the workmen call the *cream* of lime, or of a moistened powder, such as lime assumes when it is slaked with a little more than the usual quantity of water. The apparatus must therefore be accommodated, in its construction and arrangement, to these different conditions of the purifying material.

Liquid lime, or cream of lime.

When the lime is used in a liquid state, the gas is made to pass through it so as to be as much as possible exposed to its action; and it being highly conducive to the success of the purifying process that a succession of fresh portions of the liquid lime should be brought in contact with the gas as it passes through it, the material is kept in a state of constant agitation by means of machinery. Fig. 7 represents an arrangement of that kind in which *aaa* is a flat cylindrical vessel in which the purification is performed, the gas entering by the pipe *c* and escaping by the pipe *d*. In the inside of this vessel is another of a similar form *ff*, terminating at the bottom in a broad horizontal flanch or circular plate *gg*, and having revolving within it an agitator *hh*, which works in an air-tight stuffing box. The gas being forced by the pressure from the retorts or from the exhauster to descend below *g*, is more effectually exposed in its progress to the action of the lime by the commotion produced by the agitator, and finally ascends, in a purified state, through the pipe *d*. Fresh portions of the purifying material are supplied from the vessel *k* by means of the connecting pipe *b*; and the cream of lime, after being saturated with the impurities, is withdrawn at *e*. In large establishments the gas is forced in succession through several vessels of the kind described, the cream of lime being changed in each of them at different times, to render its action more uniform and regular.

Purification promoted by agitation.

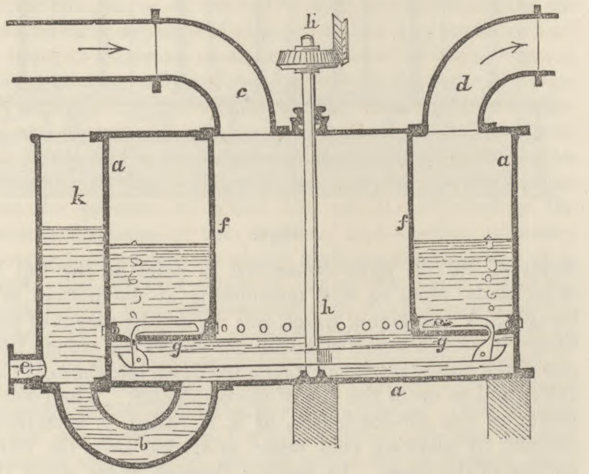

Fig. 7.

Objections to the use of lime in the liquid state.

One of the objections against the method of purifying by the cream of lime, or lime in a liquid state, is, that unless the gas be previously freed entirely from tar, that substance enveloping it with a thin film of oleaginous matter, which has little tendency to unite with water, carries the gas along with it in rolling bubbles, so that the internal parts of it can thus scarcely ever come into contact with the purifying materials. In some arrangements mechanical contrivances are employed to agitate and disperse the gas, with the view of exposing every portion of it, more or less, to the action of the lime; but these modes of promoting the efficacy of the process cannot be resorted to without the aid of some moving power, which, in many cases, must necessarily be attended with considerable trouble, as well as additional expense. There is another objection to which this method of purification, even if it required not the assistance of machinery, must always be liable; namely, that the olefiant gas, upon which the illuminating power mainly depends, is largely absorbed by water, insomuch that either oil or coal gas, standing a few days over that fluid, suffers a great deterioration of its quality, and becomes in every respect less fit for the purposes of illumination. When lime is used in the dry state, or rather in the state of a moistened powder, for purifying coal-gas, neither of these objections is applicable; and when the arrangements for that mode of purification are contrived with a due regard to the simplicity and convenience of the manipulations, the separation of the useless and noxious gases is effected more easily, and not less effectually, than by the method of liquid lime. The abstraction of the sulphuretted hydrogen becomes more perfect by adding to the lime a small portion of the peroxide of manganese, which, being a cheap substance, adds very little to the expense of the process. This method of purifying coal-gas having been adopted with success in most gas establishments, we shall now proceed to explain the nature of the apparatus by which it is carried into effect.

Apparatus for dry lime.

Fig. 8 represents an elevation in section of a dry lime purifier. The gas is admitted by the pipe A into the bottom of a rectangular iron vessel, about three feet deep: over the mouth of the inlet pipe is a plate of iron B, which serves to spread the gas, and to prevent the lime from falling into the pipe. In some cases this vessel is divided into two compartments by means of a partition extending nearly to the top, in which case the gas filters up through one compartment and down through the other, passing each way through layers of lime, L L, placed on iron gratings or on perforated shelves, S S, of cast-iron, 7 or 8 inches apart. The perforations are each $\frac{5}{8}$ths inch in diameter and $\frac{3}{4}$ths inch asunder. The vessel is covered with a light lid of sheet iron, the border of which dips into a narrow vessel of

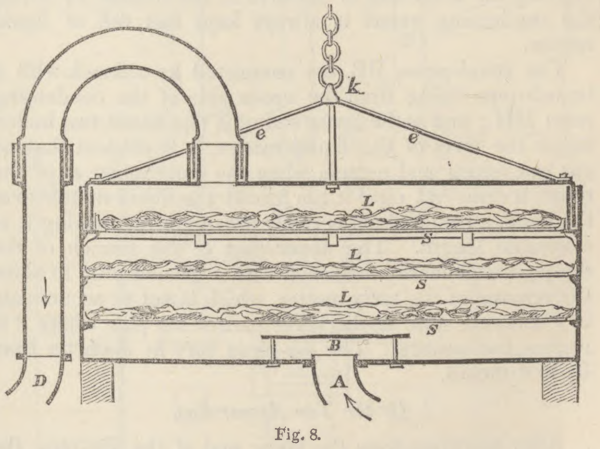

Fig. 8.

water, thus forming a secure water-joint or water-lute. The lime is fresh slaked and slightly moistened, and is placed on each shelf to the depth of about 3 inches; it is then sprinkled with water from a watering-pot. It is stated that a bushel of quick lime is sufficient for the purification of 10,000 cubic feet of gas. By slaking and reducing it to powder its bulk is more than doubled: two bushels of hydrate of lime thus formed cover a surface of 25 square feet to a depth of 2½ inches. At some works a bushel of slaked lime, or half a bushel of unslaked lime, is allowed for every ton of coals distilled. Some engineers estimate that 40 lb. of lime are required for every 10,000 cubic feet of gas from average Newcastle coal. If more lime is required the coal must have been damp, or have contained more than the usual proportion of sulphur. Good Newcastle coal contains about one per cent. of sulphur; some kinds of *cannel* only one-half per cent. The capacity of dry lime purifiers is calculated on the assumption that 25 square feet of surface are required for 10,000 feet of gas. The purifiers are generally arranged in a set of four, three of which are usually at work while the fourth is being emptied. In fig. 8, D is the exit pipe, leading to the second purifier. In emptying one of the purifiers the cover is raised by means of the chain *k*, attached to the light rods *e e*, and the shelves are also moveable, the upper ones being taken out while the lower are charged. The spent lime contains hydrosulphuret of ammonia, and when exposed to the air it evolves sulphuretted hydrogen, carbonic acid taking its place. The poisonous liberated gas thus becomes a nuisance to the neighbourhood, but it is sometimes got rid of before the purifier is emptied, by connecting each purifier with a large horizontal pipe which opens into the chimney-shaft of the retort-house, the powerful draught of which draws off all volatile matter from the lime, air instead of gas being let in at the bottom. The cover of the purifier can then be raised, and the lime be removed without annoyance to any one. The lime is burned in ovens, and is used a second time in the purifiers, after which it becomes refuse.

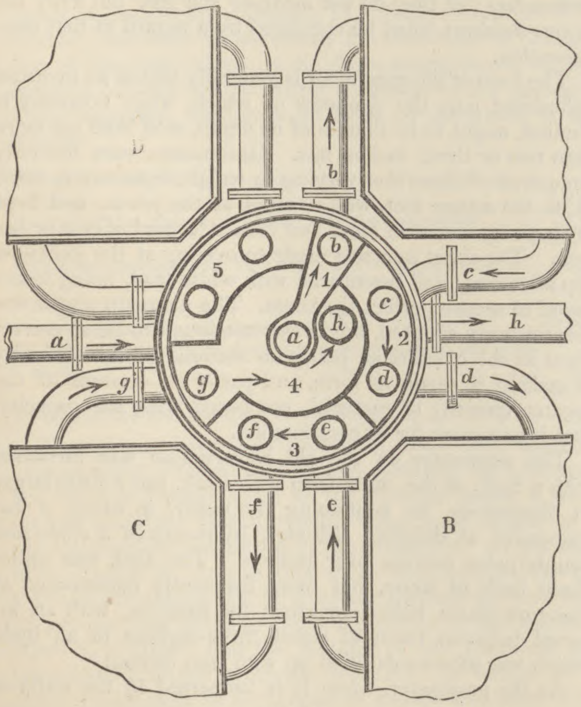

Fig. 9.

An ingenious form of purifier, contrived by Mr Malam, consists of a central valve and cover, and four vessels, A, B, C, D, fig. 9, placed around it. The central valve consists of an iron cylinder, 4 feet 6 inches in diameter and 3 feet deep, supported on brick piers; the bottom is perforated with ten holes for the reception of pipes leading to and from the four purifiers, and also for the main inlet and outlet pipes. Each purifier is 5 feet square and 3 feet 6 inches deep,—it contains seven layers of lime, supported on sieves of wire, or slitted plates of iron. Each purifier has a cover with short sides dipping into a water groove, and the central cylinder has also a cover fitting within it in such a way as to communicate with the pipe *a*, and either of the 4 inlet pipes, and also to communicate between one of the outlet pipes and the pipe *h*, which carries off the purified gas. The inlet pipes, *b*, *d*, *f*, admit the gas from the central case to the bottom of the purifiers; and the outlet pipes, *c*, *e*, *g*, return the gas from the purifiers back to the case, after having passed up through the layers of lime, and descended at the back of a partition plate in each purifier to the outlet pipes at the bottom. *a* is the main inlet pipe for conveying the gas from the scrubber or the condenser, and *h* is the main outlet pipe for conveying the gas to the gas-holder. The central cylinder contains water to the depth of 10 inches, and the ten pipes rise up through the bottom to the height of 12 inches, so that the mouth of each is 2 inches above the surface of the water. The cover which fits into the cylinder is 4 feet 3 inches in diameter, and is divided into five parts, the first of which, 1, fits over the inlet pipe *a*, and over either of the inlet pipes leading to the purifiers. The partitions 2, 3, and 5 fit each over an inlet and an outlet pipe, while one partition, 4, fits over one outlet pipe from one purifier, and over the pipe *h*, which leads to the gas-holder. In fig. 9 the arrangement is such as to open a communication between the inlet pipe *a* and the purifier A. Now supposing the gas to have passed from the scrubber or the condenser into the centre of the cylinder, its only means of escape is to pass down the pipe *b* into the purifier A, where it ascends through the layers of lime, and passing over the top of a dividing plate, descends and escapes from the bottom of the purifier by the pipe *c* back to the cylinder. Here its only means of escape is by the pipe *d*, which conducts it to the purifier B, in which it ascends and descends as before, returning by the pipe *e* to the cylinder, whence it proceeds by the pipe *f* into the purifier C, then along the pipe *g*, which is shut off from communication with any pipe except *h*, by which it is conveyed away to the gas-holder. By this arrangement the three purifiers A B C are being worked, while a fourth purifier D is being emptied and re-charged with lime. When it is found, on testing the gas, that the lime is unfit for its office, the purifier A is thrown out of work, and D is brought in. The frame is then shifted so as to bring the triangular division 1 over *d*, by which means B C D will be the working purifiers, and A will be thrown out of use. In this way, by shifting the frame round its centre over each of the four outlet pipes, any three of the purifiers can be brought into action. At the top of the frame is an upright shaft with a screw cut upon it, which works the frame up, by turning a lever which has a corresponding thread. The position of the triangular partition is then ascertained, and the communication from one purifier to another can be changed in a few minutes.

Quantity of lime necessary for purifying gas.

The quantity of lime necessary for purifying a given volume of coal-gas varies, as already stated, with the quantity of sulphur contained in the coal from which the gas is produced. It is proper, however, to examine at intervals, during the progress of the purification, the state of the gas by such chemical tests as are calculated to detect the presence of any of the deleterious substances with which it is usually contaminated. Thus carbonic acid is readily discovered by agitating a small portion of the coal-gas with lime water in a limpid state, the solution being quickly rendered turbid when the most minute quantity of that gas is present. Sulphuretted hydrogen is discovered with equal facility by causing a small current of coal-gas to play against a slip of paper moistened with a weak solution of acetate of lead, or nitrate of silver, both of which instantly become black when they are exposed to the action of sulphuretted hydrogen.

Of late years a variety of improvements have been introduced for purifying gas, which we now proceed briefly to notice. They are at present only in partial use, but are likely to lead to important results. Indeed the chemistry of the manufacture is just now in a transition state, and is receiving considerable attention from scientific men.

After the tar and ammonia have been for the most part extracted from the gas by the condenser, a further separation of ammonia is now frequently effected by passing the gas through layers of coke dust, cinder or breeze, or brick-dust, placed in trays or sieves, six or eight inches apart, in a vertical hollow shaft, and as the gas streams up through the porous column the ammonia is retained. This *scrubber*, as it is called, is sometimes used in conjunction with a washing vessel, and sometimes the latter only is employed, with the advantage of separating a portion of sulphuretted hydrogen and carbonic acid as well as the ammonia; but the wash-vessel is said to remove much of the olefiant gas, the illuminating power of which is very high; an objection which does not apply to the scrubber. Mr Croll has patented a method of separating ammonia by means of chloride of manganese, which has the effect also of removing much of the sulphide of carbon, of producing a saving of one-half or one-third of the lime required in the subsequent process, while a valuable product is formed by the chlorine of the manganese uniting with the ammonia, to form sal-ammoniac. Ammonia has also been separated by passing the gas through dilute sulphuric acid, the resulting sulphate of ammonia being also a valuable secondary product. The ammonia may also be separated by means of sulphate of manganese, chloride, or sulphate of zinc.

Formerly a good deal of ammonia passed off with the gas to the consumer, to the great injury of the gas meter, the gas fittings, and the furniture of houses. After the ammonia has been separated, the gas is passed into the dry-lime purifiers, which are preferable to the wet-lime, not only for the reasons already stated, but on account of the less amount of pressure required to force the gas through them. The objection to dry lime is on account of the volatile nature of the offensive hydrosulphide of ammonia, which is only mechanically combined with it, so that when the purifiers are opened, and the spent lime taken out, the oxygen of the air combines with the hydrosulphide, evolving great heat, and filling the neighbourhood with noxious odours. This serious objection is now obviated by getting rid of the ammonia between the condenser and the purifier: the salts separated by the dry lime are then no longer volatile, but, on the contrary, the spent lime becomes in some cases a valuable manure, consisting, as it does, of sulphate, carbonate, and cyanide of lime.

A method of purifying the gas, patented by Mr Hills of Deptford, is now attracting considerable attention. It is based upon the property of the hydrated oxide of iron to decompose sulphuretted hydrogen, a portion of the sulphur forming a sulphide with the iron. Quicklime is also used to separate carbonic acid, and the oxide of iron is mixed with sawdust or cinders (breeze) for the purpose of increasing the surfaces of contact, and this mixture is placed in the purifiers. When a sufficient quantity of gas has passed through it the purifiers are opened, and the mixture is exposed to the air, under which new condition it combines with oxygen, and again becomes fitted for use in the purifiers. The chemical changes which occur in these operations are the following:—The mixture of hydrated oxide of iron, &c., absorbs sulphuretted hydrogen $Fe_2O_3 + 3HS = Fe_2S_3 + 3HO$. The sulphide of iron, by exposure to the air, absorbs oxygen, and the sulphur is separated in an uncombined form $Fe_2S_3 + O_3 = Fe_2O_3 + S_3$. The mixed material can be again employed in the purification of the gas, and the process may be repeated until the accumulation of sulphur mechanically impairs the absorbent powers of the mixture. The sulpho-cyanogen which accompanies the gas is retained by the oxide of iron, and gradually accumulates in the mixture.

Chemists have also sought for substitutes for lime, or for means of diminishing the amount usually required. M. Penot recommends sulphate of lead for separating sulphide of hydrogen. Professor Graham proposes to add to the slaked lime one equivalent of crystallized sulphate of soda, which would absorb sulphide of hydrogen until two equivalents thereof were absorbed by one equivalent of lime; the lime is converted into sulphate, and the soda becomes bi-hydrosulphuret, which might be readily washed out of the lime, and again be converted into soda by roasting, and thus be used over and over again to mix with the lime. The secondary product formed in the manufacture of chloride of lime, viz. the mixture of chloride of manganese with sulphate of soda, has also been used as an efficient gas-purifier.

Gasometers for receiving and containing the Gas before it is consumed.

Capacity of gasometers.

As many disadvantages would be experienced by attempting to adjust the production of the gas to the rate of its consumption, it is found to be more convenient, as well as more economical, to store up such a portion of it during the day as shall compensate for the deficiency of the supply that may be furnished during the time the gas is being consumed in the course of the evening. The capacity of the vessels used for this purpose, which are incorrectly called *gasometers* (for they do not *measure* the gas, but only act as *gas-holders*), must be regulated by a regard to that consideration.

Best form of.

The form of the gasometer is generally that of an inverted cylindrical cup, the diameter of which, when economy is studied, ought to be double of its depth, or at least not more than two or three inches less. Gasometers were formerly composed of sheet iron varying in weight from two to three lb. to the square foot, well rivetted at the joints, and kept in shape by means of stays and braces formed of cast or bar iron. The sheet iron was made to overlap at the joints—a slip of canvas, well besmeared with white lead, being interposed to secure perfect tightness. The prismatic shape was also formerly adopted, but it was not found to be so convenient as the cylindrical, partly on account of the difficulty of making it retain its form, and partly on account of the greater quantity of material, compared with the capacity, that is necessary for its construction.

Tank of gasometer.

The gasometer on the old construction was furnished with a tank, of the same form with itself, but a little larger in dimensions, for containing the water, in which it was suspended at different altitudes, by means of a chain and counterpoise moving over pulleys. The tank was sometimes built of stone, but more frequently constructed of cast-iron plates bolted together by flanches, with an interval between them of about three-eighths of an inch, which was afterwards filled up with iron cement.[1]

As the gasometer, when it is immersed in the water of the tank, suffers a loss of weight equal to that of the portion of fluid which it displaces, it is evident that unless some arrangement be made to counteract the varying pressure which must thus result from the different depths to which it may be immersed, the gas contained in the gasometer will be expelled, at different times, with a varying force. If, however, the weight of the chain of suspension, or rather the weight of that portion of it whose length is the same as the height to which the gasometer ascends, be equal to half the loss of weight which the gasometer sustains by immersion in water, a perfect compensation will be made, and an equilibrium will hold between the gasometer and its counterpoise at all altitudes. Thus, if the weight of the gasometer were five tons, or 11,200 lb., and it lost by immersion a seventh part of its weight, or 1600 lb., then the weight of that portion of the chain equal in length to the highest ascent of the gasometer would require to be 800 lb., and the weight of the counterpoise 11,200 – 800, or 10,400 lb.

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[1] The following iron cement is recommended by Peckstone:—Take iron turnings or borings, and pound them in a mortar till they are small enough to pass through a fine sieve; then, with one pound of these borings, so prepared, mix two ounces of sal-ammoniac in powder, and one ounce of flowers of sulphur, by rubbing them well together in a mortar; and afterwards keep the mixture dry till it may be wanted for use. When it is so, for every part thereof, by measure, take twenty parts of iron borings, prepared as above mentioned, and

	lb.
For, the gasometer being immersed, its virtual weight is 11,200 – 1600, or	9,600
Weight of portion of chain now acting with the gasometer	800
Sum is the weight of counterpoise	10,400

Again,

The gasometer being elevated out of the water, its weight is	11,200
Weight of chain now acting in opposition to it	800
Difference is the weight of counterpoise	10,400

Although the compensation, by this adjustment of the weight of the chain, answers the purpose in the most effectual manner, the following method is by some deemed preferable. Let the counterpoise consist of a long cylindrical or prismatic body, having the area of its horizontal section equal to the area of a similar section of the plates of the gasometer, and be allowed to descend into the water as the gasometer rises out of it. Also let the chain be of a weight equal (length for length) to a column of water of equal bulk with the counterpoise. Then, if the weight of the gasometer be, as already supposed, 11,200 lb., the weight of the counterpoise must be the same; but the weight of that portion of the chain which, by the above arrangement, was only equal to half the loss of weight sustained by the gasometer when immersed, must now be equal to the whole of that weight.

	lb.
Then, the weight of the gasometer in the water is, as before	9,600
Weight of the chain now acting with the gasometer	1,600
Weight of counterpoise, now out of the water	11,200

Again,

The weight of the gasometer, out of the water, is	11,200
Weight of the chain, now acting in opposition to the gasometer	1,600
Weight of the counterpoise, in water	9,600

Pressure for expelling the gas.

Though we have only shown, in both these modes of compensation, that an equilibrium between the gasometer and its counterpoise holds in the extreme cases, it would be easy to prove that the same thing must subsist at all the intermediate elevations of the gasometer. At the same time, it must be obvious that these contrivances, however well calculated they may be to secure the equilibrium alluded to, can have no effect in expelling the gas; and therefore, when it is wished that the contents of the gasometer shall issue from it under a certain pressure, the weight of the counterpoise must be diminished to a suitable extent. Thus, if it were required that the pressure employed for expelling the gas should be equal to that produced by a column of water three-fourths of an inch deep, then it would be necessary to diminish the weight of the counterpoise by the weight of a column of water having the same diameter with the gasometer, and an altitude of three-fourths of an inch. If the diameter of the gasometer above mentioned were, for example, 35 feet or 420 inches, the weight of a cylindrical portion of water having that diameter. and a depth of three-fourths of an inch, would be, in grains,

$$420^2 \times {\cdot}7854 \times \tfrac{3}{4} \times 252{\cdot}5 = 26236876 \text{ grs. or } 3748 \text{ lb.}$$

Hence it would be necessary to make the counterpoise 3748 lb. lighter than it was supposed to be according to the above-mentioned arrangements, in order that the gas might issue from the gasometer under a pressure of three-fourths of an inch of water. If the calculation were conducted with extreme accuracy, the specific gravity of the gas ought also to be taken under consideration; but the object to be attained is not of so delicate a nature as to require an attention to such minute circumstances. Besides, we shall afterwards find that the value of the arrangements we have described for obtaining a uniform and equable pressure is greatly diminished; and these are even entirely superseded by a contrivance called the governor, to be afterwards explained.

Such is the old method of constructing gasometers. Of late years, however, a different system has prevailed. Instead of making them of heavy plate iron, strengthened by angle iron and stays, and of so great a weight as to require the above-described complex system of equilibrium chains and counterbalancing weights to relieve the gas from the great pressure to which it would otherwise be subjected, the gas-holders are now made so light that they actually require to be loaded in order to supply the required pressure. The practice has even been introduced of not suspending the gas-holders at all, but regulating their rise and fall by means of guide rods placed round the tank. Fig. 10 represents a section of a modern gas-holder, in which will be seen a contrivance for getting rid of a large body of water in which the gasometer was formerly sunk, and which was found inconvenient in frosty weather, when, to prevent freezing, it was necessary to introduce steam. The objections to the contact of a large body of water with the gas have been already referred to. By using a central core of masonry, brickwork, earth, or sheet iron, the large volume of water is got rid of—the only water required being that contained in the ring-shaped space or tank, TT, round the core. Small

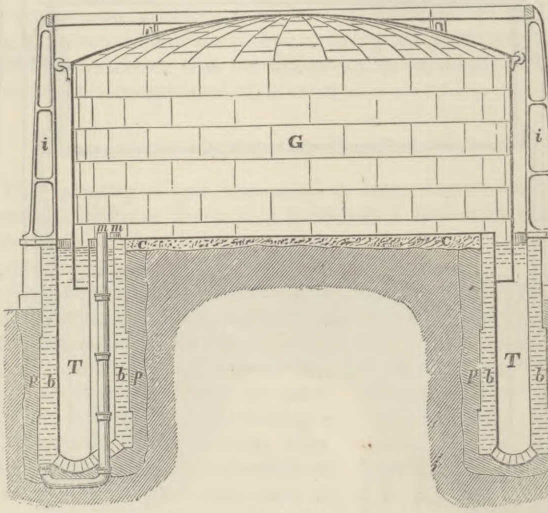

Fig. 10.

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mix them well together in a mortar or other iron vessel. The compound is to be brought to a proper consistency by pouring water gently over it as it is mixing; and when used it must be applied between the flanches by means of a blunted caulking iron.

gas-holders on this construction may be suspended from the centre by a chain, while to the pillars of the triangular or polygonal cast-iron frame, *ii*, guiding rollers are attached to facilitate the motion of the cylinder, and to keep it horizontal. In forming the tank, TT, the brick-work and the mortar joints must be perfect, or the core will soon be injuriously acted on by the water. When the whole of the core is not built up, but a solid mass of earth is left in the middle, it is first dressed to the proper shape, and the slope is usually puddled, as at *p*. The brick-work, *b*, is carried up in Roman cement, or in the best hydraulic mortar, and it is recommended that the puddle behind the brick-work be clay, with a portion of sand or silt. The surface of the core is covered with concrete, *cc*. On one side of the tank is a well, containing the inlet and exit pipes, *mm*. The inlet pipe enters at the top of the well, and passes to the bottom of the tank, where there is a vessel for the reception of any tar or moisture that may by chance be conveyed by the gas: this pipe then passes horizontally through the brick-work, and rises up vertically through the water, so that its mouth may be about two inches above the surface. The outlet pipe stands by the side of the inlet pipe, and, descending through the water, passes out through the wall of the tank into the stand-pipe well, where there is another receptacle for tar and water: this pipe proceeds up the well either to the governor or to the main.

Particular forms of gasometer.

In situations where a sufficient depth of the tank cannot be easily obtained, an expedient may be resorted to, such as is represented in fig. 11, and known as the *telescope* gasometer. It consists of two, or even three parts, separable from each other; the one having the form of the common gasometer, and the other being open at the top as well as the bottom, but connected with the other by a channel running around the bottom, which is filled with water. The lower part has a recurved form at the top; and this portion of it entering into the channel becomes water-luted, by which the entire gasometer is rendered air-tight at the line of junction. When the gas passes in by the inlet pipe the inner cylinder rises first, and when its lower edge nearly reaches the surface of the water its curved flange catches the flange of the next cylinder, which also rises, and when this has risen to the proper height it catches the third cylinder if there be one, and raises it also. The water contained in the lower flange of each cylinder effectually prevents the escape of the gas or the entrance of atmospheric air.

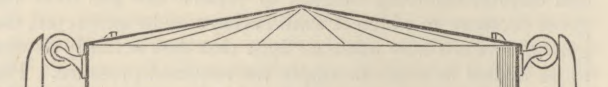

Fig. 11.

Pipes for introducing and discharging the gas.

The pipes by which the gas is commonly introduced and conducted off being in many cases considerably below the level of the street pipes with which they communicate, are apt to be filled up in the course of time with the condensed water which passes off in a vaporous state with the gas. To remedy this inconvenience, it is necessary to place vessels for receiving that water in connection with the entrance and exit pipes, so contrived that the accumulated water may be easily removed from them when required. One of these vessels, which are improperly termed *syphons*, is represented by fig. 12. When the water rises to the height *d*, *e*, it is drawn off by means of a small suction pump, introduced into the pipe *ac*, which reaches within about an inch of the bottom of the syphon. To prevent too much water being removed, and thus allowing the gas to escape at *ac*, the lower end of the pipe of the suction pump should be perforated with small holes to as great a distance as the water is to be left in depth; or, if deemed preferable, the upper end of the pipe *ac* may be rendered air-tight by a screwed cap.

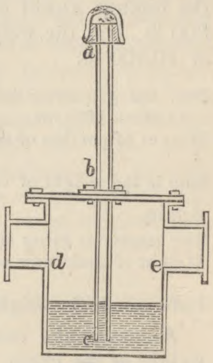

Fig. 12.

When access to the bottom of the tank is difficult, swivel or flexible-jointed tubes, disposed so as to rise and fall with the gasometer, are sometimes resorted to. Jointed tubes, connected by means of water-lutes, are also occasionally employed, and they are found to answer the purpose in situations where the water is not exposed to frost.

Of the Main and Service Pipes.

The gas being duly purified and prepared for combustion, the next point to be considered is the transmission of it from the gasometer to the various places where it is to be consumed. As it must sometimes be conveyed, particularly in the case of large establishments, to the distance of several miles, it is evident that unless the diameters of the various pipes through which it is to be conducted have a due relation to the quantity of gas to be transmitted, there will be a danger either of incurring an unnecessary expense, by making the pipes too large; or, what is still worse, of being exposed to a deficiency of supply, by making them too small. The first object, therefore, to be ascertained by the engineer, is the probable number of lights that may be required in the various streets and lanes in which these pipes are to be laid; and these being known, the corresponding quantity of gas, according to the quality of it, may be afterwards computed. With regard to the relative dimensions of the pipes at different distances from the gaswork, the only general rule to be observed is, that the sum of the areas of the sections of the main pipes proceeding immediately from the gasometer should be equal to the sum of the areas of the sections of the various branch-pipes which they supply with gas; and this rule, with some little modification, should be followed in the case of the subordinate ramifications.

Dimensions of pipes.

In the case of good coal gas, we may safely reckon that one-fourth of a cubic foot of it will furnish the light of a moulded candle for an hour, of which one pound will, when the candles are burnt in succession, last forty hours. On this supposition, and assuming that the pressure upon the gas in the gasometer is equal to three-fourths of an inch of water, the diameters of pipes necessary for conveying various quantities of gas may be stated as follows:—

Diameters of main pipes.

Diameter of Pipe in Inches.	Quantity of Gas in Cubic Feet per Hour.	Equivalent Number of Candles.
¼	4	16
½	20	80
¾	50	200
1	90	360
2	380	1,520
3	880	3,520
4	1,580	6,320
5	2,480	9,920
6	3,580	14,320
7	4,880	19,520
8	6,380	25,520
9	8,090	32,360
10	10,000	40,000

This table has been deduced partly from theoretical considerations, and partly from the results of experiment. Peckstone affirms, in his work on Gas-lighting, that a pipe ten inches in diameter, is capable of transmitting 50,000 cubic feet of gas per hour, under a pressure of one inch of water; while, according to the statement of Mr Creighton, such a pipe would scarcely convey the tenth part of that quantity, under a pressure of from four-eighths to three-fourths of an inch of water. It is impossible to reconcile these discordant statements either by an allowance for the difference of pressure or the difference of the specific gravities of the gases; for it ought to be kept in view that the discharge of gas is directly proportioned to the square root of the height of the column of water by which it is pressed, and inversely as the square root of the specific gravity of the gas. Both of these propositions, however, must be greatly modified by friction, and consequently by the length of the pipes through which the gas is conveyed. In the supply stated to be furnished by pipes of different dimensions, we have deemed it safest rather to underrate the quantity than overrate it.

The main-pipes are usually made of cast-iron, joined together with socket-joints, in lengths of three yards. The depths of the sockets vary in pipes of different sizes from three to six inches, part of them being fitted with gasket to bring the centres of the pipes into line, and the remainder with lead after the gasket has been driven home with suitable chisels or caulking irons. The depth of lead to secure a good joint should not be less than an inch and a half; the interval between the spigot and socket being from three-eighths to seven-eighths of an inch, according to the diameter of the pipe. Joints are now frequently made without lead. One plan is to caulk into the bottom of the socket, to the depth of two inches, white rope-yarn covered with putty, and to nearly fill up with tarred gaskets, leaving a *gate* into which is poured a composition of melted tallow and vegetable oil. Another plan is to bore the socket of the pipe with a slightly conical opening, the small end being similarly turned to fit the socket. The two ends of the pipe are coated with a mixture of white and red lead, and being brought together, are driven home by a mallet. Such a joint is said to be quite tight. Rings of vulcanized India rubber have also been recommended for the joints of gas and water pipes.

Necessity of giving pipes a proper inclination.

As a considerable quantity of water is carried off by the gas in the state of vapour, which is afterwards condensed in the pipes, some arrangement must be made for its collection and occasional removal; and accordingly, in laying the pipes, care must be taken to give them a regularity of declivity towards one or more points, where proper syphons, close vessels, and cocks must be placed, to receive and discharge the collected water. When these precautions are neglected, or when the levels are inaccurately taken, much annoyance is experienced; and as the evil can only be corrected by lifting and rejoining the pipes, the utmost attention should be paid to guard against it at first.

For stopping off the gas in large pipes, valves luted with water or mercury, according to the degree of pressure to be resisted, are usually employed. One of the most simple forms of these valves is represented in fig. 13, where *aa* is the valve, having the shape of an inverted cylindrical cup, which is raised and depressed by a rod *c* passing through an air-tight stuffing-box; and *bb* an annular cavity or interval, partially filled with water or mercury, into which the valve descends when it is shut.

Service pipes.

To convey the gas from the main-pipes, and distribute it through the various apartments of dwelling-houses, pipes made of block-tin are generally used; these being more durable and better adapted to the purpose than pipes composed of copper or any other metal. In arranging the interior fittings, the same precautions must be observed as were recommended in the case of the main-pipes, viz. to give the various branches a due degree of inclination, so as to cause all the condensed water to flow to one or more points, where proper cocks must be placed for its removal. Unless this be done, the lights will be apt to flicker, or be extinguished at times altogether. Nor is it of trivial moment to enjoin the workmen, when they are soldering the service-pipes, to avoid with the utmost care allowing any of the melted metal to find its way into the inside of the pipes; it being in a great measure to this circumstance that the deficiency in the supply of gas, so frequently complained of, is owing.

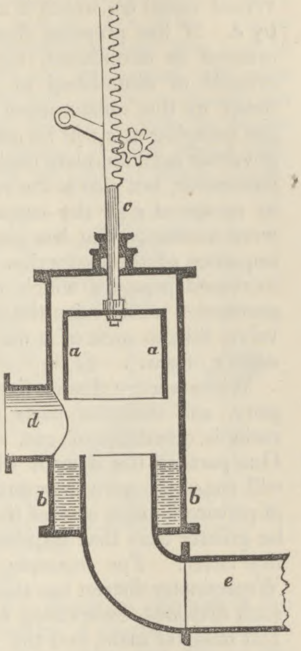

Fig. 13.

Of the Governor or Regulator.

Use of regulator.

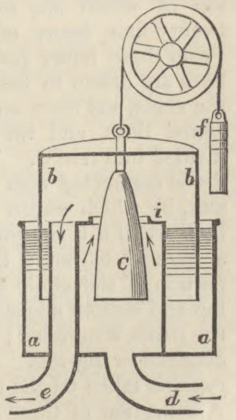

Fig. 14.

The quantity of gas consumed in large towns varying greatly at different times, it is evidently a matter of some importance to the public, as well as to the manufacturers of gas, that the supply of it should be duly adjusted to the consumption; so that when the lamps are once regulated to a proper height of flame, they may continue afterwards to burn with the same steady light throughout the whole of the evening. Any contrivance that can accomplish so desirable an object must save a great deal of trouble to the consumer of gas, and much unnecessary waste of it to the manufacturer; and such is the design of the governor or regulator. Fig. 14 represents one of these contrivances, *d* being the pipe proceeding from the gasometer, by which the gas is admitted, and *e* the pipe by which it escapes; *c* is a valve of conical form, fitted to the seat *i*, and raised and depressed by means of the weight *f* attached to a cord passing over a pulley; *bb* is a cylindrical vessel formed of sheet iron, which ascends and descends in the exterior vessel *aa*, in which water is contained to the level represented. The gas, entering at *d*, passes through the valve, fills the upper part of the inverted vessel *bb*, which it thus partially raises, and escapes by *e*. If the pressure from the gasometer be unduly increased or diminished, the buoyancy of *bb* will be increased or diminished in like proportion, and the valve being by this means more or less closed, the quantity of gas escaping at *e* will be unaltered. And not only will the governor accommodate itself to the varying pressure of the gasometer, but also to the varying quantities of gas required to escape at *e* for the supply of the burners. Thus, if it were necessary that less gas should pass through *e*, in consequence of the extinction of a portion of the lights, the increased pressure which would thus be produced at the gasometer would raise the governor, and partially shut the valve, till the state of it was duly adapted to the requisite supply of gas.

Pressure indicator.

When a large district is supplied by a single gas company, and different parts of the same district consume variable quantities of gas, variable pressures are required. One part of the district where there are numerous shops will consume more than another part which consists chiefly of private houses, so that the pressure for the former must be greater than that required for the latter. For example, the Westminster district has about 20 such divisions, comprising nearly 150 miles of main, and the varying pressures required for each division are managed as follows:—In the superintendent's room there are a number of small gasometers called *pressure indicators*, and over each is the name of the sub-district to be supplied. Each gasometer (A, fig. 15) is about 12 inches in diameter. It is supported in a tank of water in such a manner that it can rise and fall with the varying pressure in the mains with which it is connected by the pipe B. At the upper part of the gasometer is a rod C, carrying a black lead pencil, which bears upon a cylinder D, which is covered with a sheet of paper, along the top of which are marked the twenty-four hours of the day. From these hours perpendicular lines are drawn to the bottom of the sheet, and there are also horizontal lines, and the bottom is divided into tenths. The cylinder is connected with a time-piece, so as to rotate on its axis, by which means the pencil draws a line opposite the hour when it is set going. If the pressure be constant for a number of hours, the pencil will of course describe a portion of the circle round the cylinder parallel with the top and bottom edges of the paper, or a straight line when the paper is unrolled; if the pressure vary, the line will be diagonal or zig-zag. At the end of twenty-four hours the paper is taken off the cylinder, and replaced by a new one. A collection of these papers for each district furnishes an index to the supply of gas at any hour of the day to the the sub-district to which it refers.

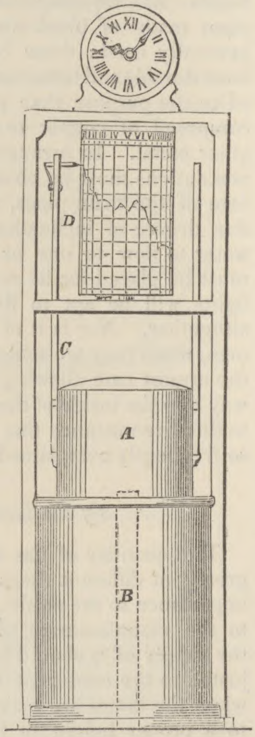

Fig. 15.

Gauge.

It is often necessary to ascertain the pressure to which the gas is subjected in the various forms of apparatus used in the manufacture. For this purpose a simple gauge is attached thereto, consisting of a bent graduated glass tube, containing a portion of water or of mercury, as shown in fig. 16. If one end of the tube be screwed into a vessel or an upright pipe as in the figure, containing gas of the same pressure as that of the external air, the liquid will stand at the same height in the two limbs of the gauge. If the pressure of the gas be greater than that of the external air, the liquid will rise in the open limb, and the pressure of the gas will be 1, 2, or more inches, according to the height to which the liquid rises. But if the pressure of the gas be less than that of the atmosphere, the atmospheric pressure, which always acts at the open end of the tube, will prevail, and the liquid will be depressed in the open limb, and rise in the other.

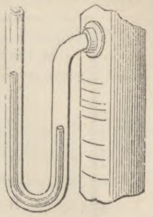

Fig. 16.

The Gas-Meter.

Design of the gasometer.

The gas-meter is a simple but ingenious mechanical contrivance, the design of which is to measure and record the quantity of gas passing through a pipe in any given interval of time. Experience has proved it to be no less advantageous to the consumer than to the manfacturer of gas, by allowing the former to use gas without any unnecessary waste of it, and securing to the latter a fair and regular price for the quantity of it actually consumed.

The wet meter.

There are two forms of meter in actual use, viz., the *wet* and the *dry*. The former, the invention of Mr Clegg, is represented in the following figures. In the sections, figs. 17, 18, *cc* represent the outside case, having the form of a flat cylinder; *a* is a tube which enters at the centre for admitting the gas, and *b*, fig. 17, is another for conveying it off to the burners; *g*, *g* are two pivots, one supported by the tube *a*, and the other by an external water-tight cup, projecting from the outside casing, and in which is contained a toothed wheel *h*, fixed upon the pivot, and connected with a train of wheel-work (not shown in the figure) to register its revolutions. The pivots are fixed to and support a cylindrical drum-shaped vessel *ddd*, having openings *e*, *e*, *e*, *e*, internal partitions *ef*, *ef*, *ef*, *ef*, and a centre piece *ffff*. The machine is filled with water, which is poured in at *h* up to the level of *i*, and gas being admitted under a small pressure at *a*, it enters into the upper part of the centre piece, and forces its way through such of the openings *f* as are from time to time above the surface of the water. By its action upon the partition which curves over the opening *a*, a rotatory motion is communicated to the cylinder; the gas from the opposite chamber being at the same time expelled by one of the openings *e*, and afterwards escaping at *b*, as already mentioned.

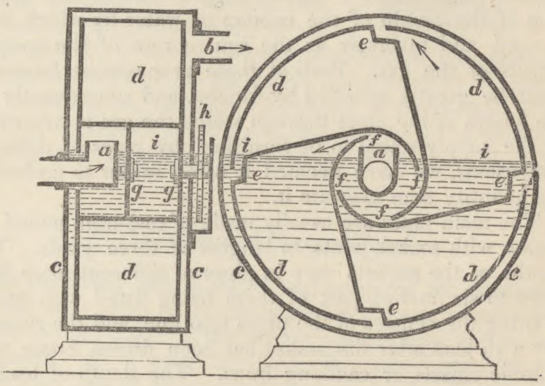

Fig. 17. Fig. 18.

As the quantity of gas which passes through the machine in any given time depends not only upon its internal dimensions and the number of revolutions which it performs, but also upon the level of the surface of the water in which the cylinder revolves, due care must be taken to maintain the water at the same level, for the regular action of the meter. This is easily accomplished, by pouring in water when necessary, till the superfluous quantity is discharged by an orifice properly placed for the purpose.

The dry meter.

One great objection to the wet meter is, that the water is liable to freeze in winter, by which means the supply of gas is stopped: it has been proposed to use a solution of caustic potash or soda instead of water, as being less liable to freeze, and exerting a beneficial action on the gas by removing traces of carbonic acid or sulphide of hydrogen. A second objection is, that if the water level be lowered so that one compartment may at the same time communicate with the central and outer spaces *f f* and *d e*, more gas will pass than can be registered, an effect sometimes produced by the dishonest consumer tilting forward the meter. In the dry meter, as its name implies no liquid is used, and the gas is measured by the number of times that a certain bulk of it will fill a chamber constructed so as to contract and expand for the passage of the gas. These alternate contractions and expansions give motion to certain valves and arms, which, with the aid of a train of wheels, turn the hands of the dials as in the wet meter. The two forms of dry meter which have attracted most attention are Defries's and Croll and Glover's. Defries's meter consists of three measuring chambers separated by leathern partitions partially covered by metal plates, and as they expand by the pressure of the gas they assume the form of a cone on one side or other, the motion of which backwards and forwards drives the measuring machinery, and by an action somewhat similar to that of a three-throw pump, a continuous stream of gas is ejected. This incessant bending of the leather backwards and forwards causes it to wear rapidly, while the efficiency of the meter obviously depends on the soundness of the leather. In Messrs Croll and Glover's meter the leather is applied in perhaps a less objectionable form. This meter consists of two short metal cylinders, each closed at one end; AA, fig. 19, representing one such end attached to a fixed central plate BB, by means of broad bands of leather, which act as hinges, allowing one side to swell out with gas, while the other parts with its gas by being pressed in towards the centre plate. The to-and-fro motion of the discs which close the short cylinders affords means for measuring the gas. Each disc is kept in place by a hinge joint S attached to upright rods, RR′. There are also parallel motions *exy* attached to each disc, and to the top plate of the meter. As the gas passes into each cylinder and distends it, the rods RR′, one on each side, are made to move each through the half of a circle by means of jointed levers S attached to them. At the top of each rod are two arms R*ad*, R′*ad*, fig. 20, each of which partaking of the motion of the rods RR describes alternately the arc of a circle, and a rotatory motion is obtained by means of connecting rods attached to these arms, and also to two other arms *rr* which work two D valves DD, each of which is made to slide backwards and forwards over three apertures, the two outer of which lead to the inside and outside of the cylinders respectively, and the middle aperture to the exit pipe E. It is the function of these valves to regulate the flow of gas into and out of the two chambers of each division of the meter. While the gas is flowing into one cylinder and distending it, the gas on the other side of this cylinder disc is expelled to the exit pipe E; as soon as this is done, the valve is reversed and gas enters on the side of the disc from whence it was last expelled. The process is then repeated by the other disc, and in this way a continuous flow of gas is obtained by means of the two valves DD, which being placed at right angles to the double-cranked shaft, and the two cranks on the shaft being at an angle of 45° to each other, it follows that as one valve closes the other opens, but the closed valve always begins to open before the other is quite shut. In fig. 20, the dotted portion represents one of the short cylinders A′ distended with gas, and the other cylinder A collapsed.

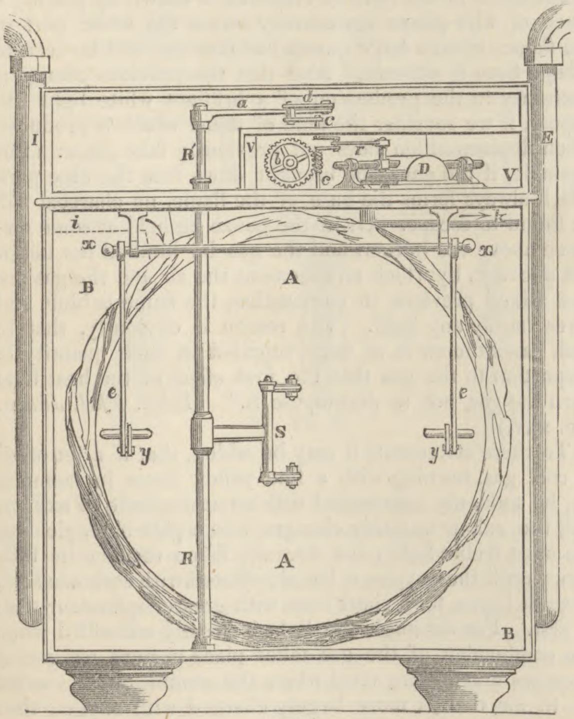

Fig. 19.

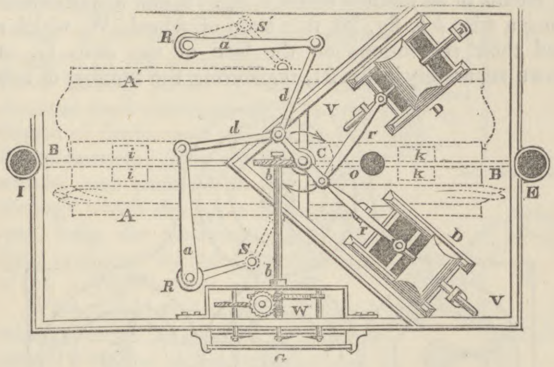

Fig. 20.

We will now trace the course of the gas in its passage through the meter. Suppose a continuous stream of gas under pressure to be passing down the inlet pipe I. On arriving at *i* it meets with a horizontal tube which conducts it by the aperture *o*, fig. 20, in the direction of the arrow into a triangular chamber VV. It then passes down an open slit of one of the valves, which we will call No. 1, and entering one of the cylinders, distends it and forces the gas which was on the outside of the disc to escape through slit No. 2, and so along a tube *k* leading to the exit pipe E. While this action is going on, that is, while the cylinder on one side is being distended, the cylinder on the other side is already full, the gas is shut off from it by the sliding valve D, and is made to pass on the outside, where exerting its pressure on the disc AA, it forces it inwards, and the gas escapes along a short pipe attached to either side of the partition BB into slit No. 2, and so escapes to the exit pipe. The triangular chamber V V has no connection with the cylinders, &c. situated below it except through the tubes already indicated, and the train of wheels W, fig. 20; and the dials are also so boxed in as not to be exposed to the corrosive action of the gas. The rods R′ R pass into this upper compartment through leather washers and a stuffing of wool. The cylinders are inclosed in an oblong box of iron plate or galvanized iron, so as to be completely concealed from view. The pressure to which the gas is subjected in order to force it along the mains is amply sufficient to work this meter. If the gas were subjected to the pressure of only half an inch of water, this quantity multiplied into the area of the disc, which in a ten-light meter is ten inches in diameter, amounts to many pounds.

The circular motion of the double crank is transmitted by means of an endless screw *c*, fig. 19, and a spur-wheel *b* along a wire *b b*, fig. 20, to a train of wheels W, which record their revolutions on the face of the dials G, also shown separately in fig. 21, registering the number of cubic feet of gas consumed, in units, tens, hundreds, thousands, &c. The top circle marks the units, the left hand circle hundreds. The motion of the hand from 0 to 1 shows that 100 cubic feet of gas have passed through the meter, while a whole revolution of this hand registers ten times that quantity, or 1000 cubic feet. The motion of the hand of the centre circle from 0 to 1 indicates 1000 feet, and a whole revolution 10,000 feet. The right hand circle, in a similar manner, indicates in a whole revolution 100,000 feet. In reading off the numbers on the circles, we take the number at which the hand is pointing, or the lower of the two numbers that the hand is between. In fig. 21, beginning with the right-hand dial, the hand is between 9 and 0, showing that nearly a whole revolution has been accomplished; we therefore write down,

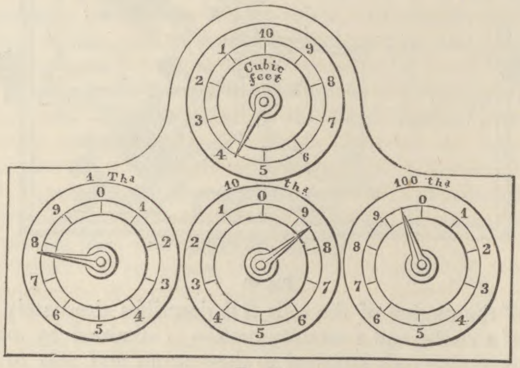

Fig. 21.

90,000 for the right-hand dial,
8,000 for the middle dial,
700 for the left-hand dial.

98,700

If the collector, in taking the register three months before, had recorded the quantity as 73,200, this quantity, deducted from 98,700, gives 25,500 cubic feet as the consumption of gas for three months. The top or units dial is not used in registering, but it serves to indicate to the collector as well as to the consumer that the dial is acting properly, the more rapid motion of the hand facilitating this object.

Burners.

Principles upon which the light yielded by combustion depends.

The most economical mode of consuming gas, so as to obtain from a given volume of it the greatest possible quantity of light, both in degree and duration, is a problem of no less importance than that of the most suitable arrangements for its production and purification. The presence of oxygen, in some form or another, being essentially necessary to produce ordinary combustion, it follows, that from whatever cause that principle may be deficient in quantity, the combustion must be imperfect; and when this is the case, the light yielded by the combustible body is also diminished in a proportional degree. On the other hand, if the quantity of oxygen brought into contact with the combustible body be more than sufficient for its entire combustion, the superfluous quantity of that gas, instead of augmenting the effect, can only lower the temperature, and diminish, it may be presumed, in a corresponding degree, the intensity of the light. This must be the consequence if the brilliancy of the light yielded by a combustible body depends at all upon the temperature to which it is exposed during its combustion; and that this is the case may be inferred from the simple fact of causing the flame of a jet of gas to play, first against a sheet of ice, and then against a bar of red-hot iron, when the difference of the light will be such as to leave no doubt of the influence of temperature upon its intensity. A similar result is obtained by bringing the flames of two separate jets into contact, when an obvious increase of light is perceived. From these simple facts it may be inferred, that though a certain quantity of common air must be brought into contact with the inflamed gas to produce the greatest intensity of light, whatever exceeds that quantity will not only be useless, but, by diminishing the temperature of the flame, must tend to impair the brilliancy of its light.

But although the immediate cause of the light is probably the high temperature to which the carbonaceous portion of the gas is exposed, the condition in which the carbon exists at the time it is so exposed is of the utmost importance to the effect. According to the opinion of Sir Humphry Davy, as adopted by Drs Christison and Turner, "a white light is emitted only by those gases which contain an element of so fixed a nature as not to be volatilizable by the heat caused during the combustion of the gas; and that in coal-gas this fixed element is charcoal, formed by the gas undergoing decomposition before it is burnt. The white light is caused by the charcoal passing into a state, first of ignition, and then of combustion. Consequently no white light can be produced by coal or oil gas without previous decomposition of the gas."

"That the gas undergoes decomposition before it burns, and that the carbonaceous matter is burnt in the white part of the flame in the form of charcoal, is shown by placing a piece of wire-gauze horizontally across the white part of the flame, when a large quantity of charcoal will be seen to escape from it unburnt. And that this previous change is necessary to the production of a brilliant white light will appear, if we consider the kind of flame which is produced when decomposition does not previously take place. For example, if the gauze be brought down into the blue part, which always forms the base of the flame, no charcoal will be found to escape. Or, if the gauze be held at some distance above the burner, and the gas be kindled not below but above it, by which arrangement the air and the gas are well mixed previous to combustion, the flame is blue, and gives hardly any light. The reason is obviously, that in both cases the air is at once supplied in such quantity in proportion to the gas that the first effect of the heat is to burn the gas, not to decompose it." (*Edin. Phil. Journ.* No. xxv.)

Circumstances influencing the intensity of the light.

To these statements it may be added, that if a jet of oil or coal gas, burning with a fine yellow flame in common air, be suddenly surrounded with an atmosphere of oxygen gas, the colour instantly changes into a pale blue, yielding the most feeble light; nor does the flame recover its brilliancy until the oxygen is largely diluted with carbonic acid, when it burns for a short time with greater splendour than at first. For although the light is greatly enfeebled when the combustion of the gas takes place in pure oxygen, it becomes much more vivid when the combustion is carried on in air that is more largely charged with oxygen than common air. Hence the brilliancy of the light appears to depend upon two conditions; 1*st*, the perfect combustion of a portion of the gas in an undecomposed state; 2*dly*, the temperature produced by that combustion upon the residual part in a decomposed state. When a large portion of the gas is consumed in the first condition, the temperature is higher; but the undecomposed part is then too small in quantity to yield an intense light, in consequence of the attenuated state of the carbon; and, on the other hand, when a small portion of the gas is consumed in the undecomposed state, the temperature produced is too feeble to raise the temperature of the now partially decomposed part to a sufficient pitch for the full ignition of the carbon.

General principles to be observed in the construction of burners.

The conditions which thus seem to be necessary for obtaining the greatest portion of light from the combustion of a given quantity of gas, while they are perfectly consistent with the most anomalous facts presented by that process, so they appear to afford the only sure principles upon which we can proceed in the construction of gas-burners. One of the most obvious conclusions deducible from these principles is, that whatever be the form of the gas-burner its construction should be such that while it admits as much air as is necessary for the perfect combustion of the gas, it should never admit more than is barely sufficient for that purpose.

Experiments of Drs Christison and Turner.

According to the experiments of Drs Christison and Turner, the diameter best fitted for single-jet burners appears to be about one twenty-eighth of an inch for coal-gas, and one forty-fifth for oil-gas. As these dimensions, however, must vary with the quality of the gas, we consider one thirty-sixth of an inch to be more applicable to the gas obtained from cannel coal, if its specific gravity be not less than ·65. Every form of burner composed of separate jets, in which the gas is made to issue in a horizontal or oblique direction, gives a consumption which increases in a much faster ratio than the light which it yields; and consequently, however beautiful such burners may be in appearance, they are far from being economical.

Forms of burner.

One of the most useful forms of a burner with single jets, is where there are two holes, and their directions are so inclined as to cause the streams of issuing gas to cross, and exhibit during their combustion a broad continuous flame. This burner, which is termed a *swallow-tail*, is well adapted for street-lights, as it gives a powerful light, and consumes a small quantity of gas. When the gas is emitted by a narrow slit at the top of the burner, the burner receives the name of a *bat-wing*. Specimens of common gas flames are represented in figs. 22, 23, 24.

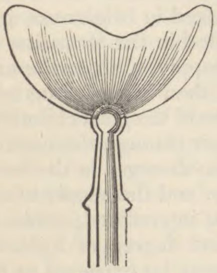

Fig. 22.

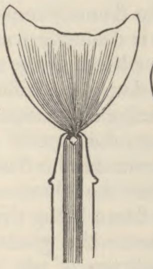

Fig. 23.

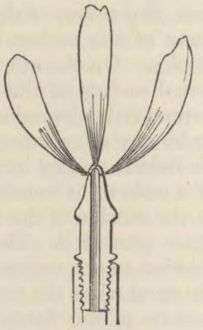

Fig. 24.

Argand burner.

But of all the forms of the burner, that upon the Argand principle, in which the holes are arranged in a circle, *d*, fig. 25, so as to allow the air to have access to the flame internally as well as externally, is the most economical, and the best calculated to secure the complete combustion of the gas. The diameter of the holes should, in this burner, be about the fortieth part of an inch for coal-gas of an ordinary good quality, and the distance between them should be such as to allow the separate flame of the different jets to unite together and form a continuous hollow cylinder of light. In fig. 25, *a* is the pipe which supplies the gas, and *b b* the channel up which it passes to the holes shown in the lower figure.

The construction of burners, and the most economical mode of consuming gas, having been examined with much philosophical precision by Drs Christison and Turner, we shall extract from their elaborate dissertation on the subject the most valuable and important conclusions which they have deduced from their experiments; and this we do with greater confidence, because the results they obtained coincide very exactly with those which the writer of this article procured when engaged in the same inquiry. The three leading points to which they directed their attention were, 1*st*, the length of flame most suitable for different burners; 2*dly*, the form, magnitude, and position of the orifices through which the gas is discharged; and, 3*dly*, the modifications of the light produced by the glass chimney of the Argand burner.

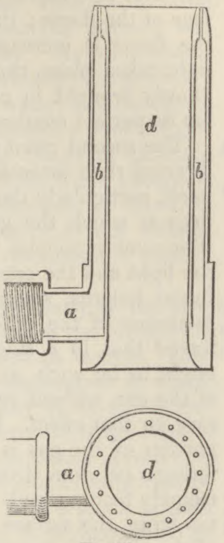

Fig. 25.

Length of flame.

With regard to the length of flame which afforded the greatest light compared with the expenditure of gas, they found that, in the case of the jet, the best length for coal-gas was about five inches, and for oil-gas about four inches. When the flame was kept shorter, the quantity of gas consumed was greater in comparison of the light which it yielded; but no advantage was gained by increasing the length beyond that mentioned as the most suitable for each gas; the combustion becoming less perfect, and beginning to be accompanied with the escape of the carbon in the form of smoke. Thus they found that, in the case of coal-gas having the specific gravity ·602, while the lights emitted from a two-inch and a five-inch flame were as 556 to 1978, the corresponding expenditures were to each other as 605 to 1437. But the light, in an economical point of view, must be estimated inversely as the quantity of gas from which it is obtained; and hence the ratio of the lights, in reference to the expenditure, was as $\frac{556}{605}$ to $\frac{1978}{1437}$, being as 100 to 150.

In the case of Argand burners, the augmentation of the light in a ratio greater than the expenditure was exemplified in a still more remarkable degree. Thus the following results were obtained with coal-gas of the specific gravity ·605, by elevating the flame of a five-holed burner, successively from half an inch to five inches.

Length of Flame.	Half-Inch.	One-Inch.	Two-Inch.	Three-Inch.	Four-Inch.	Five-Inch.
Light	18·4	92·5	259·9	308·9	332·4	425·7
Expenditure.........	83·7	148	203·3	241·4	265·7	318·1
Ratio of light to expenditure.....	100	282	560	582	582	604

Hence the light is increased about six times for the same expenditure by raising the flame from half an inch to three or four inches; but very little is gained by any additional increase of the flame beyond that length, in the description of burners with which the experiments were made.

These facts receive a satisfactory explanation from the general principles which we have already laid down with respect to the combustion of the luminiferous gases. When the flame is short, the supply of oxygen for the combustion is too great; almost the whole of the gas is thus consumed before any portion of it can undergo the decomposition which is necessary for the evolution of light; while the temperature of the flame being reduced by the superfluous air which brushes along its surface, the intensity of ignition, and with it the splendour of the light, is proportionally diminished. This explanation is well illustrated by partially shutting the central part of the burner, and thus interrupting the supply of air to the internal surface of the flame; the moment this is done, the length of the flame is increased, and a visible improvement of the light takes place, thus indicating that more air was previously brought in contact with the gas than was requisite for its perfect combustion.

Magnitude and position of the orifices.

The second point to which Drs Christison and Turner directed their attention was the construction of the burner itself, particularly the magnitude and position of the orifices at which the gas is emitted during its combustion. The same principles which explained the relation between the light and the expenditure in the case of flames of different lengths, suggested the rule for regulating the dimensions of the orifices; and accordingly they justly inferred that, in a single jet, the diameter of the aperture ought to be such as to ensure the complete combustion of the gas, without rendering it more vivid than is necessary for that effect. If the orifice be too small, the greater portion of the gas is liable to be consumed without suffering a previous decomposition, and thus the light is extremely feeble; and, on the other hand, if the orifice be too large, the surface of the flame exposed to the action of the air being too small in comparison of the discharge of gas, the combustion is imperfect, and the carbon, after being separated from the hydrogen, either burns at a low temperature with a dusky flame, or, what is still worse, a large portion of it passes off in the state of smoke. In conformity with these views, they recommend, as we have already stated, a twenty-eighth of an inch for coal-gas, and a forty-fifth for oil-gas, as the most suitable dimensions for single jets. They acknowledge, however, that their experiments with coal-gas were too limited to justify them in using very confident language on the subject; and we have therefore the less hesitation in stating that we consider an orifice varying in diameter from a thirty-second to a thirty-sixth of an inch as better adapted to coal-gas of a specific gravity between ·62 and ·70.

Orifices of Argand burners.

In Argand burners the diameter of the orifices ought to be a little smaller. Drs Christison and Turner state that the diameter which appeared to answer best for coal-gas of the specific gravity ·6, when the holes are ten in a circle of three-tenths of an inch radius, was a thirty-second of an inch. We consider this, however, to be too great for coal-gas of a better quality, and would recommend, in preference, apertures varying in diameter from a thirty-sixth to a fortieth of an inch.

Distance of jet-holes.

The distance between the jet-holes of Argand burners is a matter of no less importance than the diameter of the orifices, and must be regulated by the same principles. When they are so far asunder that the flames of the separate jets do not coalesce, no advantage is derived from the Argand form; but when they unite, and compose a uniform and unbroken surface of flame, the light is considerably greater, compared with the expenditure of gas, than is obtained from detached jets. In order to determine the most suitable distance at which the orifices of Argand burners should be placed, Drs Christison and Turner employed burners six-tenths of an inch in diameter, which they caused to be drilled with eight, ten, fifteen, twenty, and twenty-five holes, a fiftieth of an inch in diameter; and having determined with each of these burners the light and expenditure in the case of oil-gas, they obtained the following results:—

Burners.	VIII.	X.	XV.	XX.	XXV.
Light	360	360	391	409	382
Expenditure	367	318	296	289	275
Ratio of light to expenditure	98	113	132	141	139

As the standard of comparison was a single jet, burning with a four-inch flame, the ratio of the light yielded by which to the expenditure was expressed by 100, it was inferred that no advantage is gained by giving the jets the Argand arrangement with a burner of the dimensions above mentioned if the holes are only eight in number; and that the gain does not increase after the number reaches to twenty. In the former case the distance of the holes must have been ·2356 inch, or nearly one-fourth of an inch, and, in the latter, ·0945; so that the most advantageous distance for jet-holes of a fiftieth of an inch in diameter would seem to be about $\frac{9}{100}$ths of an inch. For coal-gas burners, however, the distance between the jet-holes ought to be increased in a ratio varying inversely with the quality of the gas, or directly as the diameters of the orifices themselves. Hence, if the coal-gas were of an ordinary quality, the jet-holes should not be less than one-eighth nor more than one-sixth of an inch from each other.

Diameter of circle of holes.

The distance between the orifices being once assumed, serves to determine the diameter of the circle of holes. Thus, in a burner of eighteen holes, each a seventh of an inch asunder, the circumference ought to be $18 \times \frac{1}{7} =$ 2·57 inches, and consequently the diameter of the circle of holes should be $\frac{2{\cdot}57}{3{\cdot}1416} = {\cdot}818$ inch. If the breadth of the rim be supposed to be a tenth of an inch, and perhaps it ought not to exceed that quantity, it may be proper, in the case of the larger burners, to contract the lower part of the central air-hole, on account of the supply of air to the inside surface of the flame increasing in a faster ratio than the number of jets.

Glass chimney.

The only remaining point to be considered with respect to the burner is the glass chimney, which serves at once to protect the flame from irregular currents of air, and to convey to the gas a due supply of it during combustion. When the interval between the chimney and the external part of the flame is too great, the tendency of the air to flow through the air-hole is diminished, and the flame contracts towards the top, where it yields a dusky light, and indicates a disposition to smoke. The diameter of the chimney should therefore be reduced until it is perceived that the upper part of the flame is enlarged, and acquires the same diameter as the lower part. When this is the case, the colour of the flame is improved in brightness, and none of the carbon is uselessly wasted in the formation of smoke. On the other hand, if the supply of air to the external surface of the flame be diminished beyond a certain extent, either by reducing the diameter of the glass chimney, or by any other means, the flux of air through the central air-hole is unduly increased, the flame diverges in the form of a tulip till it touches the chimney, and the supply of air to the outside of the flame being thus interrupted, smoke is again produced. Hence the greatest degree of light, in relation to the expenditure of gas, may be expected to be obtained when the supply of air to the external and internal surface of the flame is so adjusted by the diameter of the chimney that the flame is perfectly cylindrical, neither burning with too much vivacity, nor showing any tendency to smoke. The length of the glass chimney is of much less importance than its diameter, and may vary from five to six inches.

A cylindrical chimney, however, is the least advantageous form that can be adopted. If the chimney be tall and narrow, and contracted towards the top, as in *a*, fig. 26, or suddenly contracted near the bottom, as in *b*, the draught is increased and the light improved. It is also useful to contract the

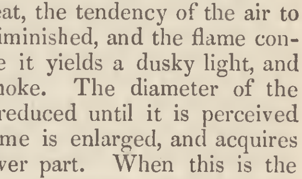

Fig. 26.

diameter of the glass chimney about a couple of inches above the burner, as at *c*, so as to form a shoulder a few lines in width, the effect of which is to change the direction of the draught, and project it on the flame at a certain angle.

Bude light.

In the Bude light proposed by Gurney, oxygen gas instead of air was passed through the flame, the effect of which was greatly to increase its brilliancy. In the Bude light as now constructed, there are two, three, or more concentric burners with chimneys supplied with common air, and a dioptric apparatus.

Ventilation of burners.

Attempts have been made of late years to ventilate gas burners so as to get rid of the injurious products of combustion. One part by weight of good coal-gas produces nearly three parts by weight of carbonic acid, which produces many distressing symptoms when breathed with the air of the room. Sulphurous acid, and other compounds which are not entirely removed in the purification of the gas, form deleterious products during the combustion of the gas. The sulphurous acid forms sulphuric acid, which exerts a corrosive action on the walls and furniture, books, pictures, &c., while the hydrogen of the gas produces vapour of water which serves as a vehicle for some of the other products. To get rid of these noxious fumes a bell-shaped vessel is sometimes suspended over the chimney, and is connected with a tube leading into the open air. Unless this tube be judiciously arranged the condensed water of the gas may accumulate in it, and cause inconvenience. By a contrivance of Dr Faraday, a copper tube of about the same diameter as the flame is conducted from its summit out of the apartment; the heat of this tube establishes a rapid current, which serves to convey away the products. The same distinguished chemist invented another contrivance, by which the ventilating current is made to descend between two concentric glass chimneys of different heights, the outer one being the taller, and this is covered with a disc of talc. When the current reaches the bottom of the space between the two glasses, it is conveyed away by a ventilating tube which bends upwards. The descending current is first established by applying heat to the bend of the ventilating tube where it begins to ascend; when this current is established the gas is lighted, and the plate of talc is put on: the products of combustion are conveyed into a box, from which proceeds a pipe for conveying the vapours outside. A globe of ground glass open only at the bottom is placed over the lamp. The accumulation of condensed water in different parts of this apparatus is said to have greatly interfered with its successful action.

Ventilation by means of gas.

Mr R. Brown of Manchester has a contrivance for ventilating by means of gas. Through an opening in the ceiling a wide tube is passed, one end of which conveys the foul air outside, and the other projects a little below the level of the ceiling. The gas pipe enters on one side, and is bent so as to hang perpendicularly in the centre of the tube, and has an annular burner at the lower extremity, surrounded by a glass chimney, which is supported on the top on a metal cone piece, secured to the lower extremity of the tube by screws. This arrangement is surrounded by a hemispherical glass shade with its mouth uppermost, and a few inches below the level of the ceiling. The air of the apartment passes off in the strong draught occasioned by the burner, and a fresh supply of air is admitted at the lower part of the room.

Oil-Gas, Resin-Gas, and Water-Gas.

Composition of oil.

When tallow or oleaginous matter of any kind is raised to a certain temperature, it is resolved into various gases. of which the compounds of carbon and hydrogen, viz. olefiant gas or bicarburetted hydrogen, and light carburetted hydrogen, are the principal, both in point of quantity and quality, for the purposes ef illumination. As oil contains in its composition a portion of oxygen, existing most probably in union with hydrogen in the state of water, that substance also yields, during its destructive distillation, a considerable quantity of carbonic oxide, as well as traces of carbonic acid, hydrogen, and even nitrogen. With these products, all of which are of a determinate character, is found in greater or lesser abundance a quantity of a very inflammable vapour,[1] which seems to be a compound of carbon and hydrogen.

Variable nature of oil-gas.

Oil-gas owes its illuminating power chiefly to the proportion of olefiant gas which it contains, and the oleaginous vapour which is diffused through it; and as both of these ingredients vary in quantity with the temperature at which the decomposition is effected, the quality of oil-gas is extremely fluctuating. When the temperature is too high, a portion of the olefiant gas and oleaginous vapour is resolved, by the deposition of carbon, into light carburetted hydrogen; and though the quantity of gas from a given portion of oil is thus increased, the quality of it is diminished in a still higher ratio. On the other hand, if the temperature be rather too low, a larger quantity of olefiant gas, mixed with a greater proportion of oleaginous vapour, is obtained; but as the latter is gradually and rapidly condensed when the gas is allowed to stand over water, the higher illuminating power of this richer gas is more than counterbalanced by the deficiency in its quantity, and the deterioration to which it is liable by keeping.

Experiments by Dr Henry.

We are indebted to Dr Henry of Manchester for the first analysis of the aëriform compounds obtained by the decomposition of oil by heat; and though his elaborate researches can scarcely be said to have led to the determination of the precise products of that decomposition, they furnish data from which their true nature may be inferred, with a probability nearly as great as that which belongs to the results of direct experiment. The principal difficulty of the analysis consists in determining the condition in which the elementary principles of carbon and hydrogen exist in union with each other, and reconciling the various suppositions that may be made respecting the compounds thus formed, with the specific gravity which belongs to the original gas, supposed to be produced by their mixture.

The results of Dr Henry's first experiments were published in 1805; but it was not till about ten years after that period that an apparatus for decomposing oil, on a large scale for economical purposes, was constructed. In 1815 a patent was obtained by Mr Taylor, in which he was afterwards joined by Mr Martineau, for producing gas from oil, by means of an apparatus which was employed with little variation in all the oil-gas establishments which were subsequently formed in various parts of the country. The general arrangements adopted in that apparatus will be readily understood from figs. 27, 28, and 29.

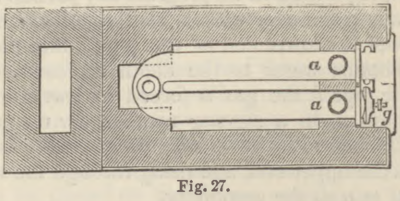

Fig. 27.

The retort *aa* has the form of a horse-shoe, being recurved and furnished with two mouth-pieces. The grate of the furnace is represented by *b*. The oil, which is contained in the cistern *c*, is conveyed by means of a tube, furnished with a stop-cock for regulating the discharge, and allowed to drop into the retort upon fragments of brick or coke heated to redness, to promote the decomposition. The gas, after its production, ascends from tne retort, at the opposite limb through the upright pipe *ff*, by which it is conveyed into a close vessel *hh*, which is surrounded with cold water in the cistern *ii*. From the bottom of the vessel *hh*, a worm or spiral tube *kk* ascends, and after a few convolutions around *hh*, terminates in the pipe *l*, which descends into the air-tight chest *mm*. The gas, leaving the vessel *hh*, is conducted by the spiral tube *kk*, depositing in its progress any portion of the oil that may have come over with it in a volatilized state, and escapes from the lower end of the pipe *l*, into the chest *mm*, which contains water to the depth represented. After quitting the pipe *l*, the gas is forced to traverse the inclined partition *n*, in a zig-zag manner, by means of diagonal ribs attached to its lower side, till gradually ascending, it escapes at the upper end, and rising through the water, finally passes off at *g* to the gasometer.

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[1] The oleaginous vapour alluded to consists, according to the experiments of Mr Faraday, of two distinct compounds of carbon and hydrogen. One of these he terms *bicarburet of hydrogen*, which, by his analysis, is composed of six proportions of carbon and three of hydrogen. The other compound, to which Dr Thomson has given the name of *quadro-carburetted hydrogen*, consists of four proportions of carbon and four proportions of hydrogen, existing in a different state of aggregation from that in which they exist in olefiant gas, the elementary constituents of which are in the same proportion.

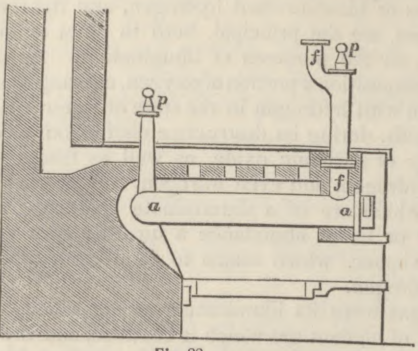

Fig. 28.

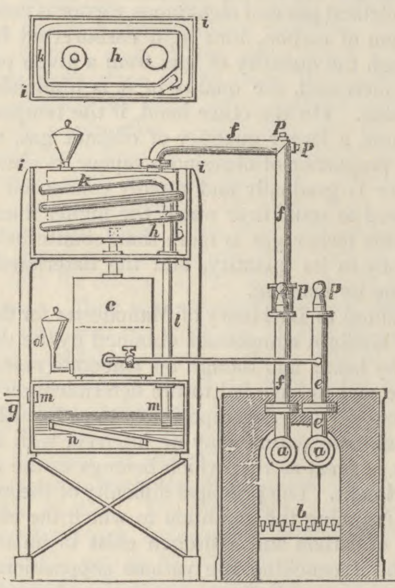

Fig. 29.

Loss incurred by converting oil into gas.

Oil being decomposed at a loss of nearly fifty per cent., the conversion of it into gas, after a protracted but ineffectual competition with coal, was gradually abandoned on the large scale, even in those places where, from the interest they had in the whale-fisheries, there was the strongest inducement to foster the prejudices which prevailed for some time against the use of coal-gas. The exaggerated advantages which it was pretended would be derived from compressing oil-gas and thus rendering it portable, served to prolong the delusions on the subject; nor were these delusions fully removed until a demonstration was given of the failure of the scheme, in the decay of the costly edifices and expensive apparatus which had been constructed for carrying it into effect. The late Professor Daniell of King's College, London, also contrived an ingenious form of apparatus for making gas from resin; but the plan did not succeed on account of the impossibility of competing with the coal-gas works.

Water-gas.

Of late years a new process of gas-making has been much discussed, and has formed the subject of a variety of patents. It is known as the *hydrocarbon process of gas-making*, or more briefly *water-gas*. The principle of the manufacture is to pass steam over red-hot coke, by which it is resolved into hydrogen and carbonic oxide, and then to supply these inflammable gases with the carbon required for their illuminating power, by passing them through a retort in which oil, resin, tar, naphtha, cannel coal, or some other carbonaceous substance, is undergoing decomposition by heat. The process does not appear to have been successful with resin, but better results seem to have been attained with cannel coal.

Methods for determining the Illuminating Power of the Gases.

Having described the various manipulations by which gas is prepared, both from coal and oil, we now proceed to explain the methods which have been adopted for determining their respective illuminating powers; it being by these methods that we acquire a knowledge of one of the most important tests by which the comparative value of the gases can be ascertained.

Determination of the intensity of light by the method of shadows.

The first and most obvious of these tests is to determine the intensity of the light which the gases are capable of diffusing during their combustion, upon a white and smooth surface directly exposed to its emanations. The determination of that intensity is obtained with a considerable degree of accuracy, not by a direct comparison of the degree of illumination shed on two separate surfaces, but by means of a contrivance, first proposed by Count Rumford, which allows the illuminated surfaces to be contrasted with each other on the same ground, and so closely adjoining that the eye can readily detect a slight difference between them. This contrivance is as follows: Let A and B, fig. 30, be two luminous objects; EF a smooth and white surface, having the same inclination to the rays of light emitted by A and B; and CD an opaque cylindrical rod parallel to the surface EF; then it is evident that *aa* and *bb* will be the shadows of CD, in reference to the lights A and B. But the shadow *aa* being illuminated by the light B, and the shadow *bb* by the light A, it follows that if these shadows be perfectly the same in point of intensity of shade, the light yielded by A and B must be the same in degree. If the shadows, however, be different, one of the lights must be removed either further from EF or brought nearer to it, until the shades seem to be exactly alike, when the light shed upon EF by A and B must, in point of intensity, be, as before, the same. But the intensity of light, like that of other emanations proceeding in straight lines from a central point, being inversely as the square of the distance, the relative degrees of light emitted by A and B must, in con-

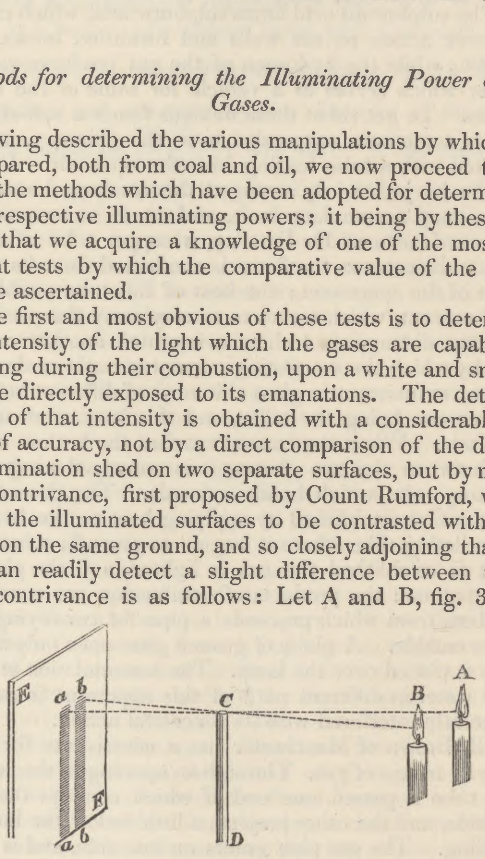

Fig. 30.

formity with that principle, be proportional to the squares of their respective distances from the surface on which the shadows are projected. Thus, if the light A were at the distance of fifteen feet, and the light B at the distance of twenty-five feet, their relative illuminating powers would be as the square of fifteen to the square of twenty-five; that is, as 225 to 625, or as 9 to 25. As the quantity of gas consumed in the same time to yield the supposed lights might be different, it is evident that a correct estimate of the absolute value of the gases for the purpose of illumination would not be duly determined unless that circumstance were also taken into account. But the economical value of the gases, yielding equal degrees of light, being inversely as the quantities consumed, it follows that that value will be directly as the squares of the distances at which the shadows are the same, and inversely as the rate of consumption. Thus, if we now suppose that the gas yielding the light A consumed three cubic feet in the same time that the gas yielding the light B consumed five cubic feet, the value of the former would be to that of the latter as $\frac{9}{3}$ is to $\frac{25}{5}$, or as three to five. In obtaining the necessary data for determining the ratio of the lights, it may be proper to add that the screen on which the shadows are projected should be guarded with the utmost care from all extraneous light. If it be desired to contrast the illuminating power of a gas-light with that of a candle, the comparison is easily made. If, for example, the gas-light give a shadow equal to that of a candle placed at one-third the distance, the light of the gas is equal to the light of nine candles. If the candle be placed at one-fourth the distance of the gas-light, the latter is equal to sixteen candles, and so on.

Bunsen's photometer.

Professor Bunsen of Marburg has contrived a photometer which is now in common use in gas-works. The principle of this instrument is not the comparison by shadows, which forms a delicate experiment, but a comparison of light transmitted through a translucent surface with light reflected from an opaque surface. For this purpose a disc of paper, TO, fig. 31, is placed between the two lights to be compared; an annular portion of this paper T is made translucent by means of melted spermaceti, or that substance dissolved in oil of naphtha, while a central disc of the paper O being left untouched by the composition, remains opaque. Fine cream-coloured letter-paper answers the purpose very well, and the central opaque disc may be about the size of half-a-crown. Now it is evident that the translucent ring will be illuminated by a light behind the disc, while the opaque portion is illuminated by a light in front. The frame on which the disc is mounted is moved backwards and forwards on a graduated bar BB between the two lights until the transmitted and reflected lights appear of the same intensity. The pointer P then shows the division over which the disc stands. Under such circumstances, the lights are to each other in the ratio of the squares of their distance from the disc. See PHOTOMETER.

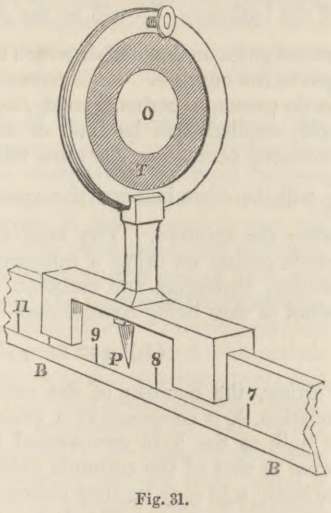

Fig. 31.

Application of chlorine to determine the quality of gas.

The determination of the intensity of light by the above simple means is capable, under careful management, of all the precision which the nature of the problem requires; it is even preferred by engineers to the more elaborate method of chemical analysis. The latter method has for its object to ascertain the relative value of the gases used for illumination, by finding the quantity of olefiant gas which they contain under equal volumes; it being assumed that the illuminating power of the compound combustible gases derived from the decomposition of oil and pit-coal is directly proportional to the quantity of that gas existing in their constitution. Though that supposition is by no means a matter of certainty, or even of probability, we shall nevertheless briefly explain the mode of analysis which has been recommended. According to the experiments of Dr Henry, chlorine has no action upon any of the gases obtained from oil or coal when the influence of light is carefully excluded, with the exception of olefiant gas; and as chlorine and olefiant gas unite together in equal volumes, this property affords an easy mode of determining the quantity of the latter which may exist in any compound gas of which it forms a constituent part. All that is required for the purpose is to add somewhat more chlorine than is absolutely necessary for uniting with the olefiant gas, and to allow the mixture to remain about fifteen minutes completely excluded from light. The extent of the absorption being thus observed, half the quantity of the gas which has disappeared of the whole mixture will be olefiant gas. Thus, if twenty parts of chlorine by measure were added to twenty-five of coal-gas, and if the mixture, after being allowed to remain a sufficient length of time in the dark, were found to occupy thirty-six measures, the absorption would be nine measures, and consequently the coal-gas must have contained four and a half measures of olefiant gas, or eighteen per cent. The quantity per cent. of olefiant gas is determined without calculation, by adding to fifty measures of the gas to be analysed an equal volume of chlorine; when the diminution of volume, in the graduated jar, is the quantity which the gas contains per cent. of olefiant gas. Dr Fyfe states that the illuminating power of the different specimens of oil and coal gas which he subjected to this test bore a pretty exact ratio to the quantity of olefiant gas which they contained. One great advantage to be derived from this method of testing the quality of any species of carburetted hydrogen containing olefiant gas in its composition, is, that it admits of a comparison being made between gases in different places and at different times, without the necessity of transporting them to a distance, and making a simultaneous examination of their illuminating properties.

The bromine test.

Of late years, bromine has been substituted for chlorine in the above analysis. The gas is passed up into a eudiometer tube, and the carbonic acid is removed by means of caustic potash: a small portion of bromine is dropped in and shaken in contact with the gas. Potash is again added to remove the bromine vapours, and the absorption is then noted. It is stated that some of the highly illuminating cannel-coal gases are condensed by this process as much as 12 or 14 per cent.; while some of the poorer gases not more than 4 or 5 per cent.

Specific gravity of oil and coal gas an imperfect test of their quality.

The specific gravity of oil and coal gas, and the quantity of oxygen which they require for their perfect combustion, have also been proposed as means of ascertaining their illuminating powers. The latter, however, even if it were a correct test, is determined with considerable difficulty; and that little reliance can be placed on the former may be inferred from the fact that some of the gases which are component parts of oil and coal gas have a great specific gravity without possessing any illuminating power. This will readily be perceived from the subjoined table.

Gases.	Specific Gravity.	Quantity of Oxygen for 100 volumes.
Olefiant gas	·970	300
Carburetted hydrogen	.556	300
Hydrogen	·069	50
Carbonic oxide	·972	50
Carbonic acid	1·538	None.

Of these gases, carbonic oxide and carbonic acid possess the greatest specific gravity; while the latter is not only destitute of illuminating property, but calculated, as we shall afterwards show, to deteriorate to a great extent the quality of the luminiferous gases with which it may happen to be mixed.

Analysis of coal-gas.

There are cases, however, in which it is necessary to determine accurately the composition of a sample of coal-gas, and the following is the now generally adopted method of conducting the analysis.[1] The ingredients or impurities which may be present in the gas are—1. Common hydrogen; 2. olefiant gas and other hydrocarbons; 3. light carburetted hydrogen; 4. carbonic oxide; 5. carbonic acid; 6. sulphuretted hydrogen; 7. ammonia; 8. oxygen and nitrogen derived from the atmosphere. A qualitative examination is made thus—the proportion of ammonia and of sulphuretted hydrogen is usually very minute, and in most cases these gases must be sought for by placing the tests for their presence for some time in a current of the gas. In searching for ammonia a piece of moistened litmus paper feebly reddened is placed for a minute in a jet of the issuing gas. If the blue colour be restored, ammonia is present. Paper soaked in a solution of acetate of lead may be subjected to a similar trial. If it turn brown, sulphuretted hydrogen is present. The presence of oxygen is detected by admitting a bubble of the deutoxide of nitrogen into a tube filled with the gas under trial, and looking through the tube obliquely upon a sheet of white paper; very small traces of oxygen may thus be detected by the red tinge produced, owing to the formation of peroxide of nitrogen. The presence of carbonic acid may be readily detected by throwing up a little lime water, or solution of sub-acetate of lead, into the gas whilst standing in a tube over mercury. The existence of the other gases may be assumed, as they are certain to be present in greater or less quantity. The sulphuretted hydrogen and ammonia being neglected, and supposing that oxygen and carbonic acid are found to be present, seven different gases are therefore supposed to exist in the mixture. The following method may be adopted for their quantitative determination:—1. *Oxygen.*—A volume of the gas is confined over mercury, and its bulk is measured with due attention to temperature and pressure. A piece of moist phosphorus, which has been melted upon the end of a long platinum wire to serve as a handle, is introduced from below through the mercury into the tube. After twenty-four hours the phosphorus is withdrawn, when the amount of absorption indicates the proportion of oxygen which was present. 2. *Carbonic Acid.*—This gas is determined in a similar manner, substituting a ball of caustic potash for the phosphorus; the second diminution in bulk shows the proportion of carbonic acid. 3. *Olefiant Gas and Heavy Hydrocarbons.*—These gases are absorbed by introducing a third ball, consisting of porous coke, moistened with fuming sulphuric acid. It is necessary, however, before reading off the volume of the gas, to introduce a ball of potash a second time, to withdraw the vapour of anhydrous sulphuric acid, which possesses sufficient volatility to introduce a serious error by dilating the bulk of the gas, unless it be completely removed. The total amount of absorption will indicate the proportion of olefiant gas, together with the vapours of condensible hydrocarbons. 4. *Carbonic Oxide.*—The separation of carbonic oxide from the other gases is not easily done with accuracy. The gas may be divided into two portions, one of which is to be carefully measured as it stands over mercury, and a small quantity of a solution of subchloride of copper in hydrochloric acid is to be added, and the mixture briskly agitated: the gas is then transferred to a second graduated tube, also standing over mercury, and a ball of potash is introduced for the purpose of absorbing the vapours of hydrochloric acid with which the gas is saturated; the bulk of the gas may then be read off, and the volume of carbonic acid may be known by the loss in bulk. 5. *Nitrogen, Carburetted Hydrogen, and Hydrogen.*—In determining the proportion of these gases, that of the carbonic oxide may also be ascertained, for which purpose a portion of coal-gas, in which the carbonic oxide is still present, is transferred to a siphon-eudiometer, and its bulk is measured: it is then mixed with twice its volume of oxygen, and the bulk of the mixed gases is again measured: the mixture is then exploded by means of the electric spark, and the bulk is a third time measured: call this diminution in bulk a, next inject a small quantity of a strong solution of potash, and the resulting condensation due to the absorption of carbonic acid may be called b; the remaining gases, c, consist of oxygen in excess and nitrogen; the quantity of oxygen in excess is ascertained by mixing the residual gas with twice its bulk of pure hydrogen, and a second time causing the electric spark to pass; one-third of the condensation observed will be due to the excess of oxygen; on deducting this excess from the residue c, the difference gives the quantity of nitrogen. The difference between the amount of the oxygen thus found to be in excess, and that originally introduced, will of course represent the quantity of oxygen consumed; call this d. We have now all the data for calculating the proportion of carburetted hydrogen, of hydrogen, and of carbonic oxide, which are present in the mixture. Let x represent the quantity of light carburetted hydrogen; this gas requires twice its own volume of oxygen for complete combustion, and furnishes its own volume of carbonic acid, which requires an equal volume of oxygen for its formation, or half the amount consumed; the other half of the oxygen being required by the hydrogen, which condenses in the form of water, $2\,x$ will be the diminution in bulk of oxygen which occurs on detonation. Again, when hydrogen is converted into water, it requires half its bulk of oxygen, and both are condensed entirely. If y represent the bulk of the hydrogen, $\frac{3\,y}{2}$ will be the diminution in bulk of the mixed gases on detonation, which is occasioned by the hydrogen in the mixture. Let z represent the volume of carbonic oxide present; carbonic oxide, for conversion into carbonic acid, requires half its bulk of oxygen, the carbonic acid produced occupying the same bulk as the carbonic oxide. $\frac{z}{2}$ will therefore indicate the condensation which occurs on firing the mixture. The total condensation in bulk (a) which occurs on firing a mixture of light carburetted hydrogen, hydrogen, and carbonic oxide, will consequently admit of thus being represented—

$$(1.)\ a = 2x + \frac{3y}{2} + \frac{z}{2}.$$

Further, the quantity of the carbonic acid formed by detonation, b, is composed of a volume of carbonic acid equal in bulk to the light carburetted hydrogen, and a volume equal to that of the carbonic oxide, so that the quantity of carbonic acid may be thus indicated:—

$$(2.)\ b = x + z.$$

And lastly, the oxygen consumed, d, will be composed of the following quantities:—Light carburetted hydrogen, twice its bulk, $2\,x$; hydrogen, half its bulk, $\frac{y}{2}$; carbonic oxide, half its bulk, $\frac{z}{2}$; or the total quantity of oxygen consumed will be the following:—

$$(3.)\ c = 2\,x + \frac{y}{2} + \frac{z}{2}.$$

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[1] Abridged from *Elements of Chemistry*, by Professor Miller, of King's College, London.

From these three equations the values of x, y, z, are determined:—

$$x = c - \frac{a+b}{3}$$

$$y = a - c$$

$$z = \frac{a+4b}{3} - c.$$

Hints respecting the Improvement of Coal-Gas.

Of all the combustible bodies having an elementary character, carbon and hydrogen are not only the most widely and copiously diffused throughout the three kingdoms of nature, but best adapted for the evolution of light during their combustion. It is only, however, when they are united together in due proportion that they answer the purpose most effectually; and, indeed, in a separate state their illuminating powers are so feeble, that even when their combustion is accelerated and rendered more perfect by the presence of oxygen, the light which they yield is yet unfit for many of the useful ends to which light is subservient. The substances in which carbon and hydrogen are united in the best proportion for the production of light are pit-coal in the mineral kingdom, and oils and fatty matter in the animal and vegetable.

The great abundance of coal, and the comparative cheapness at which it can be obtained, give it a decided advantage in point of economy over oleaginous matter, whether of animal or vegetable origin; while the processes of decomposing it, with the view of converting it into a volatile and elastic product, have been so much improved as to render the gas which it yields equally fit for the purpose of illumination with the more costly gases obtained from the oils.

The gas produced by the decomposition of coal and oleaginous matter at a high temperature is a compound of carbon and hydrogen, and consists chiefly of two gases, in which these elementary substances exist in definite proportions. One of these gases is termed carburetted hydrogen, and the other olefiant gas or bicarburetted hydrogen. The former contains one atom of carbon united with two atoms of hydrogen, and the latter an atom of each of these elements.

Light yielded by carburetted hydrogen chiefly derived from the carbon.

Of these two compounds of hydrogen and carbon, that which contains the largest proportion of the latter element is found to yield during its combustion the most brilliant light, and that too for a longer period of time. And, indeed, so great is the difference in these respects, that the hydrogen may not improperly be regarded as the mere solvent or vehicle of the carbon, acting the part of wick, and thus presenting that substance in a state sufficiently comminuted for its more perfect combustion. Accordingly, the more abundantly the hydrogen is impregnated with carbon the greater may we expect to be its illuminating power, and the fitter in every respect for yielding artificial light. These views are fully supported by experiment; for not only is the brilliancy of the light modified by the quantity of carbon held in solution by the hydrogen, but the time which a given portion of the gas takes to consume away by combustion is affected by it in a still greater degree.

Deterioration by admixture with hydrogen.

To determine in what ratio the illuminating power of the gases obtained both from oil and coal was reduced by diluting them in various proportions with hydrogen, we instituted a series of experiments, the results of which are of importance inasmuch as they indicate not only that the mixture is deteriorated, but that the same quantity of carbonaceous matter yields less light the more largely it is diluted with hydrogen.

In the first experiment we took a portion of coal-gas of the specific gravity ·67, which we found to consume at the rate of 4400 cubic inches per hour, and yielded the light of eleven candles, being 400 cubic inches per hour for the light of one candle. This gas being diluted with a fourth part of its bulk of pure hydrogen, acquired the specific gravity ·55, and wasted away at the rate of 6545 cubic inches per hour, yielding the light of ten candles. As a fifth part of the compound gas was hydrogen, the remaining four-fifths, amounting to 5236 cubic inches, was the quantity of the coal-gas which in its diluted state gave the light of ten candles for an hour; so that 524 cubic inches of the original coal-gas were requisite to give the light of one candle for the same time. But, in its unmixed state, 400 cubic inches were sufficient to give the light of one candle for an hour; and consequently, the deterioration occasioned by the dilution was in the ratio of 524 to 400, or of 100 to 76, being 24 per cent. It must be distinctly kept in view that the deterioration has been reckoned, not with respect to the whole volume of the mixture (in which case it would have been 39 per cent.), but simply in reference to the coal-gas itself; and therefore the experiment, so far as it goes, justifies us in adopting the conclusion, that had the hydrogen existed originally in union with the coal-gas, the latter would have improved in quality 24 per cent. by its abstraction; because the residuary portion would not only have lasted longer, but yielded during its combustion a superior light.

In a second experiment, conducted in a similar manner, in which the proportion of hydrogen was one-third of the quantity of the coal-gas, the deterioration was 27 per cent.; in a third experiment, the proportion of hydrogen being a half of the volume of the coal-gas, the deterioration amounted to 31 per cent.; and in a fourth experiment, the quantity of hydrogen being exactly equal to that of the coal-gas, the deterioration extended to 36 per cent.

General conclusions.

These results indicate a progressive deterioration in the quality of coal-gas by the admixture of hydrogen; and the important conclusion to which they lead is, that the abstraction or removal of the latter, though diminishing the entire volume, would improve the nature of the residuary portion not only in a higher ratio than the loss which the whole sustained in its bulk, but render that portion capable of yielding, for a longer period of time, a greater light than it could have done in its original state. Hence it may be inferred that the illuminating power of coal-gas, whether considered with respect to the cost of its production or the intensity of its light, admits of being improved; first, by impregnating the hydrogenous element more largely with carbon; secondly, by preventing the disengagement of hydrogen in a free state during the carbonization of the coal; and lastly, by detaching a portion of that gas from coal-gas when it already exists in admixture with it.

Modes of improving coal-gas.

The first of these modes of improvement seems to be practicable, at least to a certain extent, by thoroughly drying the coal before it is introduced into the retorts, and modifying the pressure under which the gas is generated; the second, by preventing the gas after its formation from being exposed to a high temperature by allowing it to pass over very hot surfaces, the effect of which is to deprive it of carbon. The second object may also be assisted by arresting the process of distillation at an earlier period than is usually practised, hydrogen and carbonic oxide being the products which predominate during the last periods of decomposition. On this point, however, the interests of the public and of the manufacturer are at variance. The consumer pays by measure, and hence it is the interest of the manufacturer to carry on the process of distillation as long as possible, for, by so doing, not only does he increase the quantity of gas but he improves the quality of the coke. With respect to the third mode of improvement, we are unfortunately, in the present state of our knowledge, acquainted with no method of detaching hydrogen from the gases with which it is mixed in oil or coal gas that would not impair the illuminating power of these gases to a greater extent perhaps than the benefit that would be derived from the removal of the hydrogen. A plan has been proposed by Mr Lowe to increase the quantity of carbon in the gas by impregnating it with the vapour of coal naphtha; for which purpose it was proposed to fill the wet gas meter at the house of the consumer with purified naphtha, and to maintain it at the same height by means of a reservoir connected with the meter; by which means the gas would be measured and saturated with naphtha at the same time. A more practical plan was to pass the gas through an ornamental vase containing a sponge saturated with naphtha, and placed at some point between the meter and the burner.

Deterioration of coal-gas by the separation of its particles, by nitrogen.

To determine the diminution of the illuminating power produced by separating the particles of the inflammable gas during its combustion, and thus diminishing the temperature of the flame, it occurred to the writer of the present article that nitrogen, having neither the property of supporting combustion nor of adding to the quantity of combustible matter submitted to that process, was well fitted to answer the intended purpose; and accordingly, on mixing coal-gas of ordinary quality (which, when burnt alone, yielded the light of twelve candles when it consumed 5400 cubic inches per hour) with varying portions of nitrogen, results were obtained which implied that the diminution of the intensity of the light proceeded in a ratio much more rapid than was observed when the gas was diluted with hydrogen. Thus, when six volumes of the coal-gas were mixed with one volume of nitrogen, the expenditure per hour was 6000 cubic inches, and the light equivalent to that of nine candles, being 667 cubic inches per hour for the light of one candle. But one-sixth of the whole being nitrogen, the remaining four-sixths, amounting to 556 cubic inches, was the quantity of the coal-gas which, in its diluted state, afforded the light of a candle for an hour. On the other hand, the quantity of the coal-gas requisite, in its unadulterated state, to give an equal degree of illumination being $\frac{5400}{12}$, or 450 cubic inches, it follows that the deterioration was in the ratio of 556 to 450, or 100 to 81 nearly.

By diluting the same coal-gas with other proportions of nitrogen as subjoined, and afterwards applying to each of the results the same kind of reduction as that which we have already made, we have deduced the following table, which exhibits the gradual deterioration of the illuminating power of the same quantity of coal-gas, produced by the mere separation of the atoms of the gas during its combustion.

Volumes of Coal-gas.	Volumes of Nitrogen.	Illuminating Power
60	0	100
60	10	81
60	12	69
60	15	55
60	20	37
60	30	29
60	60	4

By carbonic acid.

When carbonic acid was used instead of nitrogen, similar results were obtained; only the deterioration was considerably greater. Thus, when five volumes of the coal-gas were mixed with one volume of carbonic acid, the illuminating power was reduced from 100 to 30, whereas in the case of the nitrogen it was from 100 to 69. It is therefore a fortunate circumstance that carbonic acid, which is so apt to be generated during the production of coal-gas, and has so debasing an influence upon its illuminating power, is readily absorbed by a variety of substances; while nitrogen, the less injurious as well as the less abundant accompaniment, cannot be separated from the other gases with which it may exist in mixture by any process yet known.

Deterioration of Gas by keeping it after it is prepared.

Both oil and coal gas suffer, by keeping, a gradual loss in their power of illumination, which seems to increase in a more rapid ratio than the time they are kept. The deterioration, though greatest when the gases are allowed to stand over water, takes place in a considerable degree even when they are kept over oil, or in air-tight vessels. Hence it may be presumed that the carbon held in solution by the hydrogen is separated from that element, partly by its own gravity, and partly perhaps by solution in the water, or by condensation in the liquid form.

Deterioration of oil and coal gas when kept over water.

To whatever cause the deterioration is owing, the fact itself is undoubted. Thus, an oil-gas which, when newly prepared, had the specific gravity 1·054, gave the light of a candle for an hour when it consumed 200 cubic inches; kept two days, it gave the same light with a consumpt of 215 cubic inches per hour; and kept four days, it required for the same light 240 cubic inches per hour. In the case of a portion of coal-gas, which, when newly prepared, required 404 cubic inches to yield the light of a candle for an hour, the same gas kept two days required 430 cubic inches; and kept four days, 460 cubic inches to yield the same light. These results indicate a progressive deterioration in the quality of the gases, increasing with the length of time they are kept; and it is deserving of remark, that in both gases the diminution of the illuminating power decreases in a faster ratio than the time increases. After being kept three weeks, the oil-gas was so much debased in quality that it required 606 cubic inches of it to yield the light of a candle for an hour; and hence its illuminating power was reduced to one-third of what it was when the gas was newly made. From these experiments it may obviously be inferred that both oil and coal gas should be used as soon as possible after they are prepared.

Economy of Coal-Gas.

Gas superior to other modes of illumination, both in point of economy and convenience.

Among the advantages which have resulted from the introduction of coal-gas, we may reckon, first, its comparative cheapness; and, secondly, its superiority to all the other modes of artificial illumination.

In forming a comparative estimate of the cost of coal-gas and that of the other means employed for procuring artificial light, we may contrast it with the expense of wax, tallow, and oil, the ordinary substances used for the purpose. It deserves to be remarked, however, that while the price of coal, in consequence of the regular and abundant supply of that article, is liable to little fluctuation, the cost of wax, tallow, and oil, on account of the more precarious nature of the sources from which they are obtained, varies exceedingly in different seasons. The very extensive use, too, into which coal-gas has been brought, has produced a considerable effect upon the price of oil and tallow, as well as of wax; so that a comparative estimate of the expense of procuring the same extent of illumination from coal-gas and from these substances must appear less favourable to the former than would have been the case had the comparison been made when gas was first introduced. But by way of illustration, the approximative economy of the substances commonly employed for illumination may be contrasted as follows:—Supposing that 5 cubic feet of gas per hour give a light equal to that of 12 candles, then 1000 cubic feet, if burnt at the rate of 5 feet per hour, would give a light equal to that of 12 candles for 200 hours, at the cost of 4s. 6d., which is about the average price of gas in London per 1000 feet at the present time (1855). Suppose the candles to cost 9d. per lb., then 2 lb. of candles, 6 to the lb., would burn for 6⅔ hours, at the cost of 1s. 6d., or 60 lb. would burn 200 hours, at the cost of L.2, 5s. Assuming wax to be three times the price of the candles, the cost of wax candles for 200 hours would be L.6, 15s.; and taking sperm oil at 8s. per gallon, 4 gallons would give a light equal to that of 12 candles for 200 hours, at a cost of

L.1, 12s. So that, by comparing the cost of these various sources of light for equal periods of time, we have—

	L.	s.	d.
For wax candles, the cost of	6	15	0
For tallow candles, „	2	5	0
For sperm oil, „	1	12	0
For gas, „	0	4	6

The expense of gas, as compared with that of the other sources of light, will be—

Gas	1·0	Candles	10·0
Oil	7·1	Wax	30·0

In the above comparison we have taken London gas as the standard, which is scarcely fair, seeing that this gas is inferior in illuminating power to that of most other towns.

But the light obtained from coal-gas is not only procured at a smaller expense; it is also more convenient for most purposes than the light yielded by other substances. In the ordinary mode of lighting by tallow and oil, the light derived from their combustion cannot be diminished in intensity without considerable disadvantage and trouble; whereas in the case of gas, it may be reduced in an instant from the most perfect splendour to the feeblest degree of illumination by the simple adjustment of the stop-cock. The advantages arising from this easy method of regulating the light of gas, when it is used in the chambers of the sick, and indeed in all apartments where a variable but uninterrupted supply of light must be kept up, can only be duly estimated by those who have experienced them. To every branch of manufacturing industry which requires a steady and powerful light, the benefits which have resulted from the introduction of coal-gas are not less important. In many operations the light may be conveyed by means of flexible pipes, connected together with ball-and-socket joints, so as to be almost in contact with the fabric it is intended to illuminate, without the slightest risk of injury; and it may be kept in the same state for many hours in succession, or altered, as circumstances may render necessary.

For lighting churches, theatres, and other public buildings, where a strong and uniform light is required, gas answers the purpose more effectually than any other mode of illumination; partly from the facility of its application, and partly from the diversified and tasteful manner in which the jets of flame may be exhibited in various kinds of burners.

As a street light, its superiority is universally admitted; and from that application of gas it cannot be doubted that the metropolis, and other large towns, have derived great additional security against the perpetration of nocturnal crimes, as well as the means of carrying on the ordinary business of life during the evening with nearly the same convenience as during the full light of day.

Secondary Products.

The chemistry of the gas manufacture has been for some years in a state of mutation, the effect of which has been to bring about important changes in the nature and amount of the secondary products. We may, however, refer to the methods of disposing of the usual secondary products, namely, the coke, the tar, and the ammoniacal liquor. A ton of Newcastle coals of the average weight of 2240 lb. yields—

1 Chaldron of coke	=	1494	lb.
12 Gallons of tar	=	135	„
10 Gallons of ammoniacal liquor	=	100	„
9000 to 10,000 Cubic feet of gas	=	291	„
Loss	=	220	„
		2240	lb.

It is found, on an average, that 1 cwt. of coals yields about 2 bushels of coke. About one-fourth of the quantity of coke produced is used as fuel for heating the retorts, and the remainder is sold. The tar and ammoniacal liquor or gas-water separate in the tar cistern, the tar forming the lower stratum. This is used in the manufacture of patent fuel and of creasote, and as a rough paint for out-door work 100 lb. of tar yield by distillation about 26 lb. of an oily liquid known as *coal-oil.* A light product first distils over, which is called coal-naphtha; the remaining pitch is used for paying the bottoms of ships, wooden piles, &c. The coal-naphtha is used for dissolving caoutchouc, and for burning in the naphtha-lamp. The ammoniacal liquor is used in the manufacture of sal-ammoniac, carbonate of ammonia, and prussian-blue. The presence of cyanogen in the ammoniacal liquor has led to its employment in the manufacture of ferrocyanide of iron or prussian-blue. It is stated that a gallon of ammoniacal liquor, when saturated with sulphuric acid, contains enough of cyanogen and cyanates to form, with a salt of iron, 24 grains of prussian-blue.

The secondary products of the Edinburgh gas works are turned to account at the chemical works, situate at a distance of about two miles from them, the gas works being on a lower level. They are, however, connected by a line of pipes, and the gas liquor is lifted over the shoulder of the Calton Hill by means of a force-pump. The difference of level is then sufficient to carry it to the chemical works. The liquor is left for the tar to subside, but the ammoniacal liquor, consisting of an impure solution of carbonate and hydrosulphuret of ammonia, still contains a portion of tar, which is got rid of by distillation. The larger portion of the distilled liquid is converted into sal-ammoniac, and a portion into sulphate of ammonia. In order to obtain the sal-ammoniac, the liquor is neutralized with hydrochloric acid, and is then pumped into large cauldrons and evaporated to the crystallizing point, when it is drawn off into large vats, and on cooling deposits small feathery crystals; these are transferred to a stone chest, and are dried by the heat of a furnace below. The salt then resembles brown sugar; it is mixed with charcoal powder for the purpose of reducing any oxide of iron which may be present, and thus to get rid of the brown tint in the process of sublimation. The subliming vessels resemble a man's hat, and are arranged in the furnace with the crown downwards; they are about three feet in depth, and two and a half in diameter, and they contain sufficient for a week's charge. Each pot is covered with a leaden cupola, luted on with clay, and the salt is at first allowed to sublime away through a hole in the centre. This occasions some loss, but it appears to be a necessary precaution to prevent porosity in the sublimate. The central hole is then plugged with clay, and the sublimation is continued for a week. In this way hemispherical cakes of sal-ammoniac are produced; they are rasped on the surface to remove crust or colouring matter, and are broken into wedges, which are packed in barrels for exportation.

In preparing sulphate of ammonia the distilled ammoniacal liquor is saturated with sulphuric acid, and concentrated until small crystals are formed, which are removed by perforated ladles, dried, and packed in barrels lined with paper.

The tar, which contains a considerable portion of water, is transferred to a still, where crude naphtha and vapour of water distil over. They separate in consequence of their different densities, and the naphtha is digested with sulphuric acid in a leaden trough. This separates ammonia and other substances; the acid is removed by means of quicklime, the naphtha is washed with water, distilled, and is ready for the market. The remaining tar is raised to a higher temperature, and a liquid less volatile than naphtha is produced; it is termed *pitch-oil*, and is used for impregnating wood, &c. The pitch in the still is then run out, when it settles into a soft solid, for which at Edinburgh no market has yet been found, but it may probably be turned to account as a cheap fuel.

Scarcely any market is found for the tar, which was formerly largely consumed at Continental seaports. The increase of gas-works on the Continent, and the absence of duty on foreign tar as distinguished from British tar, has greatly retarded the sale of the latter abroad.

Since the introduction of the Boghead cannel coal, a new secondary product has been obtained in the form of paraffine. It is separated at the Westminster gas-works as paraffine-oil, and is used for lubricating the machinery.

(A. A—N. & C. T.)

GASCONY, *Fr.* GASCOGNE, an old province of France, out of which have been formed the departments of Landes, Gers, and Hautes Pyrénées, and parts of those of Haute Garonne and Ariège. Its capital was Auch.

GASSE, a district and county of Lower Canada lying between the estuary of the St Lawrence and Chaleur Bay, having an area of 7296 square miles and a population (1851) of 10,904. On its eastern coast is Cape Gaspé, forming the northern boundary of the Bay of Gaspé, an inlet of the Gulf of St Lawrence about 18 miles in length by 6 in width.

GASSENDI (PIERRE GASSEND), one of the most distinguished philosophers of the seventeenth century, was born in the last decade of the sixteenth (22d January 1592) at the village of Chantersier, near Digne in Provence. His family was humble, but his parents were virtuous; and to their instructions and influence Gassendi seems to have owed a more than usual debt of gratitude. His childhood exhibited the most astonishing, not to say incredible, precocity; and, if the feats told of him are true, shows (as M. De Gerando observes in his able sketch of this philosopher in the *Biographie Universelle*[1]) that the feeling which is apt to regard unusual precocity as a treacherous omen is not always to be trusted. At the age of four, Sorbière tells us, he sometimes played among his youthful companions the part of a censor, and imitated the manner of a preacher. At the same tender age he often crept out at night to watch the stars—to the great alarm of his parents. At ten he declaimed in a tiny harangue before the Bishop of Digne (Antony of Boulogne), on the occasion of a pastoral visitation; which struck that prelate (as it well might) with such wonder, that he did not hesitate, in spite of the aforesaid general distrust of precocity, to prophesy the boy-orator's future eminence. Either that, or an early grave, or speedy fatuity, would certainly be a very rational deduction from symptoms of such premature mental activity.

Gassendi was then receiving lessons from the curé of the village; but such was his ardour, that when he had learned the prescribed tasks, he would pursue his solitary studies by the light of the church lamp. At Digne he studied rhetoric, and composed certain *petites comédies.* He then went to Aix to study philosophy under Fesaye, a professor who strongly shared and expressed the rising discontent with the reigning scholastic philosophy. At sixteen our still beardless philosopher was elected to the chair of rhetoric at Digne; but, being destined for the church, speedily returned to Aix to study theology, and other branches appropriate to the ecclesiastical profession. At the early age of twenty-one he was simultaneously elected to the two chairs of philosophy and theology in the university of Aix. He chose the latter, and delivered his first course extemporaneously. He retained this chair for ten years. Not content with merely fulfilling the duties of his chair, he indulged in ample excursions into almost every department of science and literature, and made large collections of notes, which were afterwards of great service to him as a philosophical critic. His favourite pursuits in his leisure hours were astronomy and anatomy. He confesses, too, to a passing *penchant* for astrology; but it soon disappeared, and he became one of the most strenuous opponents of that delusive science. In 1623 he was presented to a benefice in the cathedral of Digne, and gave up his chair in order to surrender himself more completely to study. In the following year he commenced author by the publication of a portion of his *Exercitationes paradoxicæ adversus Aristotelem*, a work which naturally called forth, in equal measure, the censures of the servile lovers of antiquity, and the admiration of the ardent minds who longed to inaugurate a new era in science and philosophy. He himself, according to M. De Gerando, seemed half astonished at the report of his own artillery.[2] But being now committed as author, he desired, says the same writer, "s'éclairer par des observations et des conseils et former des relations utiles." With this view he made excursions in Provence and Dauphiné, visited the capital, and took a journey to the Low Countries and Holland—everywhere forming friendships with the literati of the age, haunting learned establishments and consulting public libraries. With similar views, as a pilgrim of science, he projected, in common with other learned men, a journey to Italy and Constantinople, but this design he never executed. During his stay at Marseilles in 1636 he made some important astronomical observations; and, by the aid of lunar eclipses, ascertained more correctly the limits, in latitude and longitude, of the Mediterranean, the length of which hydrographers, following Ptolemy, had exaggerated in the current charts by no less than 200 leagues. In 1638 he found an ardent friend and admirer in Louis de Valois, afterwards Duc d'Angoulême; and if the philosopher, who ever preferred studious retirement to public life, had been ambitious, he might have availed himself of this patron's aid to secure station and riches. In 1645 there was some thought of making him tutor to the young prince, afterwards Louis XIV., but it came to nothing. He was appointed, however, mathematical lecturer in the Royal College of France by the good offices of the Archbishop of Lyons, brother of Cardinal Richelieu. From that ambitious minister himself he never received any favour; which, says De Gerando, is remarkable, considering the affection of the archbishop and the renown of the philosopher. But, too often, politicians regard neither affection nor merit where talents cannot be serviceable to them, and Gassendi's modest and retiring spirit was little likely to help the ambitious cardinal. Meantime, his fame gradually spread. Amongst his ardent admirers appear royal and noble names:—Christina, Queen of Sweden; Frederick III. of Denmark; a couple of popes; and several French princes. The Cardinal de Retz also highly esteemed and honoured him. But he has more legitimate claims to remembrance than the suffrages of contemporaries illustrious only for rank and station; and indeed, with the exception of De Retz, he is himself better known now than any of the above-mentioned admirers. A more emphatic testimony to the deserved esteem in which he was held is found in his intimacy with all the great literati and philosophers of his day, with most of whom he maintained an active correspondence which forms by no means the least interesting portion of his works. A formidable list of these illustrious friends and acquaintances is given in Sorbière's "General Preface" to Gassendi's works. Galileo conferred upon him signal proofs of esteem, and Gassendi consoled Galileo in his persecutions; though, like Descartes, he prudently declined any chance of sharing them. The martyrs of science have been always scarce.

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[1] The facts of Gassendi's life are abridged from this article and Sorbière's General Preface to the *Opera Omnia.* The limits of a work like the present necessitate brevity, and allow but scanty space even to the writer of six folios. The reader is referred for fuller information to the above preface, entitled *De vitâ et moribus Petri Gassendi*; to Brucker's *Hist. Crit. Phil.*, vol. iv., and *Appendix*; and to De Gerando's *Histoire comparée des systèmes de philosophie*; ample references to other sources will be found in the *Biographie Universelle*, vol. xvi., p. 532, 533.

[2] "Il parut presque intimidé lui-meme de l'avoir tenté."

The lectures of Gassendi at the Royal College were well attended. To astronomy, which had been too much neglected, he gave due prominence. Public speaking, however, was injurious to his lungs, which were always delicate, and he was at length compelled to desist. He then repaired to Digne for the benefit of his native air, and also spent some pleasant time under the hospitable roof of his friend and patron Louis de Valois, Earl of Alais. During this interval he was chiefly occupied in composing his biographies. He finally returned to Paris, where, after a long and gradual decay, he died October 14, 1655. His death is said to have been hastened by the mad phlebotomy then in vogue. He himself had often condemned the practice; somewhat inconsistently, it will be thought, since he allowed himself to be killed by the Sangrados of his day. He is said to have reconciled himself to the treatment to which he submitted, though he could not approve it, by the thought that the weakness it induced would probably diminish the pangs of dissolution. His last words, as he begged his attendant to feel the feeble pulsation of his heart, were, "You see what man's life is!" He was buried in the church of St Nicholas des Champs, where he is honoured by a mausoleum and bust.

The countenance of Gassendi is very imposing. The broad, massive brow, full eye, and expressive contour of the face, bespeak a mind full of intelligence, vivacity, and benevolence.[1]

The character of Gassendi's intellect is everywhere indicated by his works;—it was *critical* rather than *inventive*. Probably no one was ever better qualified to be a genuine historian of philosophy, possessing as he did keen analytical skill, in conjunction with profound and accurate erudition. His *Syntagma Philosophicum* everywhere displays these characteristics. It is a vast attempt to exhibit in one encyclopædic view the entire circle of science as then known;—logic, physics, physiology, ethics, all find a place there. Subjects are discussed with a minuteness, copiousness, and patience, which remind one of the style in which questions, equally subtle and intractable, and not always more profitless, are treated in the *Summa Theologiæ* of Thomas Aquinas. Gassendi's powers of acquisition must have been singularly active; nor was his logical acuteness, or the liveliness of his imagination, much inferior to the promptness and retentiveness of his memory. His learning is never mere learning; like that of many of his erudite contemporaries, it ministers to his intellect, but does not oppress it. The vivacity of his mind animates and penetrates the mass; and the acuteness of his reasoning and the exuberance of his illustrations relieve of much of their tedium discussions in themselves often uninviting enough.

The intellectual characteristics of Gassendi, as compared with those of the far more original and profound Descartes, are sharply set off in a long and elaborate parallel in the article by De Gerando in the *Biographie Universelle*, and it will be well to find space for a translation of a few of its more discriminating touches. "There was no less opposition," says he, "between the character of their minds than between the principles of their systems. The genius of Descartes, full of originality, energy, and audacity, aspired in all things to *create;* the understanding of Gassendi, reserved, prudent, calm, and investigating, contented itself with a sound judgment of everything; Descartes, shut up in himself, strove to reconstruct universal science by the force of meditation alone; Gassendi, observing nature, studying the writings of all ages, strove to co-ordinate facts, and to make an enlightened election among opinions. The former, proceeding in the track of the geometers, deduced from a few simple principles a long train of corollaries: the second, imitating the naturalists, collected a great number of given facts in order to draw solid deductions from their comparison. The former evinced admirable ability in the art of forming a system, the latter excelled in the criticism of other people's systems. The one, an absolute dogmatist, loved to speak in the style of a master, perhaps because he was conscious of profound convictions, and did not patiently bear contradiction; the other, a skilled dialectician, unravelled objections with art, distrusted himself, and easily entertained doubts which presented themselves. The one made great and veritable discoveries, and at the same time wandered into rash hypotheses; the other brought together a great number of partial truths, and, above all, destroyed a great number of errors."

The qualities of Gassendi's mind are perhaps nowhere more distinctly marked than in his commentary on the *Tenth Book of Diogenes Laertius*, and his tractate on the life and philosophy of Epicurus. In his attempt to ascertain, illustrate, and defend the philosophy of his favourite Epicurus, there was ample scope for his exuberant learning, his critical acumen, and his eclectic tendencies. It is a pity that he should have been so inordinately enamoured of this Greek philosopher; for his strong expressions have invited accusations, and even given colour to them, which seem wholly unfounded. Whatever his predilections for the atomic philosophy, he explicitly repudiates the irreligious dogmas founded upon it; and acknowledges that a supreme intelligence alone created and organized matter, alone imparted and conserves its laws and properties. "Metaphysics, morals, and physics," says M. de Gerando, "are conformed to the opinions of Epicurus; *yet* with the modifications which the principles of Christianity demand." Whether even the eclectic criticism of Gassendi could *quite* harmonize such materials, even by the most judicious selections and rejections, may be a question; but that he sincerely *thought* he had advanced nothing contrary to Christianity, is evident from the entire tenor of his declarations; and he must be believed unless we are determined on a more unpleasant alternative—that of supposing him at least as great a hypocrite as philosopher.[2] If the works just referred to exhibit as distinctly as any the more marked features of Gassendi's intellectual character, it is the *Syntagma Philosophicum*, of course, which displays all the endowments of this great philosopher in their amplest form. The remarks on the *Meditations* of Descartes, however (supplied at the request of Father Mersenne), best present many of its phases. They are marked by an acuteness and vivacity which he never surpassed.

As a metaphysician it has been mentioned that, however ingenious and learned, he is yet *critical* rather than

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[1] The engraving in the folio edition of his works (1728) is in striking contrast with the grim effigies of Tycho Brahe and Copernicus in the quarto which contains Gassendi's lives of those philosophers. But it must be confessed the art of engraving had made prodigious progress in the interval.

[2] After avowing his orthodoxy very explicitly, he says, in the Proemial Book of his *Syntagma*, "Et videri quidem potest Epicurus arridere præ ceteris . . . . at non idcirco aut probo omnia quæ illius sunt,—*etiam* Religionis *non* attinentia placita; aut quæ probo non sic amplector ut indubia certaque habeam . . . ."—*Opera*, tom. i., p. 25. Edit. Florent.

creative. The same must be said of him as a mathematician and physical philosopher. His attainments in the mathematics were such as to elicit the praises of Barrow, no incompetent judge; and doubtless his fame might have been yet greater had he not, like Barrow himself, Pascal, Descartes, and so many other great mathematicians, varied or combined this study with so many very different pursuits. It seems, if we may judge by the conduct of almost every great mathematician from the time of those just mentioned to the present day, that, delightful as is the discovery and contemplation of mathematical truth, it cannot alone fill or content the mind. It is hardly possible to name instances of great mathematicians who are known *only* as great mathematicians, or who have not profoundly studied some branches either of physics or abstract science. Gassendi, according to Sorbière, avowedly valued mathematics chiefly as an indispensable instrument of discovery in physical science.

Ardently attached to the new philosophy of experiment, Gassendi was one of the first Frenchmen, if not the first, who fully appreciated Bacon, and, in introducing him to his countrymen, paid ungrudging homage to his genius.[1] Though such an admirer, however, of the new school of physics, he himself, as in other departments, made but moderate contributions to discovery. Here, too, his genius was *critical.* But it is not to be forgotten that he was the first to observe the transit of a planet across the sun's disc—verifying the prediction of Galileo—and that, as before mentioned, he made some valuable hydrographic corrections by means of lunar eclipses.

As Gassendi is among the most literary of philosophers, so is he also among the most voluminous. Six volumes folio attest the vastness of his industry, no less than his erudition and versatility. These have been twice printed; once at Lyons in 1658, under the editorship of Montmort and Sorbière, and once at Florence in 1728. The first two volumes are occupied entirely with his *Syntagma Philosophicum;* the third contains his critical writings on Epicurus, Aristotle, Descartes, Fludd, and Lord Herbert, with some occasional pieces on certain problems of physics; the fourth, his *Institutio Astronomica,* and his *Commentarii de rebus celestibus;* the fifth, his commentary on the Tenth Book of Diogenes Laertius, the biographies of Epicurus, Peiresc, Tycho Brahe, Copernicus, Peurbach, and Regiomontanus, with some tracts on the value of Ancient Money, on the Roman Calendar, and on the theory of Music; to all which is appended a large and prolix piece, entitled *Notitia Ecclesiæ Diniensis;*—the sixth volume contains his correspondence. The *Lives,* especially of Copernicus, Tycho, and Peiresc, have been justly admired. That of Peiresc has been repeatedly printed; it has also been translated into English. Gassendi was one of the first, after the revival of letters, who treated the *literature* of philosophy in a lively way. His writings of this kind, though too laudatory and somewhat diffuse, have great merit; they abound in those anecdotal details, natural yet not obvious reflections, and vivacious turns of thought, which made Gibbon style him, with some extravagance certainly, though it was true enough up to Gassendi's time—"le meilleur philosophe des litterateurs, et le meilleur litterateur des philosophes." Gassendi wrote in Latin; it is to be regretted that he did not compose some of his works in French. There is little doubt that he would have given us another specimen of that happy philosophical style in which his countrymen have so signally excelled from Descartes' time downwards; as it is, his writings, as might be expected from the qualities of his mind, are perspicuous and lucid in an eminent degree; but the style is very diffuse, and, in many cases, cumbersome, a fault which it may be reasonably supposed would have been obviated if he had written in his vernacular. His illustrations and examples, especially in the leisurely exposition of the voluminous *Syntagma Philosophicum,* are often multiplied to tediousness, though generally apt and well selected. Instances both of the merits and faults in question may be seen in the parts of the *Syntagma* where he treats "de Sensibus *speciatim,*" and (more briefly) in the chapter "de Instinctu Brutorum."[2]

The personal character of Gassendi must have been exceedingly attractive. Of his winning manners, agreeable social qualities, and modesty, there is a pleasing proof recorded by Sorbière, and pleasantly repeated by De Gerando. "Marivat having travelled from Paris to Grenoble in his company without suspecting his name, desired on arriving to be presented to the celebrated Gassendi. He was greatly surprised to recognise him in the amiable companion with whom he had conversed on the route. This behaviour reminds us of that of Plato when he returned from Syracuse into Greece." His temper and manners were such as became a philosopher, and a Christian philosopher rather than a disciple of Epicurus—whose precepts, if capable of being harmonized with virtue, are yet easily perverted to vice. It may be doubted whether any philosopher ever lived more philosophically than Gassendi, if we may judge by the testimony of Sorbière in the preface to the *Opera Omnia.* His eulogium records virtues which make us love the man even more than we revere the philosopher; and with a trait or two from it we shall conclude this notice of his character. "When I consider his private life, I seem to see before me some anchorite, who, in the midst of a crowded city, has set up the severe rule of the desert; so heartily did he embrace a life of poverty, chaste celibacy, and obedience, though unconstrained by any vows. Contented with little, he envied none their riches; none the richer for the patronage of the wealthy, he dispensed whatever he received with a liberal hand. He was voluntarily abstemious, rarely touched flesh, generally subsisted on vegetables, and breakfasted and supped on oatmeal porridge." Sorbière pronounces a deserved eulogium on his modesty, humility, and benevolence.

The precise character and position of the philosophic system of Gassendi has, like that of so many other philosophers, been much debated. It is a topic which there is no space to discuss here, but which cannot be wholly passed by, since from misapprehension Gassendi has been treated with less than justice by eminent philosophical critics, and among the rest by Dugald Stewart in the "Preliminary Dissertation."

By critics in general, fifty years ago, he would have been regarded as a genuine precursor of the naked and undisguised sensational French philosophy of the last century; by other and later critics, he is represented as having taught a philosophy not very dissimilar in its main principles from that of Locke. Locke, indeed, is even supposed by some to have derived more from the acute Frenchman than he has allowed the generality of his readers to suspect. Of this a word or two presently.

Meantime, the truth with regard to Gassendi seems to be, that, like many other philosophers who have written folios, and produced their works at distant intervals and under very different circumstances, he has not been altogether consistent in the exhibition of himself. Assuredly his tone is very different when urging with so much vigour all the possible "objections" which ingenuity could discover to Descartes' *Meditations*, and when systematically developing his own doctrines in his *Syntagma Philosophicum*. "The main scope," says Dugald Stewart in the Preliminary Dissertation, "of Gassendi's argument against Descartes is to materialize that class of our ideas which the Lockists as well as the Cartesians consider as the exclusive objects of the power of *reflection*, and to show that these ideas are all ultimately resolvable into images or conceptions borrowed from things external." If we look *only* at the animadversions on Descartes, there is much to favour these observations. But then, again, as Hallam justly observes, if we examine the *Syntagma Philosophicum*, even the Proemial Book, even the Logic, but more especially the important chapters in the Physics "De Phantasiâ" and "De Intellectu"—we cannot fail to perceive that this estimate is erroneous, and that Gassendi is very far indeed from resolving all the phenomena of mind into sensation. This Hallam has truly remarked, and has supplied a few extracts from the above chapters of Gassendi in proof. The explanation of the apparent discrepancies, this writer says, is difficult. "Whether he urged some of his objections against the Cartesian metaphysics with a regard to victory rather than truth, or, as would be the more candid and perhaps more reasonable hypothesis, he was induced by the acuteness of his great antagonist to review and reform his own opinions, I must leave to the philosophical reader."[1]

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[1] "Is videlicet meditatus attendensque, quam sit exiguum, quod, ex quo tempore homines philosophari cæperunt, circa veritatem, intimæque rerum naturæ notitiam consecuti sunt; *ausu vere Heroico* novam tentare viam est ausus . . . ."—*Opera,* tom. i., p. 55. Edit. Florent.

[2] *Syntag. Phil. Physicæ,* part iii., sect. iii., lib. vii.; viii., cap. v.

It seems highly probable that both explanations are correct. In accepting Mersenne's invitation, issued by Descartes' commands, to find as much fault as possible with the celebrated *Meditations* (which made such pretensions to logical rigour), Gassendi would naturally be tempted to urge every objection to the uttermost; and would probably challenge the *proof* of assertions, when he thought it weak, not less where he agreed with the conclusions themselves than where he denied them. This seems to have been obviously his course in some cases.[2] In such a controversy the true position is apt often to be forgotten both by him who writes and by him who reads. Challenged to show the invalidity of the reasoning which is employed to support a given conclusion, the objector is apt to speak and to be interpreted as if he contended not only for the validity of his objections, but for an *opposite* conclusion from that of his opponent. This may or not be. In Gassendi's case it is sometimes the conclusion as well as the reasoning, sometimes the reasoning only, to which he is opposed.

From Gassendi's "objections" his own *positive* opinions on the points in question are not always inferrible. We must look at his dogmatical explanations of his own views as a safer criterion, and we find these in the *Syntagma*. It must be added that a certain degree of personal feeling evidently gave sharpness to his criticisms on Descartes; and, philosopher though he was, being still a mortal man, this could not but exert some influence. On the other hand, when writing his *Syntagma*, Gassendi was freed from all such bias; he was no longer the advocate but the judge; he had to show, not merely that such reasoning on behalf of such and such conclusions was not valid, but *what* conclusions he held himself. He had also had the opportunity of reading all his great antagonist's "criticisms" on his *own* "criticisms," and doubtless profited by them; and lastly, though the interval, as Hallam says, between the controversy with Descartes and the commencement of the ponderous *Syntagma Philosophicum* was but brief—the dates being 1641 and 1642—yet before its author had reached the chapters "De Phantasiâ" and "De Intellectu" (nearly 1000 closely-printed folio columns from the commencement), he would have had abundant time to review any opinions of an earlier date, and profit by the discussions with his illustrious opponent.

Be this as it may, the chapter on the "Human Intellect" shows incontrovertibly that Gassendi was far removed from the sensationalists. While he maintains constantly his favourite maxim "that there is nothing in the intellect which has not been in the senses;" while he contends that the imaginative faculty, "phantasia," is the counterpart of sense; that like that, as it has to do with material images, it is itself material, and essentially the same both in men and brutes,—the chapter "De Intellectu" plainly proves that he could consistently mean nothing more than that "sensations" are the invariable and indispensable antecedents and conditions of the evolution of the phenomena of intellect; for he admits that the intellect, which he affirms to be "immaterial" and "immortal"—the most characteristic distinction of humanity,—attains notions and truths of which no effort of sensation or imagination can give us the slightest apprehension.[3] He instances in the capacity of forming "general notions;" in the very conception of *universality* itself,[4] to which he says brutes, who partake as truly as men in the faculty he calls "phantasia," never attain; in the notion of God, whom he says we may *imagine* to be corporeal, but *understand* to be incorporeal; and lastly, in the "reflex actions" by which the mind makes its own phenomena and operations the objects of attention.[5]

His remarks on the last point—his very phraseology, "actiones reflexivæ," certainly remind one of Locke, and have suggested that Gassendi's system was the source of Locke's. It *was* so, exclaims Stewart, of the *false* system of Locke into which the sensational schools of France distorted that of the English philosopher. To this it seems sufficient to reply, as before, that Gassendi himself, in his more deliberate exhibition of his philosophy, does *not* belong to those schools. At the same time, whether Locke had ever studied the system of Gassendi is somewhat doubtful. That he was not, at all events, *conscious* of any signal obligations to Gassendi, may be inferred for the following reasons:—1. Locke's distinct assertion, to Stillingfleet and others, that, right or wrong, his system had been the fruit of his own excogitation. 2. That if he had consciously borrowed from Gassendi, he, who was a model of honour and candour as a writer, would not have failed to acknowledge his obligations. 3. The very name of Gassendi scarcely occurs in all his writings;[6] and though it may be said that this silence was natural if conscious that he had *stolen*, it is inconsistent with his character that he should have so acted; the silence would have become a thief, but not John Locke. 4. He was no *helluo librorum*, and the *Syntagma* extends to two ponderous folios. It is true that the abridgment by Bernier in 8 vols. (if such an abuse of the term may be allowed) was published in 1678, and this, Locke, who was certainly in habits of intercourse with Bernier at Paris in 1677, might have seen. 5. But, supposing him to have seen it, what then? The utmost that can be said is, that it is probable that the remarks on the reflex operations of the mind, and the terms "*actiones reflexivæ*" (used, however, by Gassendi not with a view to a classification of mental phenomena, *but incidentally, in proof of the mind's immateriality*) may have unconsciously suggested to Locke his second great division of ideas, and the phraseology in which he has couched it. But the observations themselves are far too scanty to have been of much service to Locke in constructing his general theory, still less in that elaborate and minute analysis of the "ideas of reflection" which constitutes the bulk of the "Essay." The whole of the two books on "Imagination" and "Intellect" in the *Syntagma* would not make above an eighth of Locke's "Essay," and the greater part of these is occupied with questions which Locke has expressly renounced as belonging to a hopeless psychology; as, for example, whether imagination be material or immaterial (Gassendi deciding for the former)—of how many kinds, or how, mechanically or physiologically, related to sensation—whether and in what sense it can be said to possess reason—whether it be identical with the similar faculty in brutes. Such questions, together with the history of opinions, Gassendi is as prone to discuss as Locke to decline them. The opinion of De Gerando, however, on the relations of Locke's philosophy to Gassendi's is well entitled to attention. (H. R.)

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[1] *Literature of Europe*, vol. iv., p. 203.

[2] It must have been so when so severely challenging Descartes' *proof* of the immateriality of the soul, or of the existence of the material world, for Gassendi denied neither.

[3] "Itaque est in nobis intellectionis species qua ratiocinando eo provehimur, ut aliquid *intelligamus, quod imaginari seu cujus habere obversantem imaginem, quantumcunque animi vireis contenderimus,* non possimus."—*De Intellectu*, cap. ii. Opera, tom. ii., p. 383.

[4] ". . Non modo universalia, universaleisve notiones formamus, sed percipimus quoque ipsam rationem universalitatis."—*Ib.*, p. 384.

[5] "Alterum est genus reflexarum actionum quibus intellectus seipsum, suasque functiones intelligit, ac speciatim se intelligere animadvertit. Videlicet hoc munus est omni facultate corporeâ superius."—*Ib.*, p. 384.

[6] He has just introduced his name in the controversy with Stillingfleet, and that is all.

GASTRIC JUICE (γαστήρ), the name given to a transparent and colourless fluid which is the principal agent in affecting those changes that constitute digestion, that is, which convert the aliment into chyme. This secretion has a saline and somewhat bitter taste, occasionally possessing acid properties, but probably in its natural and healthy condition being neither acid nor alkaline. It contains a small proportion of albumen, together with a matter which is either gelatin or mucus. But while it thus differs to all appearance in so trifling a degree from many of the other secretions, it yet possesses very extraordinary solvent powers over the substances usually employed as food. Even when made to act upon these substances in vessels out of the body, provided they are kept in a temperature equal to that of the human body, it will reduce them in a few hours to the state of a soft pulp, producing apparently the very same change which is induced upon the same species of aliment by the digestive process within the stomach. There are three ways in which the gastric juice acts on alimentary matter; the first is that of coagulation, which is exerted on all the fluid forms of albumen, whether existing in the serum of the blood, or the white of the egg, or in different secretions, more especially milk. It is by means of this property, indeed, that cheese is obtained from the coagulation of its albuminous portion by the addition of rennet, which is an infusion of the digestive stomach of a calf. The object of this coagulation appears to be to detain the substance for a longer time in the stomach, and subject it more completely to the solvent power of the same fluid, by its previous reduction to a solid form, which prevents its escape by the pylorus. The second kind of action is that of counteracting the tendency to putrefaction, and even to the acescent fermentation. This effect takes place in a remarkable degree in many carnivorous animals, which frequently take their food in a half putrid state, and in which the first operation of the gastric juice is to remove from it all putrescence; showing that this secretion possesses the property not only of preventing putrefaction from taking place, but also of suspending its further progress when it has actually commenced. The third species of chemical action exhibited by the gastric juice is that of solution. That this effect takes place independently of any concurrent mechanical operation of the muscular powers of the stomach has been very decisively proved by the experiments of Réaumur, of Stevens, and of Spallanzani. Those of Stevens in particular are highly valuable, as having been made on a man who was in the habit of swallowing stones, which he could afterwards, by a voluntary effort, reject by vomiting from his stomach. Taking advantage of this power, Stevens induced him to swallow hollow metallic spheres perforated with holes, and filled with different alimentary substances, which, after being allowed to remain a sufficient time in the stomach, were returned, and their contents examined. It was invariably found that the food under these circumstances of exposure to the gastric fluid alone, with protection from external pressure of a mechanical nature, was more or less completely dissolved, and reduced to the state of pulp. He afterwards pursued a similar train of experiments on dogs, causing them to swallow the perforated spheres, and after a certain time destroying the animals, and examining the changes effected in their contents. Spallanzani has also varied and multiplied experiments of this kind in a manner that leaves no room to doubt the truth of the conclusion deduced from them as to the solvent power of the gastric secretion. Dense membranes and even bones are reduced into a pulpy mass by this fluid in many animals, while at the same time many bodies of comparatively delicate textures, such as the skins of fruits, and the fibres of flax or cotton, are not in the slightest degree affected by it. This difference of action on different substances is analogous to the operation of chemical affinity, and corroborates the theory that digestion is effected principally by chemical agency. The results of these experiments have been fully confirmed by experiments made on the stomachs of persons who, in consequence of a wound, had a permanent opening into that organ from the exterior of the abdomen.

Portions of the stomach are sometimes found dissolved after death, more especially when death has occurred suddenly during the act of digestion. This effect can never take place during life, because the living structures resist the solvent power of the gastric juice. Acid is frequently developed during imperfect digestion; but it appears from the experiments of Dr Prout and others, that this effect is also attendant upon healthy digestion, and that it is principally the muriatic acid which is thus disengaged from its combinations, and makes its appearance in a free state. The lactic acid, which appears to be a modification of the acetic, is also present in considerable quantity. Tiedemann and Gmelin found the acetic acid always present in the gastric juice. They observe that many of the substances employed as food which are not soluble in water are so in the diluted muriatic and acetic acids at a high temperature, and they are inclined to ascribe to a chemical solution of this kind the principal change effected by digestion. Among the agents concerned in the digestion of the aliment, the high temperature at which the contents of the stomach and intestines are retained must be considered as one of the most important. While digestion is taking place, both orifices of the stomach are closed, and there often comes on a feeling of chilliness, especially in a weakly constitution, in consequence of the demand which the stomach makes upon it for an additional supply of heat to assist in the process. There is also disinclination to exertion, and frequently a tendency to sleep. Yet the indulgence in this disposition, as well as violent exercise immediately after a meal, tend equally to retard the formation of chyme. The circumstances most favourable to perfect digestion are gentle exercise, with cheerfulness, and moderate mental exertion.

GASTROTOMY (γαστήρ, and τέμνω *I cut*), the operation of cutting open the abdomen, as in the *Cæsarian operation*.

GATA, a town of Spain, province of Estremadura, 60 miles N. by W. of Cáceres, on the right bank of the river Gata. It is not well built, has narrow crooked streets, three small squares, a fine parish church with a tall spire; a chapel, a large town-house built in 1843, with the lower story for a prison, an hospital, and several schools. Its manufactures are linen and woollen fabrics, white wax, wine, oil, soap, and hats. Its trade is chiefly in these and in grain and cattle. The pop. in 1854 was 3762.

Gata, a secular town of Spain, in the province and archbishopric of Valencia. The district lies between those of Lliber and Jabea, and is very irregular and mountainous in surface, especially towards the east, where Mount Mongo stands. Gata is about 60 miles from Alicante, on the right bank of the Jalon, and contains nearly 2000 inhabitants. The surrounding district produces silk, almonds, raisins, figs, olive-oil, carob-fruit, wine, wheat and other cereal grains, maize, and pulse. The chief objects of industry are basket-making, and utensils for the cultivation of the dwarf-palm, which abounds in an indigenous state in this district.

Gata, *Rio de*, a small river of Spain, in the province of Estremadura. It rises near the town of the same name from numerous large springs in the Sierras de Gata, Jalama, Moncayo, &c., which all unite near a mill called the Infernal, on the road which passes between the Piezas de la Moraleja and Perales, afterwards falling into the Arrago, which joins the Alagon about four miles below the town of Casillas.

Gata, *Sierra de*, in Spain, a ridge of mountains between Leon and Estremadura, commencing east at the termination of the Peña Francia, and extending S.S.W. into Portugal, where it unites with the Serra de Estrella. Two branches nearly perpendicular to its axis shoot out from it; one north, forming the watershed between the Aqueda and the Coa; and the other south, between the Alagon and the Erjas. The main chain forms part of the watershed between the Tagus and the Duero or Douro. This entire chain is almost wholly composed of granite.

Gata, *Cabo de*, a headland of Spain, in Andalucia, in the province and 22 miles S.E. of Almeria, on the east side of the Gulf of Gata, in Lat. 36. 44. N. and Long. 2. 14. W. In the centre of the promontory of Gata are four hills; and a rocky mass about 80 yards from the beach, formed of crystallized limestone, rises to the height of 215 feet above the sea, and contains a marble quarry in which corundum and agates are found, and large masses of carnelian. Its ancient name was *Charidemi Promontorium*, the S. point of Hispania Tarraconensis. It lay directly opposite to the mouth of the river Malva in Mauretania. (Ptol. ii. 4, 7.)

GATAKER, Thomas, was born in London, in 1574, and educated at St John's College, Cambridge. From the year 1601 till 1611 he held the appointment of preacher to the Society of Lincoln's Inn, which he resigned on obtaining the rectory of Rotherhithe. In 1619 he published a curious treatise, historical and theological, *On the Nature and Use of Lots*, which gave rise to much controversy. Gataker, in order to allow the storm to subside, went on a tour to the Netherlands, where he confuted some of the English Papists in Flanders. In 1642 he had the honour of being appointed one of the Assembly of Divines who met at Westminster, having obtained much celebrity from his *Opera Critica*, and other remarkably able works, chiefly on sacred literature. The part of the Assembly's Annotations upon the Bible executed by him are those on Isaiah, Jeremiah, and the Lamentations, which have considerable merit. At Westminster he disapproved of the introduction of the Covenant, and declared himself in favour of episcopacy. He zealously opposed the trial of Charles I; and from ill-health declined the mastership of Trinity College, Cambridge. He died in 1654. The best edition of his works is that published at Utrecht in 1668, folio. Echard says he was the most celebrated among the divines assembled at Westminster, being highly esteemed by Salmasius and other foreigners. He was alike remarkable for exemplary piety, charity, humility, and modesty; while his acquaintance with polite literature greatly increased his standing as a scholar.

GATEHOUSE, a burgh of barony and river port of Scotland, county of Kirkcudbright, on the Fleet, about a mile and a half above its influx into Fleet Bay, and six miles N.W. of Kirkcudbright. It stands in a romantic valley, surrounded on three sides by well-wooded hills. Brewing and tanning are carried on, as well as cotton and soap manufactures. The river is navigable for vessels of 180 tons. Market-day Saturday. Pop. (1851) 1750.

GATES, Horatio, an American general of the war of independence, was born in England in 1728. After serving in the English army and obtaining considerable promotion, he purchased an estate in Virginia, where he resided till the commencement of the revolutionary war in 1775. The immediate cause of his retirement was a wound which he had received while accompanying General Braddock in his unfortunate expedition against the French settlements on the Ohio in 1755. Having taken the popular side in the war of independence, Gates was appointed by Congress adjutant-general; and during the struggle he amply justified the high confidence placed in him by rendering many brilliant services to his adopted country. In 1776 he was appointed to command the army on Lake Champlain; but his conduct here not having been approved of, he was superseded in the following spring; yet in August he was sent to oppose General Burgoyne, whom he totally defeated on the 16th of October and compelled to surrender his whole army, which was justly considered the most important achievement of the war from its having the greatest effect in procuring the result that followed. After obtaining the chief command, however, in the southern districts, Gates was signally defeated at Cambden, in South Carolina, by Lord Cornwallis, on the 16th of August 1780. He was now superseded in his command by General Greene; and it was intimated to him that Congress had also resolved to submit his conduct to a court of inquiry. The investigation continued till after the close of the war in 1782; but it terminated in acquitting him fully and honourably of any blame, as his defeat had been unavoidable in the disorganized state of the army he commanded against Cornwallis. After this he again retired to his Virginian estate, whence he removed to New York in 1800. On his arrival he was immediately admitted to the freedom of the city, and then elected a member of the State Legislature. We should not omit to mention that before his departure from Virginia he performed the noblest act of his life—the emancipation of his slaves, accompanying their manumission with a provision for those who needed assistance. He died on the 10th of April 1806, aged 77 years.

GATESHEAD, a municipal and parliamentary borough and market-town of England, county of Durham, on the right bank of the Tyne, opposite Newcastle, with which it is connected by a handsome stone bridge, as well as by a magnificent bridge of the York, Newcastle, and Berwick railway. The town consists of two principal and nearly parallel streets, from which others diverge in various directions. The parish church is an ancient cruciform edifice surmounted by a lofty tower. Besides the parish church there are St John's Church, Gateshead Fell, St Cuthbert's Church, St Edmund's Chapel, and places of worship for Presbyterians, Independents, Methodists, Roman Catholics, &c. Gateshead has extensive glass manufactories, iron and soap works, brick and tile works, rope-works, &c. There are numerous coal mines in the vicinity. At Gateshead Fell are large quarries for grindstones, which are much esteemed, and exported to all parts of the world. Gateshead is governed by a mayor, 6 aldermen, and 18 councillors, and returns one member to parliament. Pop. (1851) 25,568.

GATH, one of the five principal cities of the Philistines, and the birthplace or residence of Goliath. It was conquered by David, and fortified both by him and by Rehoboam. Under Jehoash, Hazael king of Syria took Gath, but it was recovered from his successor Benhadad. It must, however, have soon revolted; for Uzziah finding it necessary to war against the Philistines, "broke down the wall of Gath." "Gath," says Jerome (on Micah i.) "is one of the five Philistine cities lying near the confines of Judah, on the road from Eleutheropolis to Gaza; now it is a very large village." On Jerem. xxv. the same authority declares that Gath was not far from Azotus. Modern travellers give no description of the place (Reland, *Palæst.* p. 785, *sq.*)

GATSHINA, a town of Russia, government of St Petersburg, 30 miles S. by W. of the capital. It has a palace, formerly a favourite residence of the late empress, spouse of Alexander I., a foundling hospital, school of agriculture, and a porcelain manufactory. Pop. 7000.

GAUCIN or Gauzin, a secular town of Spain, in the province of Granada, and bishopric of Málaga, from which it is distant 48 miles W.S.W. It is situated on the slope of the Sierra del Hacho; or more accurately on the Serrania de Ronda, over against Gibraltar, between the Sierra Crestellina and Mount Heaho, on the eastern declivity of the Serrata. It is well built, its streets are steep, wide, clean, and well-paved; it has a chapel, a parish church, three squares, a handsome town and session-house, a prison, a granary, three schools, and an ancient strong Moorish castle occupying the summit of an adjacent rock, in an almost inaccessible position, and garrisoned by infantry and artillery. It has manufactures of brandy, wine, oil, cotton, linen, and woollen fabrics, hats, leather, and soap. Its trade consists chiefly in cloth, lace, silks, baize, fruits, wine, brandy, and cattle. The pop. in 1855 was nearly 6000.

GAUDEN, John, the reputed author of the "Icon Basilike," was born in 1605, at Mayfield in Essex, of which parish his father was vicar. He was educated at Bury St Edmunds, and afterwards at St John's College, Cambridge. Selecting the church as a profession, he obtained in 1630 the living of Chippenham, and various other valuable preferments in rapid succession. His promotion, however, speedy as it was, did not keep pace with his desires; and when the civil war broke out, he found himself under the sad necessity of siding with one or other of the two parties. Though probably a royalist at heart, he had the tact to seem favourable to the parliamentarians, and was rewarded for some supposed services with the valuable living of Bocking in Essex. He here outwardly conformed with all the requirements of the law; but judiciously resolving to be provided against the chances of fortune, wrote secretly a "protestation" against the king's trial, and a "Just Invective against those who murdered King Charles I.," besides other loyal effusions. None of these, however, appeared till two years after the Restoration. The most remarkable of them by far was the *Icon Basilike, or Portraiture of his Sacred Majesty in his Solitude and Sufferings,* which, in the course of one year, passed through fifty editions. The evidence on which Gauden's claims to the authorship of this work rest is very fully canvassed by Sir James Mackintosh, *Edinburgh Review*, vol. xliv., and by him pronounced satisfactory. For his service to the royal cause Gauden was made Bishop of Exeter, and afterwards of Worcester. He died in 1662; and it is said that his death was hastened by his poignant grief for losing the rich see of Winchester on which he had set his heart.

GAUDENS, St, a town of France, capital of a cognominal arrondissement in the department of Haute Garonne, on a hill near the left bank of the Garonne, 45 miles S.W. of Toulouse. It has tribunals of primary jurisdiction and commerce; a communal college; manufactures of serge and tape; sawing, paper, and other mills; and a brisk trade in agricultural produce. Pop. (1851) of town 4905, of arrondissement, 147,096.

GAUGING, the art of measuring the contents of casks or vessels of any form. Gauging forms a part of mensuration, but is frequently practised by persons unacquainted with its theoretical principles, who work by certain rules, with the aid of a gauging-rod, and by the sliding rule. The ordinary gauging-rod consists of four rules made of boxwood, each a foot long, and united by brass joints, so that it may be folded together. See Mensuration.

The term *gauge* or *gage* is applied in various ways, but always with reference to measure or proportion; or, in the literal sense of the word, to that which bounds or confines something else. Thus in physics it is applied to several instruments or apparatus for measuring the state of a phenomenon; such as the wind-gage, the rain-gage, the barometer-gage for measuring the degree of pressure of the air within the receiver of an air-pump, &c.: in architecture, to the length of a slate below the lap: in railway engineering, to the space between the rails; and the like.

GAUL. See Gallia, and France.

GAUSS, Karl Friedrich, an eminent German mathematician, was born of humble parents at Brunswick, April 23, 1777. He distinguished himself greatly while a student, and in his twenty-fifth year made his name widely known by his *Disquisitiones Mathematicæ*, a work full of the most subtle mathematical speculation applied to the higher branches of arithmetical science. In 1809 he published at Hamburg his *Theoria Motus Corporum Cœlestium*, which gave a powerful impulse to the true methods of astronomical observation, towards which much care was at this period directed. Two years before this time he had been chosen director of the Göttingen Observatory, an office which he retained till his death, despite the many tempting offers he received of more honourable and lucrative positions elsewhere. So attached was he to his university, and so closely bent on his studies, that he never but on one occasion slept away from under the roof of his own observatory. In that solitary instance he had accepted an urgent invitation from Humboldt to attend a meeting of natural philosophers at Berlin. His only other acknowledged work, *Theoria Combinationis Observationum Minime Erroribus Obnoxiæ*, appeared at Göttingen in 1823, and conferred a lasting boon on the cause of science; and many of his papers read before the society of Göttingen are hardly less valuable. Gauss was well versed in general literature and the chief languages of modern Europe, and was a member of nearly all the leading scientific societies of Europe. It is related that Laplace, when asked who was the greatest mathematician of Germany, replied, "Pfaff" (the teacher of Gauss). His questioner said he had thought Gauss even more profound. "Ah," said Laplace, "I esteem Pfaff the greatest mathematician in Germany; but Gauss the greatest mathematician in Europe." Gauss died at Göttingen early in the spring of 1855.

GAUZE, a very light transparent textile fabric, made sometimes of silk and sometimes of linen thread. It is said to have been invented at Gaza in Palestine, and hence the name.

Gauze Wire-cloth, a textile fabric of wire, more or less fine. It is used for safety-lamps, sieves, framed window-blinds, &c.

GAVIA-GRANDE, a secular town of Spain, in the province and archbishopric of Granada. It is situated in a plain on the left bank of the Genil, and surrounded with beautiful gardens and fields of the richest verdure, teeming with grain and fruits in their season. It contains a parish church, a primary school, and has manufactures of linen, several oil-mills, gypsum and stone quarries, as well as a good trade in flax, hemp, and corn. It is three miles distant from Granada, and has a population of nearly 5000.

GAVIA, Gabia, or Gavea, in Brazil, a group of mountains in the Tijuco range, in the province of Rio de Janeiro, near the coast. It is about 16 miles S.E. of Rio de Janeiro, in Lat. 23. N. The highest peak, named from its appearance "Topsail mountain," is designated by English mariners "Lord Hood's Nose." It is flat on the top, and composed mostly of granite, rising almost perpendicularly from the sea to the height of 2100 feet. At its base are the bar and roadstead of the Rio Tijuco.

GAVIAO, a town of Portugal, in the province of Alentejo, on an elevated situation near the left bank of the Tagus (Tejo). It is 22 miles N.W. of Crato, and contains a population of nearly 2000. An annual fair of three days is held here.

GAVEL-KIND, in English law, a species of tenure of lands, which previous to the Norman conquest is supposed to have been the general custom of the realm, and which exists to this day in Kent, in consequence, it is said, of the success that attended the struggles of the Kentish men to preserve their ancient liberties. The chief distinguishing properties of gavel-kind are—that the lands descend not to the eldest, youngest, or any one son only, but to all the sons together; that the tenant may aliene his estate at fifteen years of age by means of a feoffment; and that the estate does not escheat in case of an attainder and execution for felony, the maxim being, "the father to the bough, the son to the plough." In most places the tenant had the power of devising lands by will, before the statute for that purpose was made. Though the lands in Kent have now for the most part been *disgavelled* by particular statutes, the presumption is still in favour of this species of tenure until the contrary be shown.

The term *gavel-kind* is said by Lambard to be compounded of three Saxon words, *gyfe*, *eal*, *kyn*, or *omnibus cognatione proximis data.* Verstegan calls it *gavel-kind*, or give all kind, that is, to each child his part; and Taylor, in his history of *gavel-kind*, derives it from the British *gavel*, a hold or tenure, and *cenned*, *generatio* or *familia;* and so *gavel cenned* might signify *tenura generationis.*

GAVOTTA (Italian), a lively dance-tune in two-fourth time, consisting of two sections, each containing eight measures.

GAWELGUR, a strong fortress of Hindustan, in the dominions of the Nizam or ruler of Hyderabad. It stands on a high and rocky hill between the Poornah and Taptee rivers, in one of the provinces recently alienated by the Nizam to the British in aid of the funds required for the maintenance of his military contingent. The fortress consists of a citadel with an inner fort, which fronts the north, where the rock is most inaccessible; the citadel is defended by an outer fort, and both are very strongly fortified; and the ascent by the road is very long and steep, and well defended. Notwithstanding these strong defences, it was taken by the army under General Wellesley, December 14, 1803, after a siege of only two days. It was restored to the rajah on the conclusion of the peace. Gawelgur is 15 miles N.N.W. from Ellichpoor. E. Long. 77. 23., N. Lat. 21. 20.

GAY, JOHN, one of the most eminent of the secondary English poets, was a native of Devonshire, born in 1688 at Frithelstock, near Torrington, where his family had been long settled. His father dying when the future poet was only about six years of age, and leaving four children, the prospects of the family were unpromising; and John, after receiving his education at the grammar-school of Barnstaple, was put apprentice to a silk mercer in London. He disliked the employment, obtained his discharge, and embarked on a literary life, varied only by incessant efforts to obtain the patronage of the great. How he lived up to his twenty-second year is not stated. In 1710 he published his poem of *Wine*, an enumeration of the charms of the "enlivening grape," written in the grave, mock-heroic, and minutely descriptive style, which he afterwards displayed with greater power in his *Trivia*. In 1712 he was received into the household of the Duchess of Monmouth in the capacity of secretary to her Grace. Next year he published his *Rural Sports*, inscribed to Pope; and this seems to have led to a friendship between the poets uninterrupted and sincere. The superiority of Pope was freely conceded. There could be no rivalry on the part of Gay, and Pope appears to have exerted himself on every occasion to serve his friend. Gay's ambition was limited to a life of ease, fine dressing, and a luxurious table, in all of which he had marvellous success, but little contentment. In the years 1713 and 1714, besides the *Rural Sports*, he produced a comedy, *The Wife of Bath*, which was acted only three nights, *The Fan*, a poem, and the *The Shepherd's Week*, a series of six pastorals drawn from English rustic life. Pope is believed to have incited his friend to this task in order to cast ridicule on the arcadian pastorals of Ambrose Philips, who had been lavishly praised in the *Guardian* (ignoring the claims of Pope) as the first pastoral writer of the age, and the true English Theocritus. The malicious wit was completely successful, but Gay's ludicrous pictures of the English swains and their loves were found to be interesting and amusing without reference to their sarcastic origin. The poem was popular, and the author's reputation considerably advanced. In this fortunate year Gay was appointed secretary to the Earl of Clarendon, ambassador to the court of Hanover; but the death of Queen Anne, August 1, 1714, soon put an end to his hopes of permanent official employment. He then tried the drama, and produced his farce of *What d'ye Call it?* which was acted with little success in February 1714–15. In 1716 appeared his *Trivia, or the Art of Walking the Streets of London*, a poem in three books, for which he acknowledged having received several hints from Swift. It is an excellent *town* poem, containing graphic and humorous descriptions of the London of that period. In January 1716–17 the comedy of *Three Hours after Marriage* was brought on the stage, and emphatically condemned. In this piece Gay was assisted by Pope and Arbuthnot. Pope is distinctly visible in his allusions to Dennis the critic; and it is remarkable that three such men should have produced a play so dull, unnatural, and gross. In 1720 Gay collected his poems and published them by subscription, by which he is said to have realized L.1000. Secretary Craggs also presented him with some South Sea Stock; and Gay called in his friends to advise as to the investment of his riches. Erasmus Lewis, according to Johnson, advised him to intrust his money to the funds, and live upon the interest. Arbuthnot bade him intrust it to Providence, and live upon the principal; while Pope directed him, and was seconded by Swift, to purchase an annuity. This was Pope's own prudent system; but Gay, like many others who ask advice, followed none, but took his own way. He embarked all in South Sea Stock; and refusing to sell out before the bubble burst, he lost the actual principal as well as the anticipated profit. The calamity overwhelmed him; his life was despaired of; but his friends exerted themselves to cheer and succour the desponding bard. Lord Burlington entertained him for months in his princely house at Chiswick; and Pope, Arbuthnot, and the other members of the circle, were unceasing in their attentions. By the beginning of 1724 he had a new play ready, a tragedy called the *Captives*, which was patronized by the Princess (afterwards Queen) Caroline and the Prince of Wales. His next performance was the *Beggar's Opera*, written in ridicule of the Italian Opera, which for a time it drove off the English stage. Swift suggested the subject, and Pope is believed to have added some poignancy to the satirical songs; but Gay's own *bonhomie* and voluptuous style colour the whole. The play ran to the end of the season, sixty-two nights, four of which were for the benefit of the author, and produced to him the handsome sum of L.693, 13s. 6d. The same year he sold his copyright of the *Opera*, with Fifty Fables in verse, for ninety guineas. The success of *The Beggar's Opera* induced Gay to attempt a continuation of the operatic style. He wrote another piece, *Polly*, with no satirical design, as he states; but the lord chamberlain prohibited its representation. The poet then resorted to publication by subscription; his friends were again active—the Duchess of Queensberry even bearding royalty in resentment of the refusal of the license; and Gay must have cleared above L.1000 by what was deemed his oppression. The Duke of Queensberry received Gay into his house, and the duchess treated him with equal respect for his talents and character. This clever, beautiful, and eccentric woman—the idol of the poets—appears nowhere to more advantage than in her affectionate patronage of Gay, and her long-cherished regret for his loss. The poet died, after a short illness, December 4, 1732, and the Duke and Duchess of Queensberry honoured his remains with a splendid funeral and monument in Westminster Abbey. A second volume of Fables, and another opera, *Achilles*, had been written by Gay, and they were published after his death, the profits going to his sisters, two widow ladies, who inherited by the poet's death no less than L.6000. Pope and Swift—always ready to blame the court and courtiers, though far from averse to their society—have censured Mrs Howard, afterwards Countess of Suffolk, for not more zealously promoting the interests of Gay by her supposed influence with the king. One offer was made to the poet—the situation of gentleman-usher to the Princess Louisa, a child—but he declined it on account of his being, as he writes to Swift, so far advanced in life. He was only thirty-nine; but all Gay's friends seem to have treated the offer as an indignity. When the queen's establishment was made up in 1727, they expected some more important office for their favourite associate, though it is not easy to discover what appointment about the court could have been better adapted to one so easy, so natural, and helpless. Mrs Howard, it is now known, had very little influence with her royal master. The real power was in the hands of the queen, and the philosophical Caroline was content that his Majesty (who hated *bhoetry* and *bhainting*, and looked upon poets as mechanics) should possess what mistresses he pleased, provided that the state power and patronage continued with herself and Walpole. But it may be safely said, that no man could have acquired such a body of great and accomplished friends as those which rallied round Gay, and mourned his loss, without the possession of many valuable and endearing qualities. His poetry is neither high nor pure; but he had humour, a fine vein of fancy, and powers of observation and local painting which bespeak the close poetical student and the happy literary artist. (R. C—S.)

GAYAH, or Boodh Gayah, a town of Hindustan, in the British district of Behar, under the jurisdiction of the lieutenant-governor of Bengal. It was one of the most celebrated places of Hindu pilgrimage, having been the birthplace of Boodh or Buddha, one of the supposed incarnations of the Deity. Many extraordinary ceremonies are performed here by those who frequent the sacred spot. Among these many of the female pilgrims, especially widows, are in the practice of shaving their hair, and devoting themselves from that time to a life of sanctity. The whole business is under the superintendence of Brahmins, who permit any person to enter the temple and approach the idol, which is that of a man sitting cross-legged, and so very rudely carved as to indicate a very remote antiquity. The town consists of two divisions, one of which is appropriated to the priests and their attendants. The number of pilgrims resorting annually to Gayah has been estimated at 100,000, though in some years this amount has been doubled. According to a recent return, the number of houses amounts to 9165, and the population to 43,451. Distant N.W. of Calcutta 265 miles. E. Long. 85. 5., N. Lat. 24. 49.

GAYATRI, the holiest verse of the Vedas, not to be uttered to ears profane, but to be recited only mentally. It is a short prayer to the sun, identified with the supreme being, and occurs in the 10th hymn of the 4th section of the 3d ashtaká of the Sanhitá of the Rigveda—*Tat savitur varenyam bhargo devasya dhimahi dhiyo yo nah prachodayát, i.e.* "We meditate on that excellent light of the divine sun; may he illuminate our minds."—*Rigveda*, iii. 4, 10. Such is the fear of profaning this text, that copyists of the Vedas often refrain from transcribing it both in the Sanhitá and the Bháshya.—Wilson, *Vishnu Parána*, p. 122, note 13. This hymn, ascribed to Vishwámitra, is properly the only Gáyatrí; though, according to a system of the Tántrikas, a number of mystical verses bear the same name. It is usually personified as a goddess, wife of Brahmá, and metaphorical mother of the first three castes.—Rosen's *Rigvedæ Specimen*, p. 13, London, 1830. [It appears to be the feminine of some obsolete word, *gáyatra*, derivable from *gai*, "to sing."]

GAY-LUSSAC, Nicolas François, is justly reckoned among the most distinguished of the chemists and natural philosophers of the age. He was born at St Léonard (Haute-Vienne), December 6, 1778, and was educated at L'École Polytechnique, where he attracted the attention of Berthollet; and from thence he passed to L'École des Ponts et Chaussées.

The expansion of gases had long been a subject of investigation among the savans of his day; and though the young Gay-Lussac was as yet but on the threshold of the temple of science, he set his heart upon resolving the important problem. The result of his experiments was, that the difference of the proportions hitherto obtained was owing to the presence of water in the gases, and that when perfectly free from moisture they all dilate uniformly with every degree of increased heat. By further experiments on mercury he ascertained that it dilates equably from the temperature of ice (32° Fahr.) to that of boiling water (212° Fahr.), and that at the same time it increases one-third in volume.

Intimately connected with the expansion of gases was that of balloons, to which Gay-Lussac's attention was particularly directed by some observations of the natural philosopher Charles, who remarked what important experiments in magnetism, electricity, and atmospheric phenomena might be made in the higher regions of the atmosphere by means of balloons. See Aeronautics, vol. ii., p. 181.

The services which Gay-Lussac had thus rendered to science were rewarded by the general esteem of the eminent men of the day, and especially by the friendship of Alexander von Humboldt, in company with whom he made a tour through France, Switzerland, Italy, and Germany, in the years 1805 and 1806, taking magnetic observations at various stations between the latitudes of Naples and Berlin, with a view to determine the position of the magnetic equator, and its intersection with the terrestrial equator. One result, among other important discoveries, was that the great chains of mountains, and even volcanoes, have no perceptible influence on the magnetic force, and that it diminishes in proportion to the distance from the terrestrial equator.

Another important class of Gay-Lussac's experiments was in connection with the voltaic or galvanic pile. He missed, indeed, the reward promised by Napoleon for the most important discoveries obtained by means of this apparatus, the French Institute having decreed it to Sir Humphry Davy, who by its use discovered potassium and sodium, demonstrating that the two substances called potass and soda are not simple bodies, but combinations of oxygen, with a metallic base. These researches, however, the French philosopher had the merit of following up. The Institute having provided the means of constructing a battery for operations on a great scale, appointed Gay-Lussac and Thénard to preside over the experiments for which the battery was designed. In 1811 these able chemists published, in two 8vo volumes, and under the title of *Recherches physico-chimiques*, the experiments of several years. The results appear chiefly to have been the obtaining of potassium and sodium in greater proportions than those mentioned by Sir H. Davy; the decomposition of alkalies by fire at a high temperature; the separation of boron from boracic acid; the analysis of organic products by their combustion by means of chlorate of potass; and, finally, they demonstrated that sugar, starch, and wood contain nearly the same proportions of hydrogen and oxygen as water.

Gay-Lussac published his curious researches on the theory of vapours and capillary attraction; on the expansion of gases; on the nature of chloric and hydrosulphuric acids; his observations on the number and nature of metallic oxides; and his experiments on cyanogen and iodine in the *Annales de Chimie et de Physique*, which he edited in concert with Arago; *Le Bulletin de la Société Philomathique;* and *Les Mémoires de la Société d'Arcueil*, which was partly edited by Humboldt.

Few men have led such a life of scientific industry as Gay-Lussac. There is scarcely a branch of chemical or physical science to which he did not contribute some important discovery. Among these, his discovery of the general laws in the composition of bodies, particularly in the animal and vegetable kingdoms, may be considered the most distinguished. He was an able and ingenious manipulator, and it would be impossible to recapitulate in a brief memoir a tithe of his philosophical labours, and their important bearings on the progress of natural science. In 1808 he became a member of the Académie des Sciences; in 1816, professor of chemistry at the Jardin du Roi and L'École Polytechnique; and there were few learned societies in France or elsewhere of which he was not a member.

In 1831, being elected deputy for his native department, La Haute-Vienne, Gay-Lussac was called to a new sphere of duty. It would seem that he had never studied the higher questions of legislation and government, or attached himself to any political creed; but he took part in discussions relative to industrial matters, to commerce, to public instruction, and to various educational establishments. After the dissolution of the government in 1837, he was re-elected to the same office, but missed his election in 1839. Immediately after this disappointment he was elevated to the dignity of a peer of France, by an ordonnance of the king, dated March 1839.

After a long life thus devoted to the interests of science, Gay-Lussac died at his residence in the Jardin des Plantes of Paris, May 9, 1850, in the 72d year of his age. (A. F. F.)

GAZA, an ancient city of Palestine, mentioned in Gen. x. 19 as one of the border cities of the Canaanites. In the division of the land Gaza fell to the lot of Judah, and was taken by him, with the coast thereof; but its inhabitants were not exterminated, and it always appears in Scripture history as a Philistine city. Gaza occurs several times in the history of Samson, being the city of which he carried away the doors of the gate, and that in which he pulled down the temple of Dagon. It was one of the five Philistine cities which gave each a golden emerod as a trespass offering to the Lord, on account of the ark. Solomon's kingdom extended as far as Gaza; and Hezekiah smote the Philistines as far as Gaza. It was besieged by Alexander the Great after the destruction of Tyre, and taken after an obstinate defence of several months. Jonathan Maccabæus destroyed its suburbs, and Simon Maccabæus took the city itself, though not without extraordinary efforts. Alexander Jannæus besieged it in vain for twelve months, when it was betrayed into his hands. It was among the cities given by Augustus to Herod, after whose death it was united to the province of Syria. It was near Gaza, on the road from Jerusalem to that place, that Philip baptized the ennuch "of great authority under Candace queen of the Ethiopians." It lies on the road leading from Akabah to Hebron, which passes along nearly the whole length of the great Wady-el-Arabah; in N. Lat. 31. 29., E. Long. 34. 29. The port of Gaza, called *Majuma Gazæ*, was situated about 20 stadia from the city. The emperor Constantine conferred important privileges upon it, and gave it the name of Constantia. Julian took away its name and privileges, which, however, were restored by subsequent emperors. The modern town, called by the Arabs *Ghuzzeh*, is situated partly on a hill about 60 feet above the plain, and partly on the plain below. Including the suburbs, the modern town contains about 10,000 inhabitants.

GAZELLE. See index to MAMMALIA.

GAZETTE, a newspaper containing an account of such transactions and events, whether of a public or private nature, as are deemed important and interesting. The word is said to be derived from *gazzeta*, the name of a Venetian coin, which was the price of the first newspaper printed at Venice, and came to be applied to the newspaper itself.

The *London Gazette* was first printed at Oxford in 1665 by the university printer, and the first twenty-three numbers were called *The Oxford Gazette.* These numbers were reprinted in London, and the publication was then continued in the metropolis. *The London Gazette* was originally published twice a-week, and comprized two pages of small folio, containing scraps of foreign intelligence, shipping news, appointments of sheriffs, circuits of the judges, orders in council, notices of non-payment of duties, and such like. At the end of two years a few advertisements crept in of goods lost, run-away servants, offenders, and then of lotteries of books, books for sale, and books published, and later the puffs of quack medicines. For the first twenty years the publication continued with little change in matter or form; but in the beginning of the eighteenth century we find extra numbers, the origin of the "Gazette extraordinary," published on the arrival of mails from Holland, and the gazettes extended in size to contain *in extenso* the despatches from our military and naval officers.

The original use of the gazette is continued to this day. It is the means by which the government formally promulgates all state intelligence, all matters of public interest affecting the royal family, orders in council, proclamations, addresses to the throne, offers of pardon, and military despatches. In it the ecclesiastical, civil, and military appointments are also published, or as it is called "gazetted;" but this does not appear to be governed by any uniform rule, for the appointment of a judge of the superior courts is not gazetted, while the mere nomination of a country solicitor to administer an oath, or to do some other formal act, does not fail to be fully recorded.

The gazette, which so long filled only two pages, now usually extends to thirty or forty. This great addition of space chiefly arises from the number of notices connected with trade and commerce, and required by enactments passed from time to time rendering insertion in the *London Gazette* a legal formality. All fiats, meetings of creditors, dividends, and certificates are inserted under the bankruptcy law, and under the insolvency law all declarations of insolvency, and applications for protection to the insolvency court; dissolutions of partnership, returns of the prices of corn, sugar, &c. are also gazetted. Further insertion is required of notices and decrees of the courts of chancery and exchequer, legal notices of sales under orders of the law courts, notices to the heirs of deceased persons, of the meetings of public companies, &c.

The office of gazette writer was formerly an appointment of some importance, but it has recently been placed upon an altered footing, and an officer who is jointly "editor, manager, and publisher," is now solely responsible for the conduct of the publication. He is appointed by the home and foreign secretaries alternately.

In 1831 the receipts for advertising notices and sale of gazettes was L.15,083, and the cost of publishing L.7807, the balance or profit being divided between the home office and the foreign office, and applied towards the expenses of those departments. In 1848 the receipts were L.17,182, and the expenses L.6195, the balance being divided as already described. But from this year a new arrangement commenced, and the receipts were paid into the exchequer to the public account, and the expenses defrayed by an annual parliamentary grant. The advertisements are paid for on a fixed scale; and the charge to the public for the gazette is—not exceeding four pages 4d., for every additional eight pages 8d., for thirty-two or more pages 2s. 8d. The gazette is subjected to the same postal regulations as an ordinary newspaper.

A gazette, called the *Edinburgh Gazette*, is published in Edinburgh upon precisely the same principles as the *London Gazette*. In 1853 it was proposed to combine these two publications, to prevent the necessity of inserting certain notices and advertisements in both, and a bill was introduced in the House of Commons to effect this, but was not proceeded with. Up to 1848 the profits of the *Edinburgh Gazette* were in the hands of private persons. Since then, by an arrangement with these interests, the proceeds have been paid into the exchequer, by which the charge is now borne. In 1849 the receipts of the publication were L.3190, and the expenses L.1325.

At Dublin a similar publication—the *Dublin Gazette*—exists. It does not appear that the receipts of this publication have been sufficient to cover the expenses. In 1849 they were L.1256, and the outlay L.1519.

Government publish also twice a-week a *Police Gazette*, under the superintendence of the chief police magistrate (Bow Street Court). This publication contains information upon aggravated offences, stolen property, escaped thieves and suspected persons, and lists of deserters from the army, navy, and militia. It is circulated gratuitously to the police, and passed free of postage. It may be purchased at 1d. per number. (S. R.)

GAZTELUGACHE, an island of Spain, on the coast of Biscaya, to which it is united by two very elevated bridges to the S.W. of Cape Machichaco, in 43. 29. N. Lat. It is a rugged hill, or rather an extraordinary huge rock, appearing as if in the act of falling into the sea. On its summit stands the church of the Decapitation of St John the Baptist, one of the two parish churches of the village of San Pelayo de Baquio, in the jurisdiction of Bermeo. In earlier times it was a monastery of the Templars. It is reached by a flight of 370 steps, and has long been a celebrated sanctuary for the Biscayans, as well as for sailors in distress.

GED, William, the inventor of the art of stereotyping, was born at Edinburgh about the beginning of the eighteenth century. In 1725 he first put in practice the art which he had discovered; and some years later he entered into a partnership with a London capitalist, with a view to employing it on a great scale. The partnership, however, turned out very ill; and Ged, broken-hearted at his want of success, died at London in 1749. The only books which he produced on the plan of stereotyping were two prayer-books for the university of Cambridge, and an edition of Sallust.

GEDDES, Alexander, an eminent Catholic divine, was born in 1737 at Ruthven, in Banffshire, in the north of Scotland. His parents were of humble rank, and unable out of their own resources to educate their son. The kindness of a rich neighbour supplied the means; and young Geddes, after a seven years' course at the Roman Catholic seminary of Scalan, was sent to the Scottish College at Paris, where he made great progress in theology, and mastered the most important of the modern tongues. On his return to Scotland he became private chaplain to Lord Traquair, a Catholic nobleman in Peeblesshire, and in 1769 priest to the congregation of Auchinhalrig in his native county. He here gained a very strong hold over the affections of his people, by the completeness of his self-devotion to their welfare. Now it was that the idea of a new translation of the Bible adapted for the Catholics of England occurred to him; but during his whole stay at Auchinhalrig, his straitened means prevented him from procuring the needful books. In 1779 he went to settle in London, with a view to carrying out this design, taking with him the good opinion of his people, and the degree of LL.D. from the university of Aberdeen, which, since the Reformation, had never bestowed a similar honour on any Catholic. He had there the good fortune to make the acquaintance of Lord Petre, who supplied him with the necessary books, and a handsome allowance till his task should be completed. With this assistance he began his work; and in 1780 published a prospectus of it, which bore that the Vulgate was to be the basis of the new version. Finding, however, that the Vulgate was in many places inaccurate, he changed his plan, and resolved to translate directly from the Hebrew and Greek originals. Everything that hard toil could do to make this great undertaking as complete as possible was done; and in 1786 Geddes published a conspectus of his new plan, with a specimen of the work, and afterwards a "General Answer to the Queries, Counsels, and Criticisms" which these called forth. Despite his indefatigable exertions, he was not able to publish the results of his labours till the year 1792, when he gave to the world the first volume of his version under the title of "The Holy Bible, or the Books accounted sacred by the Jews and Christians, otherwise called the Books of the Old and New Covenants, faithfully translated from corrected texts of the originals, with various readings, explanatory notes, and critical remarks." Next year appeared the second volume, which brought down the work to the end of the historical books; and in 1800 the third, which contained his critique on the Pentateuch. This was the last volume that he was destined to publish. In 1802, while engaged on a translation of the Psalms, he was cut off rather suddenly in the sixty-fifth year of his age. His version of the Psalms, which he completed as far as the 118th, was published in 1807.

Geddes's theological opinions were on many points so different from those then current in England, that for some time he stood quite alone, an object of equal alarm and hostility to his own church and all the Protestant denominations. The former, indeed, set the example of the persecution, to which he was for a considerable period subjected. His independence of thought and action was the cause of his leaving Auchinhalrig; and after he published his version of the Bible, a majority of the Catholic bishops in England forbade its use in their sees, while the apostolic vicar of the London district interdicted him from officiating as priest. This is hardly to be wondered at, as Geddes denied not only many of the tenets of the Romish Church, but even the authority of the pope. He denied the inspiration of the Scriptures, the divine legation of Moses (whose miracles he either rejected altogether, or tried to explain away according to natural laws), and pronounced the Mosaic account of the creation "A most beautiful mythos or philosophical fiction, contrived with great wisdom, and dressed up in the garb of real history." This view will be seen at a glance to identify Geddes with the school of German Rationalists, the leaders of which, Paulus and Eichhorn, were his personal friends. It is no wonder that accusations of infidelity, and an ill-masked desire to destroy the authority of Scripture, were heaped upon him from all quarters. To dissipate these charges, he published an "Address," in which he proclaimed himself "a sincere though unworthy disciple of Christ," and denounced those as the real enemies of religion "who seek to support her on rotten props, which moulder away at the first touch of reason and leave the fabric in the dust." Despite these assurances, however, Geddes continued to be looked upon as a dangerous champion of infidelity; and his works, if they did nothing more, at least directed the thoughts of men to establishing the principles of Christianity on a surer basis than before. The credit refused to his honesty and ability at home was readily conceded by his German friends, Paulus and Eichhorn, the latter of whom declared Geddes to be the only English theological writer of that day by whose opinion he would consent to be judged. The foregoing facts have been taken from the "Life of Geddes," by Dr Mason Good, London, 1803. The biographer gives a very detailed list, with specimens of Geddes's compositions in all the languages with which he was acquainted, and a full analysis of his translation of the Bible. This work he criticises as "for the most part plain and perspicuous, conveying the sense of the original in its native simplicity. But his language is occasionally unequal, and strongly partakes of the alternations of his own physical constitution; in consequence of which, in the midst of a passage most exquisitely rendered in the main, we are at times surprised with scholastic and extraneous expressions, or disgusted with intolerable vulgarisms." The "Life of Geddes" also contains some interesting specimens of the Latin correspondence carried on for many years between the Scottish philosopher and his most eminent friends and fellow-labourers in the same field in Germany.

GEELONG, a town of South Australia, Victoria colony, Grant county, at the head of Geelong harbour, the western arm of the bay of Port Philip, 40 miles S.W. of Melbourne. Since the discovery in 1851 of the gold fields at Ballarat, 40 miles N.N.W. of Geelong, this town has rapidly risen into importance. It is situated in a very pleasant and fertile district, adorned with numerous cottages and gardens, and the climate is mild and salubrious. The town is built on the harbour of Corio, by means of which a great trade is carried on. Large vessels discharge their cargoes into lighters six miles below the town. Pop. (1853) about 20,000.

GEFLE, a seaport-town of Sweden, capital of the län or province of Gefleborg, situated at the mouth of the Gefle river in the gulf of Bothnia, 92 miles N.N.W. of Stockholm. The river is here separated into three branches, forming two islands, on which, as well as on either bank, the town is built. It is the seat of a governor-general, and has a castle, a town-hall, one of the finest in the country, a gymnasium, hospital, orphan asylum, &c. The chief manufactures are tobacco, linen, sailcloth, leather, and sugar. It has a good harbour, defended by a long jetty, and carries on an extensive export trade in iron, timber, pitch, tar, &c. Pop. 9000. The province of Gefleborg has an area of 7531 square miles, and a population (1850) of 120,158.

GEHENNA, a term used in the New Testament to signify hell, and which is derived from the Hebrew *Ge-hinnom*, *i.e.* the valley of Hinnom. In this valley, which lies on the north side of Jerusalem, below Mount Zion, there was a place named Tophet, where, under idolatrous kings, children were immolated in honour of the god Moloch. When king Josiah overthrew that idolatry, he made this valley the receptacle for all the filth and carcasses in the city, and a fire was kept constantly burning to consume the combustible portions of the refuse deposited there; on which account the Jews, as they had no proper word in their language to signify "hell," made use of *gehinnom* as an equivalent term.

GELA, a city on a river of the same name on the south coast of Sicily, founded by the Rhodians from Lindus in conjunction with a colony of Cretans, about the year 690 B.C., very near the site of the modern Terranuova on the Fiume di Terranuova, betweeen Agrigentum and Camarina. Gela soon rose to great wealth and power, and sent out a colony in 582 B.C. to found Agrigentum, which soon rose to greater eminence than the mother city. The most important of its rulers were Cleander, who subverted the oligarchical form of government, and raised himself to despotic power (505–498 B.C.); Hippocrates, his brother, who received the sovereign authority from him, and raised Gela to its highest pitch of eminence (498–491 B.C.); Gelon, who immediately succeeded Hippocrates, and rapidly pursued the same career of aggrandisement, till in 485 B.C. he succeeded in making himself master of Syracuse itself, to which he transferred the seat of government, and thus caused the commencement of the decline of his native Gela; and Hiero, brother of Gelon, whom he succeeded in the sovereignty (478 B.C.) After this time the place gradually fell into decay, and in the time of Augustus was uninhabited.

Gela was the birthplace of Apollodorus, a comic poet of note; and was the place of Æschylus's death, 456 B.C.

GELASIUS, the name of two Roman pontiffs, the first of whom came to the papal throne in 492. He took part in the conflict then going on between the Greek and Latin Churches, but with no particular result. He also wrote some theological works, which have been partly preserved in the *Bibliotheca Maxima Patrium* of Lyons.

The second Gelasius became pope in 1118. After suffering many hardships and indignities from the partizans of the emperors of Germany, then at war with the popes, he fled from Rome, and finally retired to Rheims in France, where he maintained a sort of semblance of his ancient authority. He died in 1119.

GELATINE, or JELLY, an animal product which is extracted by long-continued boiling in water from all the hard and solid parts, such as the skin, cartilages, bones, ligaments, tendons, membranes, and muscles. By the slow evaporation of the water which thus holds it in solution, the gelatine may be obtained in a state of purity, when it appears as a hard, brittle, semi-transparent substance, which breaks with a glassy fracture. One of the most striking characteristics of gelatine is the property of forming a tremulous jelly when its solution in boiling water cools, with that of liquefying again on the application of heat. These alternate solutions and desiccations may be repeated for any number of times without changing its chemical constitution. Isinglass, glue, and size are various forms of gelatine, the first being this substance in a state of comparative purity. Solid gelatine undergoes no change if it be kept perfectly dry; but in the form of solution or of jelly it putrefies rapidly. Tannin added to a solution of gelatine occasions a copious white precipitate. This is a compound of tannin and gelatine, which collects into an elastic adhesive mass, that soon dries in the air, and forms a brittle resinous-like substance, which is perfectly insoluble in water, and not susceptible of putrefaction. It is this action of tannin upon gelatine that is the foundation of the art of tanning leather. The ultimate components of gelatine are 47·8 carbon, 7·9 hydrogen, 16·9 nitrogen, 27·4 oxygen.

Gelatine is insoluble in alcohol, but when already in solution in water it is not precipitated by that fluid. Acids dissolve it with great facility, even when much diluted, especially when aided by heat. The nitric acid effects its decomposition, during which nitrogen, and then nitrous gas, are disengaged in considerable quantities; and oxalic and malic acids are evolved, and may be obtained from the residuum. Sulphuric acid, with the assistance of heat, partly converts it into a substance resembling sugar. Chlorine combines with gelatine, forming a white substance, which assumes the form of filaments. The pure liquid alkalies dissolve gelatine very readily. The solution is a brown viscid substance, which possesses none of the properties of soap, and is not precipitated by acids. This property of remaining dissolved after acids are added to the alkaline solution, distinguishes gelatine from albumen, fibrin, and other animal products, and is therefore a valuable mode of discriminating its presence, and of separating it from them in analysis. It is precipitated by several of the metallic salts and oxides, but not so unequivocally as to afford satisfactory tests of its presence.

Gelatine is a nutritious article of food, and is very largely used as such; but as it cannot yield albumen, fibrin, or caseine, animals fed solely on gelatine rapidly lose flesh. It is much employed in confectionary, for jellies, jujubes, &c.; and in the form of thin sheets richly coloured with beet-juice, spinach-juice, or other substances, it is applied, as an elegant substitute for paper, to a variety of ornamental purposes.

GELDERLAND. See GUELDERLAND.

GELL, SIR WILLIAM, a distinguished classical scholar and antiquarian, was born in 1777. After the usual preliminary education, he was entered of Emmanuel College, Cambridge, of which he afterwards became a fellow. About the beginning of the present century he was sent on a diplomatic mission to Greece; on his return from which, in 1803, he was knighted. In the following year he published his *Topography of Troy and its Vicinity, illustrated and explained by drawings and descriptions.* He had only spent three days in the actual survey of this classic spot; but the critics were at first loud in praise of the ability, research, and correctness of his work. A more careful scrutiny, however, caused them to modify their verdicts considerably. Lord Byron who had at first praised the book, afterwards felt more inclined to condemn it. In his *English Bards* that poet had said—

> Of Dardan tours let dilettanti tell;
> I leave topography to rapid Gell.

The term *rapid* was a substitute for *classic*, which had been the original epithet. Some of his other works were perhaps chargeable with the same fault, such as his *Geography and Antiquities of Ithaca.* An exception, however, must be made in favour of his interesting *Pompeiana, or Observations on the Topography, Edifices, and Ornaments of Pompeii;* in which he was assisted by Mr J. P. Gandy.

Gell's noble and disinterested behaviour during the trial of Queen Caroline, and his manly courage in facing and braving the frowns of the great who took part with the regent at that time, exhibit his moral character in a very favourable light. The queen showed her sense of his cooperation in her defence by appointing him one of her chamberlains in 1820. He suffered severely from gout during the latter years of his life; and died at Naples in 1836.

GELLERT, CHRISTIAN FURCHTEGOTT, a distinguished German author, was born in 1715, at Haynichen, near Freiberg in Saxony. He was educated at the university of Leipsic, where, in his thirtieth year, he was appointed to the chair of belles-lettres,—a position which he occupied till his death in 1769. His principal works are his *Fabeln* and *Erzählung*, and *Sacred Odes and Songs*, both of which were immensely popular in Germany during their author's lifetime; while the former, till a recent period, held its place as a text-book in nearly all the primary schools of Germany. Not a little of Gellert's fame is due to the time when he lived and wrote. Such a German literature as there was at the time of his appearance, was groaning under the yoke of the pedant Gottsched and his school. A band of high-spirited youths, of whom Gellert was one, resolved to free themselves from these hereditary and conventional trammels, and began that revolution which was finally consummated by Schiller and Göethe. Gellert's share in the attempt was enhanced by the excellence of his personal character, his gentle piety, and his singular knack of gaining the reverence and love of young people. Part of his influence was also doubtless attributable to his position as a professor, and to his eloquent lectures on the poetry of Germany. His collective works form part of the *Karlsruher Deutscher Classiker*, 1823–26. There are some interesting notices of Gellert in Göethe's *Dichtung and Wahrheit.* His life has been twice written; first by J. A. Cramer, Leipzig 1774; and more recently by Döring, Leipzig, 1833.

GELLIUS, AULUS (sometimes, though incorrectly, called AGELLIUS), author of the *Noctes Atticæ*, was born in the course of the second century of the Christian era, and died about A.D. 180. Little or nothing is known of his personal history beyond incidental notices in his own book. From these he seems to have been born of a good family at Rome; to have travelled much, especially in Greece; to have enjoyed the tuition and personal friendship of the most eminent philosophers of that day; and, being possessed of independent means, to have spent his life in a sort of literary dilettanteism. His only work, the *Noctes Atticæ*, takes its name from the fact of its having been composed during the long nights of a winter which the author spent in Attica. In the preface he states that he had no other object in view in writing it than to while away the time in amusing his children. He had been in the habit of keeping an "Adversaria," or commonplace-book, in which he jotted down everything of unusual interest that he heard in conversation or read in books. The contents of this scrap-book he redacted with some slight changes of form into the work through which his name has been preserved. This fact sufficiently accounts for the very miscellaneous nature of the topics embraced in the book, which comprise essays on grammar, geometry, and philosophy, besides scraps of history and poetry, anecdotes, and a good deal of discussional matter. The work, which is utterly devoid of sequence or arrangement, is divided into twenty books. All these have come down to us except the eighth, of which nothing remains but the index. The work is on the whole a very useful one, as it throws light on many subjects which must otherwise have remained for ever a mystery. The style, though for the most part sufficiently clear, is disfigured by that affectation of archaism which was carried to such ridiculous extremes by Apuleius. The *editio principo* of Aulus Gellius appeared at Rome in 1469, and was speedily followed by many others in various cities of Italy, especially Venice. The best edition that has yet appeared is that of James Gronovius, Leyden, 1706; which is unquestionably superior to the recent edition of Lion, Gottingen, 1824–25. Aulus Gellius has been translated into English by Beloe, Lond., 1795; into French by the Abbé de Verteuil, Paris, 1776–89; and by Victor Verger, Paris, 1820–30; and partly into German by Walterstern, Lemg., 1785.

GELNHAUSEN, a town of Hesse-Cassel, province of Hanau, on the right bank of the Kinzig, 12 miles E.N.E. of the town of Hanau. It was formerly an imperial city, and was for some time the residence of the emperor Frederick Barbarossa. The ruins of his palace still exist on an island in the river. Being on the highroad from Frankfort to Fulda and Eisenach, it is a place of considerable trade. Pop. 4000.

GELON, tyrant of Gela and afterwards of Syracuse, raised himself to the supreme power in his native city of Gela by his military talents. The quarrels between the aristocracy and the plebs of Syracuse gave him an opportunity of interfering in the affairs of that city, and he so managed among the disputants that he ended by becoming its "tyrannus." He used his power so discreetly that Syracuse attained a degree of wealth, influence, and prosperity which reconciled the people to their bondage. The great event in Gelon's subsequent history was his defeat of the Carthaginians under Hamilcar at Panormus, on the same day that the Greeks defeated Xerxes at Salamis, B.C. 480. After Gelon had thus established his power, he made a show of resigning it; but his proposal was rejected by the multitude, and he reigned without opposition till his death, 478 B.C. His memory was held in such respect that, 150 years after his death, when Timoleon was erasing from Sicily every vestige of the tyrants that had once reigned there, he spared the statues of Gelon. (See SYRACUSE, and CARTHAGE.)

GEM, a common appellation for all precious stones, and particularly for those which are employed in jewellery. Brilliancy of lustre, richness of hue, and the most perfect transparency, are the desiderata of this class of minerals;

and the value of those specimens in which such characters are combined is enhanced according to their size, in an extremely rapid ratio. At the head of the gems stands the diamond, which, for brilliancy of lustre, or *water*, as it is termed, has not a rival. It is chiefly found in certain parts of Hindustan and Brazil, where it occurs in alluvial soil, or in conglomerate of the most recent formation. (See Diamond.) The oriental ruby, when perfect in transparency and colour, and of considerable size, vies with the diamond in value. Its most noted locality is the Capellan Mountains, near Syrian, in the kingdom of Ava. Next in order is the sapphire, which varies from a rich dark blue to a very slight tinge of the same colour, sometimes presents distinct colours in the same specimen, and is frequently transparent and colourless. It is met with in considerably larger masses than the preceding, and is found in Ava and Ceylon. The peculiar rich green colour of the emerald is well known. No gem is more frequently made mention of in sacred history, and none even at the present day stands in higher estimation among the crowned heads of the East. The aquamarine of lapidaries is, mineralogically speaking, a pale-blue variety of the same species, though one of very inferior value. Topazes occur under an infinity of forms, and are found in most quarters of the globe. From the changes which they undergo when exposed to heat, besides the fine colours they present naturally, topazes are peculiarly adapted to the purposes of the lapidary. The richest-coloured garnets are the production of Ceylon and Greenland. Chrysolites of a brilliant pale-green colour are brought to Great Britain from Constantinople; hyacinths of a deep red from Ceylon; and tourmalines of a great variety of hues from all parts of the world. The opal, and many varieties of quartz, as the amethyst, onyx, sarde, catseye, and agate, are also occasionally included under the general denomination of gem.

Generally speaking, the different species of precious stones occur in small masses. All of them are found in a crystalline state, and present the peculiar forms which nature has assigned them. Many of these forms are singularly beautiful; and their variety, particularly in the diamond and topaz species, is as great as any other class of the mineral kingdom affords. It is not, however, under these symmetrical forms that gems are most commonly found. Most of them are the productions of India, Ceylon, Pegu, and Brazil, where, having been washed from their matrix in some of the primitive ranges, they are collected, in a rolled and rubbed state, in the channels of the rivers. Every trace of their original form is thus frequently lost; and, indeed, fine stones rarely come through the hands of Indian lapidaries without receiving further abrasion or cutting. This circumstance of their so rarely presenting distinct forms renders the peculiar hardness of this class of stones a most important characteristic, and one, whatever be their external shape or appearance, which can never be mistaken. By this means, too, the real stone is easily distinguished from the factitious, which is occasionally made to bear so close a similitude that an unpractised eye finds it almost impossible to detect the difference. See Mineralogy.

GEMARA, the second part of the *Talmud*. It is a 'commentary' on the *mishna* or text. See Talmud.

GEMINI (the Twins), the third constellation in the zodiac. It is referred by the Greeks not only to the fable of Castor and Pollux, but also to those of Hercules and Apollo, Triptolemus and Iasion, Amphion and Zethus, &c. The constellation derives its name from two remarkable stars to which the names *Castor* (or α^2 Geminorum) and *Pollux* (or β Geminorum) are given. These two stars may be easily found by drawing a straight line through the belt of Orion and the two bright stars the line of which cuts through the belt. This line protracted upwards very nearly passes through the two stars of Gemini. They may also be recognised by being about midway between Aldebaran and Regulus; and should Orion and Ursa Major be seen at the same time, then Castor and Pollux on the one side, and Capella on the other, are conspicuous boundaries of the intermediate space. On Jan. 1, 1856, the right ascension of Castor was $7^h\ 25^m\ 24^s{\cdot}357$, with an annual variation of $+\ 3^s{\cdot}8433$; and his declination was $32^\circ\ 11'\ 58''{\cdot}73$ N., with an annual variation of $-7''{\cdot}38$. On the same day the right ascension of Pollux was $7^h\ 36^m\ 29^s{\cdot}907$, with an annual variation of $+3^s{\cdot}6822$; and his declination was $28^\circ\ 22'\ 11''{\cdot}59$ N., with an annual variation of $-8''{\cdot}258$. Their respective magnitudes were 2·1 and 1·2.

GEMINIANI, Francesco, a celebrated violinist, born at Lucca about 1666. He received lessons in music from Alessandro Scarlatti, and studied the violin under Lunati, and lastly under Corelli. In 1714 he arrived in London, where his performance and compositions attracted much attention. He was taken under the special protection of the Earl of Essex. After visiting Paris, and residing there for some time, he returned to England in 1755. In 1761 he went to Dublin, where he was by a servant robbed of a musical manuscript on which he had bestowed much time and labour. His vexation at this loss is said to have hastened his death, which took place at Dublin on 17th September 1762. He appears to have been a first-rate violinist, but most of his compositions are dry, and deficient in melody. His *Art of Playing the Violin* is a good work of its kind, but his *Guida Armonica* is a miserable production. He published a number of solos for the violin; three sets of violin concertos; twelve violin trios; *The Art of Accompaniment on the Harpsichord, Organ, &c.*; *Lessons for the Harpsichord*; and some other works. His musical opinions had no foundation in truth or principle. "One day he would set up French music against all other; the next, English, Scotch, Irish—anything but the best compositions of Italy or Handel." He then became a dishonest dealer in pictures—"imposing upon grosser ignorance with false names, and passing off copies for originals." (G. F. G.)

GEMISTUS, or **Georgius Pletho**, one of the later and most celebrated Byzantine writers, lived during the end of the fourteenth and beginning of the fifteenth century. His native place was probably Constantinople, though he spent most of his time in the Peloponnesus. In 1426 he held a high office under Manuel Palæologus the emperor; and was one of the deputies of the Greek Church that were present at the Council of Florence held in 1438 for the purpose of effecting a union between the Latin and the Greek Churches. Gemistus was still more famous as a philosopher than as a theologian. Being disgusted with scholastic philosophy he made Plato the subject of earnest study; and henceforth the propagation of the Platonic philosophy became his chief aim. Having been introduced to Cosmo de' Medici during his stay at Florence, he persuaded this distinguished man of the superiority of the system of Plato over that of Aristotle, and became the leader of a new school of philosophy in the West. Gemistus wrote an immense number of scientific works, dissertations, treatises, compilations on divinity, history, geography, philosophy, and miscellaneous subjects. Several of them have been printed.

GEMONIÆ Scalæ, or *Gemonii Gradus*, in ancient Rome, steps on the Aventine Hill, leading to the Tiber, to which the bodies of criminals were dragged with hooks after execution, to be cast into the river

GENALGUACIL, a secular town of Spain, in the province of Granada, and bishopric of Málaga. It is situated south of Ronda and of Benestepar, on the right bank of the Genal, eight miles from Casares, four from Jubrique, and is surrounded with hills and vineyards. The site is cheerful and picturesque, but the town is not well built, the houses being generally small, and the streets ill-paved, uneven, and dirty. The parish church is modern, handsome, and consists of three naves; besides, there are a town-house, a primary school, and a miserable prison. There are also mineral springs; brick and tile works; many distilleries; several flour and oil mills; and a good trade in wine. The population is nearly 2000.

GENDARMERIE, or men-at-arms, have existed in France, with various modifications, since the days of chivalry. At that time they were furnished by the fiefs, and, armed cap-a-pie, marched in the train of the knights and esquires. When the English were driven out of France by Charles VII., companies of gendarmes were distributed throughout the whole extent of the kingdom, and contributed powerfully to the re-establishment of internal order and tranquillity. At this time they enjoyed much consideration and many privileges, of which they were gradually deprived by the successive changes in the regular army, until in the time of the Grand Monarque they came to be looked upon as nothing but an unusually fine cavalry corps. Shortly before the French revolution, the gendarmerie had ceased to exist as a separate organization, having been merged in the maréchaussée. The Constituent Assembly again changed their name into "gendarmerie nationale." The history of the gendarmerie, which, up to this date, is a very difficult and complicated one, is fully treated by a French writer M. Tenaille-Champton. In modern parlance the term is employed to denote a military police, whose duties are to watch over the public safety, maintain order, and enforce the execution of the laws. The gendarmes also furnish patrols, examine the passports of travellers, arrest criminals, and otherwise ensure the general tranquillity. They consist of two classes, horse and foot, which are called respectively gendarmes-à-cheval and gendarmes-à-pied. The men themselves consist for the most part of deserving soldiers of the regular army, who for good conduct have been drafted into this service, where they enjoy certain privileges, and a much higher rate of pay than the soldiers of the line. They are held, however, to form part of the army, and in cases of extreme necessity are liable to be called into active service. The gendarmerie have always been noted for their faithful adherence to the government under which they have served; and in the revolutions and tumults of which Paris has been the theatre during the last twenty-five years, they have always signalized themselves by their heroic devotion to the cause they had sworn to defend. During that period their numbers have varied from 12,000 to 25,000.

GENDER. See Grammar, § *Of the Noun.*

GENEALOGY (γενεολογία: γένος *race*, and λόγος *account*), an enumeration of a series of ancestors, or a summary account of the relations and alliances of a person or family, both in the direct and collateral lines. A genealogy or lineage is frequently drawn out under the figure of a tree, with its root, stem, and branches, and the genealogical degrees are usually represented in circles or parallelograms, ranged over, under, and beside each other.

No nation was more careful to frame and preserve its genealogical tables than Israel. Their sacred writings contain genealogies which extend through a period of more than 3500 years, from the creation of Adam to the captivity of Judah. Indeed, it appears from the books of Ezra and Nehemiah that the same carefulness in this matter was observed *after* the captivity; see Ezra, ii. 62. The division of the whole Hebrew nation into tribes, and the allotment to each tribe of a specified portion of the land of Canaan as an inalienable possession, rendered it indispensable that they should keep genealogical tables. But it was not this alone that made the Jews so anxious to preserve their pedigrees; for the voice of prophecy had declared that the promised Messiah should be of the seed of Abraham, of the posterity of Isaac, of the sons of Jacob, of the tribe of Judah, and of the family of David.

The Rabbins affirm that after the Captivity the Jews were most careful in keeping their pedigrees (*Babyl. Gemar. Gloss.* fol. xiv. 2). Josephus (*De Vita sua*, p. 998, D) states that he traced his own descent from the tribe of Levi by *public registers.* And he informs us, that however dispersed and depressed his nation were, they never neglected to have exact genealogical tables prepared from the authentic documents which were kept at Jerusalem; and that in all their sufferings they were careful to preserve those tables, and to have them renewed from time to time. Since, however, the period of their destruction as a nation by the Romans, all their tables of descent seem to be lost, and now they are utterly unable to trace the pedigree of any one Israelite who might lay claim to be of that line from which their still expected Messiah is to arise.

GENERAL, in the British army, the highest *ordinary* rank—he who commands a brigade, a division, a corps, or an army. See Army.

General is also used for the chief of an order of monks, or of all the houses and congregations established under the same rule.

GENERAL ASSEMBLY. See Presbyterianism.

GENERALISSIMO, a military title, more especially among the French, equivalent to that of commander-in-chief. We are told by Balzac that the title of generalissimo was first assumed by Cardinal Richelieu, on the occasion of his leading a French army into Italy.

GENERATING Line, or Figure, in *Geometry*, a line or figure which by its motion of revolution produces any other figure, plane, or solid.

GENERATOR, in *Music*, signifies the principal or fundamental sound by which certain harmonic sounds are produced. See Music.

GENESIS, the first book of the Old Testament, containing the history of the creation, and the lives of the first patriarchs. See Pentateuch; Scripture; Bible; and Dissertation Third, vol. i. of this work.

Genesis, in *Geometry*, the formation of a line, plane, or solid by the motion of a point, line, or surface.

GENESIUS, Josephus, or Josephus Byzantinus, a Byzantine writer who lived in the middle of the tenth century, is the author of a Greek history which he wrote by order of the emperor Constantine VII. This history begins with the year 813 A.D., is entitled Βασιλειῶν Βιβλία Δ, and embraces the reigns of Leo V. the Armenian, Michael II. the Stammerer, Theophilus, Michael III., and Basil I. the Macedonian, who died in 886. The work of Genesius is considered of importance as containing the events of a period of Byzantine history which is elsewhere very scantily found, though it is but a poor compilation. At Leipzig, a MS. of this work was discovered in the sixteenth century, and attracted the attention of scholars. The first edition of Genesius was published at Venice in 1733, folio, with the title, *Josephi Genesii de Rebus Constantinopolitanis*, &c. Libri IV., with a Latin translation by Bergler. The best edition, however, is by Lachmann, in the Bonn edition of the Byzantines, 8vo, 1834.

Cave, *Hist. Lit.*; Fabric., *Bibl. Græc.*, vol. vii.; Hamberger, *Nachrichten von den vornehmsten Schriftstellern*, vol. iii.

GENETHLIACI (γενέθλη, *birth*), a name given by the ancients to those who pretended to foretell what should befall a man by means of the stars which presided at his nativity. They were also called Chaldæi or Babylonii, from the country where their science was first developed; sometimes *astronomi*, *astrologi*, or *planetarii*, because they observed the stars; and likewise *mathematici*, from their employing diagrams such as were used by geometricians. Edicts at various times were issued against the astrologers of ancient Rome; yet notwithstanding the rigour of the penal enactments by which they were denounced, they continued to maintain their popularity, and were never altogether expelled from the city. Hence Tacitus speaks of them as "*genus hominum quod in civitate nostra et vetabitur semper et retinebitur*."

GENEVA (Fr. *Genève*, Ger. *Genf*, Ital. *Ginevra*), the most populous and industrious city of Switzerland, capital of the canton of the same name, stands on the Rhone, at the western extremity of the Lake of Geneva, in Lat. 46. 12. N., Long. 6. 9. 30. E. It is divided into three portions by the river, part being on an island and part on either bank. The largest portion stands on the left bank of the river, and is built partly on an eminence rising to nearly 100 feet above the level of the lake. It consists almost entirely of the large and handsome mansions of the burgher aristocracy. On the right bank is the Quartier St Gervais, or lower town, the seat of the trade and commerce. The streets are here narrow and the houses lofty, something in the style of the old town of Edinburgh. The island is upwards of a furlong in length by about 200 feet in breadth, and is connected with the other portions of the town by several bridges. Geneva has been much improved within the last quarter of a century. An entirely new quarter has started up on the right bank of the Rhone, called Quarter des Bergues, displaying a handsome front of tall houses, among which is the Hôtel des Bergues, and lined with a broad quay towards the lake. On the opposite bank the unsightly houses that lined the margin of the lake have been repaired and beautified, and a broad belt of land has been gained from the water and formed into a quay. This is connected with the Quai des Bergues by means of two bridges thrown across the river, and united with a small island planted with trees, and containing a bronze statue of Rousseau. Geneva is surrounded landward by ramparts and bastions, erected in the middle of the last century, but of little use as fortifications, the city being commanded by some adjacent heights. The principal public building is the cathedral or church of St Pierre, an interesting specimen of Gothic architecture of the eleventh century. Its effect, however, has been injured by the addition of a fine Corinthian portico. This church contains monuments of Agrippa d'Aubigny, the friend of Henri IV., and of the Count Henri de Rohan, a leader of the French revolution in the reign of Louis XIII. The town-hall is an old and massive-looking building. The Musée Rath, so named from its founder General Rath, is a neat edifice, containing a collection of paintings and other works of art, chiefly by native artists. The museum of natural history contains principally native productions of Switzerland, and is chiefly interesting as having the geological collections of Saussure, Brongniart, and Decandolle, and the collections of M. Necker. The house in which Calvin is said to have lived and died is still pointed out in the Rue des Chanoines, and also the house in which J. J. Rousseau was born. The general hospital is an extensive and spacious building. The academy or university founded by Calvin has faculties of theology, law, science, and belles lettres, and forty professors. The public library attached to it contains about 50,000 volumes, including many valuable MSS. Geneva has numerous literary and scientific societies, an observatory, botanic garden, lunatic and deaf-mute asylums, and other charitable institutions. The town is supplied with water from the Rhone by means of a hydraulic machine. The chief manufactures of Geneva are watches and jewellery: about 100,000 watches, chiefly gold, are made annually, employing about 3000 workmen. Its other industrial products are musical boxes, chronometers, mathematical and musical instruments, cutlery, fire-arms, &c. It also carries on an active transit trade by means of steamers with the various towns on the lake. Geneva was in the time of Cæsar one of the chief towns of the Allobroges, and it continued subject to the Romans till the beginning of the fifth century, when it was taken by the Burgundians, and made their capital. Towards the end of the fifth century it became the seat of a bishop; and in 534 came into the possession of the Franks. Charlemagne conferred upon it certain important privileges, subordinate however to the bishop, who was styled Prince of Geneva, and was an immediate feudatory of the empire. It afterwards came to form a part of the second kingdom of Burgundy; on the fall of which it became entirely subject to its bishops, between whom and the counts of Genevois in Savoy there existed incessant contests for its possession. The line of the counts of Genevois becoming extinct in the fourteenth century, their inheritance reverted to the house of Savoy, and hence are derived the claims of the dukes of Savoy over Geneva; claims, however, never completely enforced. At the Reformation the bishop was expelled, and the town, with its territory, became an independent republic. Calvin was in 1536 induced to settle here, and was soon afterwards raised to the highest rank in the state; and Geneva became the metropolis of Protestantism. The dukes of Savoy made several fruitless attempts to possess Geneva by force or by fraud; but, in 1603, by the mediation of Berne, Zurich, and Henri IV. of France, acknowledged its independence. In the eighteenth century the peace of the town was frequently disturbed by internal feuds. In 1798 it was taken by the French revolutionary forces, and became the capital of the department of Leman. In 1814 it was restored by the allied powers to its independence as a canton of the Swiss Confederation. Among the many eminent men that Geneva has produced may be mentioned Isaac Casaubon, Rousseau, Lefort the friend of Peter the Great, Necker the father of Madame de Staël, the naturalists Saussure, Bonnet, and De Luc, Decandolle, Huber, Dumont, the friend and editor of some of the works of Jeremy Bentham, and Sismondi the historian. In the beginning of the fifteenth century Geneva contained about 10,000 inhabitants, and in 1550 they had increased to about 20,000. In 1715 they numbered only 18,500, but in 1789 they had risen to 26,140. In 1830 the population was 27,000, and in 1850 31,238. The Canton of Geneva is, with the exception of Zug, the smallest of the Swiss Cantons, having an area of only 91 English square miles. It is bounded on the N. by the Canton of Vaud and the Lake of Geneva, E. and S. by Savoy, and W. by France. More than one-fourth of the canton is arable, about one-fifth is meadow land, one-tenth in wood, and one-twentieth in vineyards. The agricultural products of the canton are not equal to the wants of the inhabitants, so that considerable quantities are imported. The language of the city and canton is the French. Pop. of the canton (1850) 63,932, of whom 34,212 were Protestants and 29,764 Roman Catholics.

GENEVA, *Lake of*. See SWITZERLAND.

GENEVA, a town in Ontario county, state of New York, North America, beautifully situated at the north end of Seneca Lake, on the Auburn and Rochester railway, 50 miles E.S.E. of Rochester. It is handsomely built, and has several fine churches and a medical college. Steamboats ply daily between it and Jefferson at the head of the lake. Pop. 6000. There are several other towns and villages of this name in the United States.

GENEVA, or *Gin*, a malt spirit, distilled a second time, with the addition of juniper berries. The name *geneva* is a corruption of the French *genièvre*, a juniper berry. The method of making this kind of spirit is described under DISTILLATION, vol. viii. p. 51.

GENEVIÈVE, SAINTE, in Latin GENOVEFA, the patron saint of Paris, was born at Nanterre about the year A.D. 424. She early took the veil, and distinguished herself by her active benevolence, as much as by the austere sanctity of her personal character. Twice she saved Paris, first from Attila, who with his Huns was marching to sack the town.

Ste Geneviève offered up the most earnest prayers for the safety of the city, and, according to the old tradition, a thick cloud ascended, rendering it utterly invisible to its barbaric foes, who immediately marched off in the opposite direction. At another time, when Paris, after a long siege, was on the point of yielding under the horrors of famine, Ste Geneviève ascended the river to Troyes, whence she brought back eleven boats filled with provisions, and thus inspirited her countrymen to hold out till the enemy withdrew. Neither the date nor details of this second siege of Paris are known. Ste Geneviève died in 512 at the age of eighty-eight, and was buried in the Church of St Peter and St Paul, which, in the ninth century, came to be called by her name. This church stood till 1807, and its tower is still to be seen close to the Pantheon in the Latin Quarter of Paris.

GENÈVRE, MONT, one of the principal summits of the Cottian Alps, rising to the height of 11,788 feet. It is crossed by a carriage-way, constructed by Napoleon I., at an elevation of 6353 feet. It is one of the contested routes by which Hannibal is said to have crossed the Alps.

GENII, a race of imaginary beings who, according to Mohammedan belief, were created from fire, and hold an intermediate place between men and angels. They are supposed to eat, drink, and propagate their species, to be either good or evil, to exercise a most important influence on human affairs, and to be capable, like men, of future salvation or damnation. The orientals assert that the genii inhabited this world thousands of years before the birth of Adam, under many successive kings, who all bore the name of Solomon; that at length their depravity became such that Eblis was sent to drive them into a remote part of the earth, there to be confined; and that some of that generation still remaining, they were by Tahmorath, one of the ancient kings of Persia, forced to retreat into the famous mountain of Kaph. There are also several ranks and degrees among this kind of beings, some being called absolutely *Djin*, others *Peri* or fairies; some *Div* or giants, others *Tacwin* or fates. See MOHAMMEDANISM.

GENIL, a river of Spain, which rises in a chasm called Corral de Veleta, on the N.W. slope of the Sierra Nevada, in Andalucia, province of Granada. It flows N.W. through the town of Granada, then W.S.W. till it reaches Loja, where it turns W.N.W., passes the town of Ecija, and joins the left bank of the Guadalquivir, at Palma del Rio, 32 miles below Córdova, after a course of nearly 160 miles. It is nowhere navigable; but it furnishes much valuable water-power, and is extensively used in irrigation.

GENITIVE CASE, sometimes called the elative case, is a term applied to one of the case-forms of nouns and pronouns. One thing with another, or its predicate beginning or begotten of it, is in the genitive case. It may be called the "whereof" case: as "the fear of death," "the love of home," "the works of God," "the cup is full of wine." The natural possessive and genitive cases are clearly different, though in most languages they are both classed under the same case-form; for one thing may be the begetter of another which it may not possess, or may be the possessor of a thing which it may not have begotten. "William's field," means the field of which William is the possessor but not the begetter, while "the love of money," or "the fear of death," does not mean the love or fear which money or death possesses, as neither money nor death can possess love or fear; but this love and fear are, in the mind of man, begotten by money and by death; and in the sentence "the cup is full of wine," the wine is the begetter of the predicate "full." Since one thing with another, or its predicate beginning or begotten by it, is in the genitive case, it follows that a thing may have two genitive relations—one thing to another thing itself, and another to its predicate, as "the stab of a dagger," in which the dagger" is the begetter or generator of the stab;" "the cup is full of wine," where the "wine" is not the begetter of the "cup," but of its predicate "full." It is idle to object that to make so nice a distinction as that between the relation of the thing A to the thing B, and the relation of the thing A to the predicate of the thing B, is to make CASE needlessly perplexing; for some nations, as the Finnic, have shown such discriminations in the case-forms of their languages, and we could not understand any language in which such discriminations might be made without the distinction first existing in the mind. The "genitive" is distinguished from the "possessive" by Euren in his *Finsk Språklära*, in which he calls the latter the "genitive-possessive." From the want of this distinction in the Greek and Latin languages arises much of the perplexity in treating of the syntax of the genitive case in their grammars. A clear example of the ambiguity arising from the same case-ending answering for both relations may be seen in 2 Cor. v. 14, *ἡ ἀγάπη τοῦ Χριστοῦ συνέχει ἡμᾶς*. If *τοῦ Χριστοῦ* is possessive, it means "the love of Christ for us;" whereas if it is genitive, it means "our love for him." See Bloomfield on the passage; and Barnes's *Philological Grammar*, London, 1854.

GENIUS, in *Antiquity*, the tutelary spirit that watched over the destinies of nations, and of each individual. The idea of the genius, or *δαίμων*, is first met with in the mythology of the Greeks. Homer makes no mention of these *dæmones;* but Hesiod accounts for their origin by describing them as the souls of good men who lived in the golden age. According to him, they are 30,000 in number: their functions are to watch over the human race and carry out the will of Jove, unseen by mortal eye. This conception was taken up by the Platonists, who assigned to every man at his birth a good and an evil dæmon. According as either of these was in the ascendant, the life of the individual was influenced for good or evil. The beautiful conversations of Socrates on his good and evil genius are familiar to all who have read the works of Plato.

Like the *dæmones* of the Greeks, the *genii* of the Romans were tutelary or guardian spirits; but their functions began at a still earlier period. They were in fact (as the etymology of their name implies) the producing or life-giving powers which organized the being whom it was their duty to protect till death. On this account also the nuptial bed was called the *lectus genialis.* By every Roman citizen the genius was worshipped with especial honour, and a birthday was celebrated with offerings of the finest flowers and wine to them. Every one thought it at once a duty and a privilege to "indulge his genius" (indulgere genio), *i.e.* to enjoy to the utmost the merriment allowed on these occasions.

In the Roman mythology genii were not confined to the human race alone. Every living being, and even every place, had a guardian spirit of its own. These local genii were symbolized under the form of a serpent (the type of renovation) eating fruit placed before him. (Plutarch, *De Genio Socratis;* Hartung, *Die Relig. der Röm.;* Smith's *Dict. of Gr. and Rom. Antiq.*, &c.)

GENIUS, in its modern use, signifies generally the bent of national or individual disposition. In a more limited sense it denotes those endowments and powers of mind which one has received from nature. To define or illustrate the term, when employed in this sense, is difficult if not impossible. Fuseli described it as "that power which enlarges the circle of human knowledge, or combines the known with novelty." A better, though far from perfect, definition is that of the poet Crabbe: "I recognize genius wherever there is power to stimulate the thoughts of men and command their feelings." Better than either of these is that of Coleridge, which we extract from his *Table Talk:* "To carry on the feelings of childhood into the powers of manhood, to combine the child's sense of wonder and novelty with the appearances which every day for perhaps forty years had rendered familiar—

> ‘With sun and moon and stars throughout the year,
> And man and woman;’

this is the character and privilege of genius, and one of the marks which distinguish genius from talent.” Genius is in fact a quality so subtle and impalpable that though we are aware of its presence, and recognise it when it manifests itself, we cannot tell exactly in what it consists. It has been called by Diderot, “L’étendue de l’esprit, la force de l’imagination, et l’activité de l’âme.” That this definition is not correct is plain, because these qualities are often found separately or collectively in men to whom “the vision and the faculty divine” have been denied. In general terms, genius may be considered as that power which either creates ideas wholly new, or combines old ideas in new and unexpected forms. It is to be found in every department of thought in which the human mind has been exercised; and no work is fairly entitled to be called great which does not exhibit traces of this quality. Genius, like art, is of no country, and is not restricted to any form of thought. Galileo and Newton were as undoubtedly men of genius as Dante and Shakspeare; and if we deny the title to Tacitus we must also withhold it from Sir Walter Scott. Genius, like talent, is of various degrees; but its presence is an indispensable element in all greatness.

GENGHIS KHAN, or Zinghis Khan, a celebrated Tartar chief, in the early part of the thirteenth century, who with his barbarian hordes overran and desolated Asia. See Asia, vol. iii. p. 745, and general index.

GENLIS, Étiennette, or Stephanie Félicité Ducrest de St Aubin, Comtesse de, a voluminous French writer, was born in 1746, of a noble but impoverished family, at the château of Champcéry, near Autun. At the early age of fifteen she married the Comte de Genlis, who had been attracted to her as much by her wit and skill in music as by her beauty. A few years later the marriage of her aunt, the Comtesse de Montesson, with the Duke of Orléans, opened up to her the best society of Paris—a privilege which she turned to good account in her works. She was afterwards made governess to the duke’s children, one of whom, Louis Philippe, finally succeeded to the throne of France. The better to carry out her theory of education, she wrote several works for the use of her royal pupils, such as the *Théatre à l’usage des jeunes personnes*, *Les Annales de la Vertu*, *Les veillées du Château*, and several others. Some of these works were in a high degree useful and popular, and earned large sums of money for their author. When the French Revolution broke out, Madame de Genlis, though at first well disposed to the movement, was obliged to emigrate. Visiting successively Switzerland, Belgium, England, and Germany, and supporting herself by writing and painting, she settled in Hamburg, where she wrote her novel entitled *Les Chevaliers des Cygnes*, a story of the court of Charlemagne, ill-conceived, ill-executed, and, to judge from its results, ill-intentioned. This work gave a sort of colour to the slanderous aspersions of the royalist *émigrés*, who were exasperated at her connection with some of the extreme revolutionists. She felt her position so uncomfortable that she attempted to justify herself in a pamphlet entitled *Précis de la conduite de Madame de Genlis*. A clue to her real political opinions is only to be got from her actions, which at this time were decided enough, especially her marrying her adopted daughter, Pamela, to the unfortunate Lord Edward Fitzgerald, whose political creed was destined to bring him to an untimely and ignominious death. After the 18th Brumaire she applied to the first consul for leave to return home; and debased herself by adulations so slavish as to be only surpassed in meanness by her subsequent retractation of them. Besides the pensions and privileges which she procured from Napoleon, she realized large sums of money by hack-work for booksellers; but her utmost efforts failed to procure her admittance into the highest ranks of French literary society. She wrote a little for the *Biographie Universelle*, and out of a number of rejected articles concocted a book which she published under the title of *De l’influence des Femmes sur la littérature*. This work is distinguished by a mean spirit of detraction, envy, and spitefulness towards the leading French authoresses of that day, such as Madame de Staël, Madame Cottin, and others. About this time also she sadly befooled herself in a literary contest with Ginguené and some of the principal contributors to the *Biographie Universelle*. Indeed there was hardly a month of her literary career in which she was not engaged in one squabble or another, not seldom of a nature very discreditable to her: witness her quarrel with the publisher Roret. Of her later works, that which made the most noise in its day was her *Diners du Baron d’Holbach*, in which she set forth with a good deal of cleverness the prejudices, the intolerance, the fanaticism, and the eccentricities of the philosophers of the last century. This work, as was natural, was severely censured by the free-thinking party in France; but the author’s replies to their attacks were marked by a bitterness and malignity to which they could offer nothing parallel. Madame de Genlis attained the age of eighty-four, and died Dec. 31, 1830. Before her death she had the satisfaction of seeing her quondam pupil Louis Philippe seated on the throne of France.

To give a list of the separate works of Madame de Genlis, eighty in all, is manifestly impossible within our limits. They comprise prose and poetical compositions on a vast variety of subjects, and of every grade of merit. The swiftness with which they were written, their diffuseness, and their somewhat fugitive and transitory interest, forbid us to look in them for thought of perennial value or literary art of the highest or indeed of a high order. Posterity seems to have confirmed the verdict of Palissot, who declared that Madame de Genlis’ fame would rest solely on her *Théatre d’Éducation*. This judgment may seem rather harsh; but it is true that that work is the only one which still continues to stand the test of time, if we except perhaps some of the *Contes Moraux*, *La Duchesse de La Vallière*, and *Mademoiselle de Clermont*. Madame de Genlis owed much of her literary success to her social tact. She turned her position in the Orléans family to such good account as to make it react on her literary standing, and gain for her an eminence to which she was by no means justly entitled. Her appearance was good, and her manners in a high degree attractive and fascinating. To these qualities, and her inordinate ambition, she owed her extraordinary success in life, which she never allowed a regard for consistency or honour to interfere with. No woman of her day had a finer knack of disentangling herself from humble friends who were no longer likely to be useful, or of more delicately making herself necessary to those who stood on the higher grades of the social ladder, whose heights it was her chief ambition to climb. After she fairly reached the top, she is not known to have actively assisted or befriended any but her own nearest relations. (For a complete list of Madame de Genlis’ works see supplement to the *Biographie Universelle*, vol. lxv.)

GENOA (more accurately Genova), Duchy of, one of the administrative divisions of the kingdom of Sardinia, occupies that portion of the Ligurian Apennines which lies at the head of the Gulf of Genoa. Its extreme Lat. is 44. 2. and 44. 49. N., and its Long. 8. 20. and 10. 6. E. It is bounded on the N. by the administrative division of Alessandria, on the E. by the Duchy of Massa, on the S. by the Mediterranean, and on the W. by the administrative division of Savona. The area is 1258 square miles English, occupied by a population (1855) of 580,000.

Boundaries.

Dimensions, surface, and coast-line. The greatest length of Genoa is about 130 miles, and greatest breadth 46. The Apennines traverse this duchy from N.E. to S.W., in directions nearly parallel to the shore, from which their central ridge is seldom more than 16 miles distant. The coast line does not exceed 100 miles; but it is varied by numerous indentations, which form several good harbours and two spacious bays—Rapallo, and the beautiful Bay of Spezzia (the *Portus Lunæ* of the Romans). The surface presents a succession of mountain slopes and terraces, intersected and diversified by valleys and ravines. The greater part of it is covered by the Apennines, which curve round the Gulf, and form two slopes, from the northern of which descend the Trebbia, the Staffora, the Scrivia, the Orba, and the Bormida, all affluents of the Po; while from the southern slope descend into the Gulf of Genoa the Magra, the Vara, the Sturla, the Besagno, and the Polcevera, all streams of minor importance, besides numerous mountain torrents, which so much heighten the beauty of the landscape. **Geology.** The prevailing rocks belong to the carboniferous and magnesian limestone systems. Statuary marble and other kinds, as well as alabaster, limestone, slate, coal, and asbestos are easily obtained. **Soil, climate, and vegetable productions.** The soil is not naturally very productive, being, from its very rugged nature, for the most part rocky and unfit for agricultural purposes; but the industry and skill of the inhabitants have turned to advantage every spot capable of cultivation. The climate is in general temperate and salubrious, and the air is remarkably pure. In winter, however, the winds in the elevated ravines are bitterly cold, giving a tendency among the inhabitants to pulmonary complaints; and the influence of the sirocco is sometimes severely felt. The chief vegetable productions are citrons, lemons, oranges; light wines; chestnuts, olives, silk, cotton, hemp, figs, pomegranates, almonds, and other excellent fruits. On the mountain slopes there are fine pastures and extensive forests. **Manufactures and commerce.** The manufactures have made great progress in large towns, especially in Genoa, where, in particular tissues, it still excels the rest of the world. (See Genoa, *City of*). But the great passion of the Genoese is for the sea, whence they have in all ages been well adapted for commercial pursuits. Though they have in recent times been far surpassed by other nations, they still carry on a very important trade, both foreign and coasting. The best seamen in the Mediterranean are furnished by the Rivieras, or maritime districts, and the Sardinian navy is manned chiefly from them. Their vessels trade to the Levant, the Black Sea, the Baltic, to America, and the coasts of the Pacific. The principal articles of export are silk, paper, rice, oil, and hemp.

Roads. From the nature of the surface of this duchy there is only one main line of road traversing the length of the country. This excellent road runs along the western shore from the city of Genoa to Savona, and along the eastern shore from Genoa to Sarzana, disclosing views of the most picturesque and enchanting beauty. The transverse roads which run into this main line are the terminations of those from Lombardy and Piedmont. The only railways in the duchy are the southern portion of the Turin and Genoa Railway, opened throughout its whole extent in December 1853, and one between Voltri and Genoa, opened in 1855.

The Duchy of Genoa is divided into four provinces—Genova, Chiavari, Levante, and Novi.

People. The Genoese are a robust and handsome people; they are active, shrewd, frugal, industrious, and parsimonious. From the time of Virgil to that of Dante, the Ligurians or Genoese have been the subject of great vituperation.[1] The dialect of Italian spoken by them is one of the most difficult to strangers, and there are only a few books of poetry printed in it.

Genoa, *City of* (in Italian *Génova*, and anciently *Génua*, misnamed in the middle ages *Janua*), belongs to the kingdom of Sardinia, and is situated in a recess of the Gulf of Genoa, on the coast of the Mediterranean, at the foot of the Ligurian Apennines, in Lat. 44. 24. 20. N., and Long. 8. 52. 55. E. It is 75 miles S.E. of Turin, 73 S. of Milan, and 90 N.W. of Leghorn. **Population.** Exclusive of the garrison and seamen, the population (in 1855) was nearly 105,000 within the city walls. The garrison on an average amounts to 8000, and the merchant seamen to about 10,000. Genoa is surrounded on the land side by a double wall, of which the inner (550 yards from the sea) incloses the town, and is 6 miles in length. The outer, called Nuove Thura, erected between 1630 and 1632 A.D., encompasses several hills with the fortresses of the Sperone and the Begato, which formerly commanded the town. **Aspect.** When viewed from the sea, Genoa and its environs rise in a compact mass like a marble amphitheatre from the harbour, which is flanked by its two gigantic moles and lighthouses. The aspect is thus truly magnificent. A succession of fine buildings, more than two miles in length, stretch along the shore; the white edifices in successive terraces; numerous churches and convents; palaces and gardens on the steep sides of the hills that rear their dark, bold, bleak, and barren summits above, crowned with formidable ramparts, forts, and batteries, give the city an air of great magnificence worthy of the ancient epithet "La Superba." **Streets.** On entering the town, however, some disappointment is naturally felt by the visitor; the houses are indeed well built, but the streets are steep, narrow, crooked, and irregular, yet clean and well paved. The buildings are square and lofty, affording a pleasant shade in the scorching months of summer, and the roofs are covered with a light-coloured slate, which has a pleasing effect on viewing the city from a distance. Such streets as the Strada Balbi and Strada Nuova, which are entirely lined with marble palaces belonging to the Genoese nobles; and the Strada Nuovissima, Carlo Alberto, and Carlo Felice, which are also magnificent, must be excepted from the character of narrowness, inconvenience, and irregularity. **Squares, private palaces, and gardens.** The few squares (or piazze) open towards the principal churches and the theatre of Carlo Felice. The palaces of the Genoese patricians display not only the attractions of architecture, but of painting and sculpture: marble columns, rich friezes, balustrades, statues, arcades, galleries, fountains, all formed of the same costly materials, are here interspersed with terraced gardens, in which the myrtle, orange, and oleander bloom in rich luxuriance. The principal of these sumptuous mansions are those of Balbi, Brignole, Durazzo, Doria, Serra, Negro, Reale, Cattaldi, Rosso, Cambraso, Pallavacini, Carega, and Lercari. The marble of which these princely edifices are constructed abounds in the vicinity of Genoa, yet the modern palaces are nearly all faced with stucco. **Public buildings.** Genoa has many handsome churches: among the finest are the Cathedral L'Annunziata, built by Sauli a citizen, and the church of Carignano; about one-half of the churches, however, and among them some of the finest, were destroyed by the French during their occupation of the city at the end of the last century and beginning of the present. Besides these there are many public edifices, of which the most interesting and important are—**Palace of the doges.** the Palazzo della Signoria, the ancient residence of the doge, and the place of meeting for the public bodies. The great and little council rooms still occupy their place in this palace, though the interior was destroyed by fire; whence the fine ceilings and wainscoting have all disappeared. There are three theatres; and the hospitals vie with the palaces in magnificence. **Private houses.** The private dwellings are neat and durable, generally high, with flat roofs; and the Exchange, where the merchant princes formerly carried on their mighty trade, is now occupied by fruiterers. The Loggia de' Banchi, where the exchange is, the Ponti or quays, the Porto Franco, the lighthouse, the promenade of L'Acquasola, the Albergo de' Poveri, or great hospital, the Ospedale del Pammatone, the Banco di San Georgio, and the Strada degli Orefici (Goldsmith's Street), are also all worthy of special notice.

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[1] Dante, *Inferno*, xxxiii., 151–154, Carlisle's edition.

Commerce. Genoa is still an important commercial city, though vastly inferior to what it was in the 14th and 15th centuries. The "superb merchant princes" of the olden time of the republic are now no more. This inferiority has been mainly brought about by the expensive wars in which the republic engaged. Still the exports amount to about two millions and a half sterling, while the imports are about four millions. Of exports, the principal articles are cheese, rice, hemp, fruits, olive oil, and hides; and of her own manufacture, paper, soap, works in alabaster and marble, jewellery, and bijoux in coral, silks and fancy goods, damasks and velvets, for the last of which Genoa has long been highly celebrated. **Manufactures.** The annual value of the silk and satin manufactures averages L.250,000; and the raw material is partly raised at home and partly imported from Sicily, Calabria, and the Levant. Gold and silver filigree manufactures of Genoa have long held a first place in the estimation of connoisseurs in such work. Other less important articles of manufacture are artificial flowers, white-lead, candied fruits, chocolate, maccaroni, and hats. **Imports.** The chief articles of import are corn from Sicily, and sometimes from Barbary; raw silk from Sicily and Calabria; naval stores and iron from the Baltic; sailcloth and linens from Germany; cottons, tin, lead, sugar, hardware, and coals from Great Britain; wood from Spain, cotton and wax from the Levant; and various articles of colonial produce from British North America and the United States. Many of these imports are again exported to Switzerland, France, and Spain. **Transit trade.** Two laws, passed in 1751 and 1815 respectively, which enabled merchants to deposit goods in the Porto-Franco without paying duty unless taken out for home consumption, have very much facilitated the transit trade, which is now very considerable. Genoese vessels trade to the Euxine, the Levant, the Baltic, and North and South America; while steamers regularly ply between Marseilles, Barcelona, Leghorn, Civita Vecchia, &c. **Harbour.** All this vast trade is much facilitated by the fine harbour of Genoa, and the liberal encouragement to trade given by the Sardinian government. The harbour is bounded at its two extremities by the Molo Vecchio and the Molo Nuovo, 595 yards apart, and above the latter stands the noble fanale or lighthouse, 385 feet above sea level. The harbour, exposed to the S.W. wind and its heavy swells, is in the form of a semicircle, whose diameter is about 2000 yards, with the Old Mole on the E. side and the New Mole on the W. The water at the New Mole is deepest, and the bottom is clay, and holds well. The Darsena, or state dock and arsenal, on the N. side of the large harbour, was established in 1276 A.D., and is used for refitting and preserving the national galleys. With it is connected the Bagne or prison for convicts. Two towers are erected on the moles, one as a lighthouse, the other as a defence of the harbour. A strong thick wall runs along the quays between the harbour and the houses, which completely conceals the former from view.

Government and laws. Genoa is a garrison town, the residence of a governor-general, and of a high court of justiciary or senate for the whole duchy. In the practice of these courts the French codes, civil and commercial, have been retained. The government of the city is vested in the great town-council of 40 members, 20 of whom are merchants and 20 nobles, a lower council, two syndics, with various subordinate officers. **Education.** For public instruction there are the university, attended by about 500 students, a royal college, a naval school, and six commercial schools, one for each district of the city, a deaf and dumb school, an academy of fine arts, public libraries, one of which contains 50,000 volumes, besides several learned societies of very old standing; yet education is not generally diffused, nor has Genoa produced many men who rank high in the republic of letters. **Eminent citizens.** Among her poets, Chiabrera the lyrist stands alone eminent. The most celebrated character of which she can boast is Andrea Doria; and Columbus who was born in the duchy, but not in the city. Oderico was a famous philologer, and Lomellini first ventured to use lightning rods. And though Genoa bears ample proofs of her liberal tastes, neither has she been distinguished as the birthplace of eminent artists. Besides all the institutions already mentioned, Genoa has 15 female asylums or *conservatorie*, as well as various convents and benevolent institutions. **Religion.** The established religion is Roman Catholic; but other creeds are tolerated, even the Jewish.

History. Few states in Europe have experienced so many political revolutions as Genoa. Old traditions would assign to it an antiquity greater than that of Rome. At the beginning of the second Punic war (218 B.C.) it is mentioned by Livy as a town in friendly relations with Rome. Shortly after this, in order to effect a diversion in favour of Hannibal, Mago, the Carthaginian general, sailed with an army on board his fleet, took Genoa by surprise and partly destroyed it; but, by order of the Roman senate, it was restored a few years after.[1] From that time Genoa continued in alliance with Rome, but was not one of her colonies. She is also mentioned by Strabo as an emporium for the sale of honey, cattle, and hides, brought from the interior by the Ligurians, who received wine and oil from the other parts of the peninsula in exchange. Involved in all the vicissitudes of the Roman empire, Genoa suffered first from the invasions of the Goths and Lombards, and afterwards from the ravages of the Saracens. Such, however, were the resources of its commerce and the advantages of its situation that it always emerged from oppression; and during the tenth century succeeded in establishing a free constitution, having rid itself of the dominion of the Frank counts imposed upon it by Charlemagne. After the fall of the Carlovingian dynasty, and during the contests about the crown of Italy, the Genoese seized the opportunity of regaining their independence, and established an aristocratic republic under elective magistrates styled consuls. From the end of the 11th century the names of the consuls were recorded. By sea the Genoese merchants had already rendered themselves formidable, having strengthened their navy in self-defence against the Saracens, from whom they had suffered severely. In alliance with the Pisans they succeeded in expelling these infidels from Capraja, Corsica, and Sardinia, between 1016 and 1021 A.D. From this time dates the domination of Genoa over Corsica and Capraja. During the great crusade under Godfrey de Bouillon, the Genoese obtained settlements along the coast of the Holy Land, especially at Acre; and in 1146 A.D. they took Minorca Island from the Moors, and the next year succeeded in storming Almeria in Granada, whence they carried off immense booty. All this time the Genoese fleet consisted of 63 galleys with 163 transports, on board of which they carried 12,000 land forces. In 1148 A.D., in company with the Catalonians, they took Tortosa, which was defended by a Moorish garrison. **Pisa as a rival power.** These conquests roused the jealousy of the rival cities Pisa and Venice, also great naval and commercial powers. Two centuries of almost uninterrupted war between Genoa and Pisa succeeded, terminating in the complete defeat of the latter in a naval engagement near the rocks of Meloria in sight of their own coast. In this decisive and desperate battle, 3000 Pisans were killed and 13,000 taken prisoners to Genoa, where they mostly died in chains. The Pisans never recovered from this blow; and nine years afterwards (1290 A.D.) the Genoese, under Conrad Doria, destroyed Porto Pisano, and filled up the mouth of the harbour.

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[1] Livii, lib. xxi. 32; xxviii. 46; xxx. 1.

Venice as a rival power.

Soon after the conquest of Constantinople by the Franks in 1244 A.D., the rivalry between Venice and Genoa began to manifest itself. Michael Palæologus, having been considerably assisted by the Genoese in recovering his capital, granted them the important suburbs of Pera and Galata, and the port of Smyrna, with full jurisdiction over them all; and thus virtually granted them the command of the commerce of the Levant. This brought them into collision with the best interests of the Venetians, who disputed with them the supremacy of these seas. After several naval engagements, however, the two hostile republics concluded a truce in 1271 A.D. But after the decisive conquest of the Pisans the Genoese felt themselves more free to renew the contest with their other great rivals the Venetians; and putting to sea a large fleet and sailing up the Adriatic, they defeated the Venetians near the island of Curzola, destroying 84 galleys, and making 7000 prisoners, including the Venetian Admiral Dandolo. In 1299 a peace was concluded between these fierce rivals, by which the Venetians were entirely excluded from the trade of the Euxine, where the Genoese had studded the coast with a chain of forts, factories, and colonies, by means of which they pushed their trade far into the interior of Asia. Their commerce had now reached its greatest height. The markets of Constantinople were now wholly supplied by the enterprising and warlike merchants of Genoa; and under their auspices Kaffa, now and anciently Theodosia, became one of the finest commercial towns in Europe. At this time the Genoese not only commanded the Euxine, but had a communication with the Caspian, by which they received the costly merchandise of India. When Mohammed II. conquered Constantinople (1453 A.D.) he seized the Genoese colonies in the Euxine, which fell an easy prey to him while internal dissensions agitated the parent city at home. But long before this, in 1346, the Genoese had again come into collision with the Venetians, whom they defeated in sight of Constantinople, but were themselves afterwards totally routed on the coast of Sardinia. After this disheartening defeat the Genoese submitted to Visconti Duke of Milan, and from 1381 A.D. Venice and Genoa remained at peace. The rule of the podestà had succeeded that of the consuls about 1190 A.D. With some interruptions this lasted till 1270 A.D., when Spinola and Dona, two eminent citizens, usurped the supreme power, calling themselves "Captains of Liberty," and they retained it till 1291 A.D. The lower classes were reconciled to their rule by their appointing a magistrate called Abbate del Popolo, who vindicated the rights of the people against the nobles. Next were appointed "foreign captains" chosen from among the natives of places at least 100 miles distant from Genoa. Next was instituted a council, consisting first of 12, then of 24 members, of equal numbers of nobles and plebeians. Endless feuds arose within the city between these classes, who rendered the city with its territory almost a desert, so that in 1339 A.D. the citizens, disgusted and weary of discord, appointed a magistrate called *doge*, elected for life, excluding by law all the nobles of every faction from ever filling the office. This mode of government, with frequent contests between the chief citizen families, lasted two centuries. Taking advantage of these feuds, the Visconti of Milan and the kings of France at different times got possession of Genoa. But at length Andrea Doria delivered his country from the French, and changed the form of government by establishing biennial doges, with councils to assist and control them. This form of government lasted from 1528 till the invasion of Italy by Napoleon, when the democratic party overpowered the aristocracy after a dreadful contest, and received the protection of a French garrison. In 1799, the French under Massena were besieged within Genoa by the English and the Austrians, to whom they capitulated; but the city was again given up to the French after the battle of Marengo. A new form of government was then imposed upon Genoa by Napoleon as consul, leaving it only a nominal independence under the name of republic. When he became emperor, however, he compelled the doge and senate to submit to the annexation of Genoa to France. In 1814 Genoa surrendered to the English; and in 1815, by a decision of the Congress of Vienna, it was united to the Sardinian monarchy, and since that time the spirit of commercial enterprise among her citizens has greatly revived, and a large amount of prosperity has been regained by the city. In 1850 the city was seized by insurgents, who drove out the garrison and proclaimed a republic, April 1850; but before the end of the same month these insurgents surrendered to General Marmora.

Foglietta and Caffaro, the old chroniclers; *Istoria dei Liguri e dei Genovesi*, by Serra; Dr William Smith's *Dictionary of Greek and Roman Geography*; *Storia d'Italia*, by Botta; *Annali di Genova*, Giustiniano, in folio, Genoa, 1537; *La Chronique de Gennes*, 8vo, Paris, 1507; *Histoire du Consulat et de l'Empire*, by Thiers; Murray's *Hand-Book of Northern Italy*, &c.

Genoa, *Gulf of*, anciently called *Sinus Ligusticus*, is a large bay in the Mediterranean, lying N. of the island of Corsica, and washing the southern shores of the Sardinian provinces in Italy. No precise points can be named as marking its limits, for it opens widely and imperceptibly from the main body of the Mediterranean. It may, however, be said to comprise the whole space north of the parallel of 43. 40. N., though it is more usual to confine the appellation to that portion of this large bight which lies to the north of the parallel of San Remo, 43. 48. 44. N. Lat., and 7. 50. 0. E. Long. Thus defined, its entrance is about 140 miles in width, and its extreme breadth 54 miles. Its outline embraces the beautiful minor bays of Spezzia and Rapallo, as well as the capes of La Mele, Chiapa, and Venere.

Genoa, a township in the Cayuga county, State of New York, United States, situated on Big Salmon Creek, 162 miles W. of Albany. The post-village of the same name is pleasantly situated on the creek in this township, and contains two churches, an academy, two mills, and an iron foundry. The Auburn and Ithaca Railway passes through the village. Pop. (1850) 2503.

GENOVESI, Anthony, an eminent Italian writer, born November 1712, at Castiglione, near Salerno. After receiving a preliminary education in his native village, at his father's desire he commenced the study of scholastic theology, with a view to the ecclesiastical profession. He soon distinguished himself as a proficient in dialectics; but in consequence of his having formed an attachment to a young woman, he was removed by his father to another village, where he found a priest who diverted his attention to different objects. Having been afterwards excommunicated by the archbishop of Conza for acting a part in a comedy, he returned to Castiglione; and finding his mistress married, he re-assumed the cassock, and took priest's orders at Salerno in 1736. Here he soon distinguished himself so much by his talents, that the archbishop of this town promoted him to the chair of eloquence. At this period Genovesi was a mere school theologian; but he now began to perceive that there were sources of knowledge beyond the scholastic sphere, more extensive, more interesting, and more real than those to which he had hitherto applied. Genovesi entered into this new intellectual world by the perusal of some romances; from these he proceeded to the study of history; and finally applied himself to the study of modern philosophy, particularly the works of Leibnitz and Locke. He then went to the capital, where he endeavoured to maintain himself as an advocate; but becoming disgusted with the details of practice, he soon abandoned it, and devoted himself to study. He improved his knowledge of the Greek, and of several of the modern languages, attended all the most celebrated professors of the university of Naples, and soon perceived the imperfections of the system of public instruction. He accordingly resolved to effect its reform, with a view to the amelioration of the condition of his countrymen. Although there existed at Naples a university celebrated for the learning of several of its professors, the pupils had long been accustomed to carry on their studies in private schools. Genovesi having conceived the design of opening one of these seminaries, he procured the appointment of extraordinary professor of metaphysics in the university, in order that he might appear before the public in a known character. He had formed peculiar methods of his own in all the faculties which constitute the philosophical course; and his first essays induced him to publish his *Elements of Metaphysics*, of which the first volume appeared in 1743, and afterwards, in 1745, his *System of Logic.* In these two works he made ample use of the doctrines of Bacon, Descartes, Leibnitz, and Locke; and having substituted philosophical doubt for implicit belief, the observation of nature for the speculations of the schools, and reason for authority, he was denounced as an infidel, or at least as an irreligious person, by those who still adhered to the scholastic methods. He was supported, however, by Galiani, archbishop of Tarentum, grand almoner of the king, and grand master of the university; yet notwithstanding this protection he experienced some trouble and difficulty in obtaining the professorship of moral philosophy; and was disappointed in an attempt to procure the chair of theology.

The unjust and obstinate hostility he suffered on account of his theological works diverted him for a time from this path of inquiry, and brought him back to that of philosophy. He published a continuation of his *Elements of Metaphysics;* but with every new volume he continued to experience the censures and opposition of the partizans of the scholastic routine. Among these were the Cardinal Spinelli, archbishop of Naples, and an Abbé Magli, whom Genovesi covered with ridicule in his work entitled *Lettere à un Amico Provinciale.* In spite of these continual jarrings, Genovesi obtained the approbation and esteem of Pope Benedict XIV., of several cardinals, and of most of the learned men who at that period flourished in Italy. Of this number was Intieri, a Florentine, alike distinguished for his philanthropical qualities and the extent and solidity of his acquirements. It is to him that Italy is indebted for her first chair of political economy, which he founded at his own expense in the university of Naples, under three conditions, namely, that the lectures should be in Italian, that Genovesi should be the first professor, and that, after his death, no ecclesiastic should succeed him.

Genovesi opened his first course of lectures on the 5th of November 1754, with great success. The novelty and the interest of the subject, the eloquent style and agreeable manner of the professor, attracted a crowd of auditors, and made a deep and lively impression. Nothing, indeed, was talked of but agriculture and commerce. Genovesi afterwards published his *Lectures on Commerce*, and Carey's *Account of the Trade of England* translated into Italian by his brother, with notes by himself. The great success of these lectures, which were delivered in Italian, induced Genovesi to draw up a complete code of philosophy in that language, so as to render the work accessible to those classes to whom the Latin tongue was not familiar. He had published in Italian his *Meditazioni Filosofiche*, on religion and morals; and his *Lettere Accademiche*, on the utility of the arts and sciences—a treatise written in opposition to the well-known work of Rousseau on that subject. Following out his plan, he began to recast all his Latin works, and to improve their form, so as to render them more generally interesting. The first of these was his treatise on *Logic*, which went through several editions. Then his *Metaphysics* appeared, in three parts, viz., on cosmology, theology, and anthropology. In 1767 he published part of a work on the *Science of the Rights and Duties of Man;* but this was never completed. In all his writings the style is somewhat affected; at the sametime they present us with a good exposition of the ideas and systems of the most celebrated philosophers.

After the suppression of the order of the Jesuits, when it became a question with the government whether they ought to be reinstated in their superintendence of public instruction, Genovesi was consulted, and his advice was to replace the scholastic chairs by schools of mathematics, physics, and history; and he proposed one chair for the illustration of Cicero *De Officiis.*

From the commencement of 1763 Genovesi had felt the symptoms of a dangerous malady; but he continued to teach and to write to the last day of his life; and he had the satisfaction of witnessing the great success of his labours. Since the days of Telesius and Campanella no school had attained more credit and celebrity at Naples than that of Genovesi. Pupils of all ranks flocked to his lectures; and those who heard him generally adopted his ideas. He handled the most abstruse subjects in the most agreeable manner, and thus secured a great command over the attention as well as over the judgment of his pupils. Indeed all that Italy has since produced in philosophical and economical science may be said to have originated in the school which he founded. Genovesi died of a dropsical disorder, September 22, 1769, aged fifty-seven.

The following list of his works is taken from Fabroni, *Vitæ Italorum doctrina excellentium*:—1. Disciplinarum metaphysicarum Elementa Mathematicum in morem adornata, 1744–1751, 4 vols. 8vo; 2. Elementorum Artis logico-criticæ libri quinque, Neapolis, 1745; 3. Discorso sopra alcuni trattati d'Agricoltura, ibid. 1753; 4. Lettere Accademiche, ibid. 1764; 5. Storia del Commercio della Gran Brettagna, &c., 1757; 6. Delle Lezioni di Commercio; 7. Discorso sopra l'Agricoltura, with a translation of Tull's Husbandry; 8. Discorso sul volgarizzamento del Saggio Francese sull' Economia de' grani, Naples, 1765; 9. Meditazioni Filosofiche sulla Religione e sulla Morale, ibid. 1766; 10. Della Filosofia del giusto e dell' onesto, 1766–1776, 3 vols.; 11. Universæ Christianæ Theologiæ elementa dogmatica, historica, critica, a posthumous work, Venice, 1771, 2 vols. 4to. (J. C.)

GENS, in *Roman Antiquity*, a clan, embracing several families, whose bond of alliance was a common name and certain religious rites performed in common. The *Gens Cornelia*, for instance, comprised the families of the Lentuli, Cethegi, Scipiones, and many others. Persons of the same gens were called *Gentiles*, while those of the same family were designated Agnati. At first patricians only were considered to have a gens; but after the plebeians obtained the right of intermarriage with the patricians, and access to the honours of the state, they likewise received the rights of gentes. Hence there were both patrician and plebeian gentes; and sometimes in the same gens there were both patrician and plebeian families. (See Niebuhr's *Röm. Gesch.*, vol. i., p. 339; Adam's *Roman Antiquities;* Freund's *Lexicon*, &c.)

GENSERIC, king of the Vandals, was the most formidable of the Gothic invaders of the Roman empire. In 429 A.D. he became king of the Vandal settlers in Spain, and in that same year crossed over into Africa, where he subjugated the Roman provinces of the north, and committed the most frightful devastations. His next exploit was to fit out a fleet, in which he sailed to Ostia, whence he marched to Rome, which he stormed, and gave up to his soldiers to be pillaged during fourteen days (A.D. 455). Two attempts were made by the Romans to avenge themselves on the barbarians; the first by Majorian, emperor of the west, in 457; the second by Leo, emperor of the east, in 468. Both of these attempts, however, signally failed. Genseric spent the remainder of his life in consolidating his conquests, and died at a great age in 477. He was cruel to bloodthirstiness, cunning, unscrupulous, and grasping; but he possessed great military talents, and his manner of life was austere. Though the effect of his victories was neutralized by the subsequent successes of Belisarius, his name long remained the glory of the Vandal tribes. (Comp. Procopius' *De Bell. Vandal.*; Gibbon's *Decline and Fall*, chap. 33-36.)

GENTIAN, a genus of plants belonging to the nat. ord. *Gentianaceæ*. It includes about a hundred species, many of them remarkable for the beauty of their flowers, which are usually of different shades of blue, but sometimes red, purple, yellow, or rose-coloured. See BOTANY, vol. v., p. 200. The officinal gentian is the dried root of *Gentiana lutea*, a native of the Alps, which has a stem about three feet high, broad ovate leaves, and numerous yellow flowers. It has an intensely bitter taste, and is in general use as a tonic in diseases of debility. Its febrifuge virtues have been celebrated from antiquity, and it was a much-valued remedy in intermittents before the introduction of cinchona, for which it is still sometimes substituted. All the species contain the bitter principle in abundance.

GENTILE (Lat. *Gentilis*, from *gens*, a nation) is used in Scripture to denote a pagan, or worshipper of false gods. The Hebrews included all the inhabitants of the earth except the Israelites under the common name of גוֹיִם (*goïm*), *i.e.* 'nations;' in the Greek rendered τὰ ἔθνη, and in the Latin by *gentes*. By degrees this appellation came to be used by the Hebrews in a reproachful sense, on account of the idolatry of the surrounding nations. It was afterwards used by the Jewish converts to the gospel as a common designation for such as were neither Jews nor Christians. St Paul is styled emphatically the apostle of the Gentiles, because the sphere of his labours lay chiefly among the foreign pagans.

In the Roman law and history the word gentile is used as equivalent to *barbarian*, which was applied to all who were not Romans.

GENTILESCHI, HORATIO, an Italian painter, born at Pisa in 1563. After having made himself famous at Florence, Rome, Genoa, and in other parts of Italy, he removed to Savoy, from thence to France; and at last, on the invitation of Charles I., came over to England. He was appointed lodgings at court, with a considerable salary, and employed to decorate the palace at Greenwich and other public places. His best performances in England were the ceilings of Greenwich and York House. He also executed a Madonna, a Magdalen, and Lot with his two daughters, for the king. His attempts in portrait were feeble, his talent lying altogether in the historical style, with figures the size of life. After twelve years' residence in England, he died at the age of eighty-four, and was buried in the Queen's Chapel at Somerset House.

GENTILIS, ALBERICUS, a laborious jurisconsult of the sixteenth century, with more erudition than taste or judgment, was born in 1551 at Castello-di-San-Genesio, in the March of Ancona, and studied at Perugia, where he took the degree of doctor in civil law at the age of twenty-one. Soon afterwards he was appointed a judge at Ascoli; but not having it in his power to profess there in security the Protestant religion, of which he was an ardent follower, he went to seek an asylum in Carniola, and ultimately in England. During his stay in London, where he continued for several years, he lived entirely on the bounty of some generous friends of the sciences. At length the Earl of Leicester procured him, in 1587, the chair of law in the university of Oxford, which, with other lucrative appointments, he held till his death in 1611. The labours of Albericus Gentilis in jurisprudence give him but small claims to our esteem. His views are often erroneous, and the sound doctrines which may be found in his works are buried in a mass of citations without end, from the philosophers, fathers, poets, historians, and jurisconsults. But his treatises on the law of nations have rendered his name worthy of a place in the history of jurisprudence. His book *De Jure Belli* contains excellent views on a science which Aristotle and Cicero have not even touched on; and if the author has not sufficiently fathomed his subject, he has at least the merit of having furnished abundant materials to Grotius, who knew better how to use them.

An exact list of the works of Gentilis may be found in the *Mémoires* of Nicéron (tomes xv. and xx.); but it may be sufficient here to indicate the following: *Liber Conditionum*, Wittemberg, 1580, 8vo; *De Juris Interpretibus Dialogi Sex*, London, 4to; *De injustitia bellica Romanorum actio*, Oxford, 1590, 8vo; *De Jure Belli libri tres*, Hanau, 1598, 8vo; *Disputationes duæ, prima de actoribus et spectatoribus fabularum non notandis, secunda de abusu mendacii*, Hanau, 1599, 8vo; *Ad Joannem Rainoldum de Ludis Scenicis epistolæ duæ*, Middelburg, 1699, 4to; *Disputationes tres, prima de libris Juris Canonici, secunda de libris Juris Civilis, tertia de Latinitate veteris Bibliorum versionis male accusata*, Hanau, 1604 and 1605, 8vo; *De Linguarum mixtura disputatio parergica*, Hanau, 1604, 8vo. (J. B—E.)

GENTLEMAN (from the root of *gens*, a family), a designation which in its most extended sense comprehends every man (whether titled or untitled) whose condition is above that of a yeoman. In a more limited sense it denotes one without a title who bears a coat of arms, or whose ancestors have been freemen. By courtesy, however, this title is generally accorded to all persons above the rank of common tradesmen when their manners and deportment are indicative of a certain amount of refinement and intelligence. But in its best and highest sense, this word is used to denote one who not only does what is right and just, but whose conduct is regulated by a true principle of honour, which springs from that self-respect and intellectual refinement which manifest themselves in unconstrained yet delicate manners.

The word is a synonym of the French *gentilhomme*, with the substitution of the Saxon *man* for the corresponding term of the Norman French. This again is from the Latin *gentilis homo*, which was used by the Romans to signify one who belonged to a *gens* or family. The meaning of this term is explained by Cicero (*Top.* vi.) as follows:—*Gentiles sunt, qui inter se eodem sunt nomine, ab ingenuis oriundi, quorum majorum nemo servitutem servivit, qui capite non sunt diminuti.* The word gentleman, as connected with *gentilis*, has its equivalent in most of the languages of western Europe that are derived from the Latin. Thus in Italian it is *gentiluómo*; and the Spanish has *gentilhómbre*, though the equivalent term in that language is rather *hidálgo*, or *hijo d'álgo*, *i.e.* the son of somebody, or a person of note. Some have maintained that the word is derived from *gentilis* in the sense of *pagan*; and that the ancient Franks when they conquered Gaul, which had been converted to Christianity, were called by the natives *gentiles* as being yet heathens. Others state, that in the decline of the Roman empire, as recorded by Ammianus Marcellinus, there were two companies of soldiers distinguished for their valour, the *gentiles* and the *scutarii*,—and that hence we derive the terms *gentleman* and *esquire*: to which opinion Pasquier inclines, especially as it was to these brave soldiers that the principal portions of land were assigned.

GENTLEMAN-USHER *to the Black Rod*, an officer belonging to the Garter, and chief usher to the sovereign. It is his duty to attend the House of Peers during the sitting of parliament, to regulate the ceremonial forms of the house, and to carry messages to the Commons. He has no fixed salary, but derives his emoluments from fees regulated by the house. He has also the appointment of the doorkeepers, messengers, and other servants of the house.

GENTLEMEN-PENSIONERS, a band of forty gentlemen, instituted by Henry VIII. in 1509, to form a guard to the royal person to and from the chapel-royal, and on other occasions of solemnity. In 1834 this corps resumed, by royal command, its ancient title of "*The Honourable Corps of Gentlemen-at-Arms*;" and it was further ordered, that the appointments should be made exclusively by the sovereign, from lists kept by the commander-in-chief, and on his recommendation, and that none should be eligible but officers of the army or marines, who should also be allowed to enjoy their half-pay along with their salaries. These appointments are placed on the same footing with respect to purchase, and vacancies by death, as commissions in the army. The corps consists of the captain with a salary of L.1000 a-year, the lieutenant with L.500, the standard-bearer with L.310, the clerk of the cheque with L.120, and of forty gentlemen who are entitled esquires and receive L.70 each per annum. They form a body-guard to the sovereign; but their duty is now chiefly confined to an attendance at drawing-rooms, levees, coronations, and other state ceremonies. (*Official Handbook*, Lond., 1855.)

GENTOOS. See Hindustan.

GENUS, in a general sense, is an assemblage of objects, whether persons, animals, plants, inanimate or abstract things, related by some common resemblance in natural qualities. In logic it signifies that which has several species under it; or it may be defined as a universal which is predicable of several things of different species.

In natural history it is used to denote an assemblage of species which possess certain common characters by which they are distinguished from all others. It is subordinate to *class* and *order*, and, in some arrangements, to *tribe* and *family*. Sometimes a single species, possessing certain peculiar characters distinct from all other species, constitutes a genus.

Genus, in *Music*, signified a particular arrangement of the sounds forming the ancient Greek scales, diatonic, or chromatic, or enharmonic. (See the Musical Histories of Burney, Martini, and Forkel.) (G. F. G.)

GEOCENTRIC, having the earth for its centre, or the same centre as the earth; a term applied in astronomy to the place of a planet as seen from the centre of the earth, in opposition to its *heliocentric* place, or that point in the ecliptic in which the planet would appear if viewed from the centre of the sun.

GEODESY (γῆ, and δαίω I divide), that part of practical geometry which relates especially to the measurement and division of surfaces. In its more extended signification geodesy embraces all the trigonometrical and astronomical operations necessary for the construction of maps, for measuring the length of a terrestrial degree, &c.; and includes, in short, all those operations which relate to the measurement of the earth's surface. See Figure of the Earth, Geography, and Trigonometrical Survey.

GEOFFREY of Monmouth, an ancient English chronicler, was born about the beginning of the twelfth century, in the town from which he took his name. A room in the Benedictine monastery of Monmouth is still pointed out as the place where he studied. He entered the church, became archdeacon of Monmouth in 1152, was promoted in 1152 to the see of St Asaph, and is supposed to have died in 1154. Geoffrey's *Chronicon, sive Historia Britonum* professes to be, and probably is, a translation from the Welsh. The Welsh original fell into his hands through Walter, archdeacon of Oxford (a different person from Walter Mapes, who has been very often confounded with him), who got possession of it in the course of a tour through Armorica or Brittany. Geoffrey, who undertook to translate it, executed his task with great fidelity. The work itself is a history in nine books of the Welsh from the time of their leader Brut, the great-grandson of Æneas! to the death, in 688, of Cadwallader, whom the Saxon chroniclers name Ceadwalla, and describe as king of Wessex. This work does probably not possess much historical value, but it is important as containing the legends and traditions of the Kymri in a better form than they are to be found elsewhere. The outline of Geoffrey's history is all to be found in Nennius, who preceded him by at least three centuries. But the splendid tale of Arthur and his knights had fallen into complete oblivion, till revived by the monk of Gloucester into fresh life and universal and enduring popularity. For this service alone does Geoffrey deserve to be gratefully remembered by us, and to be forgiven the many fabulous and trifling stories which he has grafted on historical outline in such numbers as to make some critics, Buchanan among the rest, regard his entire work as a fiction. The style of the *Chronicon* is lively and agreeable, and the Latinity, though far from perfect, is greatly superior to that of most contemporary chroniclers.

There are several editions of Geoffrey's history. The oldest is that printed by Ascensius at Paris in 1508, and again in 1517. It is also contained in Commeline's Collection, Heidelberg, 1587. It was translated into English in 1718 by Aaron Thompson of Queen's College, Oxford. (Tanner, *Bibl. Britan. Hib.*; Chalmers, *Biog. Dict.*; Craik, *History of Learning and Literature*, &c. &c.)

GEOFFROY SAINT-HILAIRE, Étienne, one of the most eminent naturalists of modern times, was a native of Étampes (Seine-et-Oise), where he was born, April 15, 1772. By his genius, energy, and skilful investigations, during a long career as professor of zoology to the faculty of sciences of the Académie de Paris, and at the Jardin du Roi, he contributed more than any other naturalist, except his great contemporary and friend Cuvier, to the progress of the science and philosophy of natural history. Destined by his parents for the clerical profession, he was entered at the college of Navarre, in Paris, in order to study philosophy and the other branches reckoned necessary as preparatory to a theological course. At this time Brisson was professor of experimental philosophy in that college, and gained immense influence over the mind of the young student, who felt instilled into him an enthusiastic love of nature in all its wonderful variety. This inclination greatly strengthened the sympathy between Geoffroy and his teacher. Having completed the term of his literary studies, he left the college of Navarre, and obtained his father's permission to enter the college of Cardinal Lemoine. Notwithstanding the high and honourable position in the church held out to him through powerful patronage, Geoffroy wished to pursue studies more in harmony with his peculiar tastes and sympathies; and while hesitating about which department of natural science he should devote his attention to, he was much assisted in coming to a decision by making the acquaintance of the celebrated Haüy, then one of the professors in the Cardinal's college. Haüy became his warm, steady, and attached friend, and by his example and counsels greatly assisted him in developing the tastes which the lectures of Brisson had aroused. The consequence was, that from this moment Geoffroy enthusiastically devoted himself solely to the study of the natural sciences. In pursuance of his determination, he first, in company with Haüy, took the mineralogical course at the Collège de France. Daubenton, who filled this chair, was not slow to perceive the decided bent and talent of his pupil. At the conclusion of his lectures, being in the habit of entering into conversation with his pupils, for the purpose of affording explanations to his auditors on points which might to them seem obscure, Daubenton was struck with the depth of the remarks and questions elicited from the young Geoffroy on such occasions; and even then he predicted the distinguished rank which his pupil would one day occupy in the scientific world.

The labours of Geoffroy and his friend Haüy, however, were interrupted by the revolution of 1789. During the massacre of September 1792, Geoffroy, at the risk of his own life, was the means of saving several priests; and among them Haüy, who had been imprisoned for recusancy. This act of devotion so endeared him to his teachers, especially to Daubenton, that through his instrumentality he was appointed, in 1793, to an office in the Jardin des Plantes, where he founded the vast zoological collections which form one of the true glories of Paris. By the law of June 10, 1793, the Jardin du Roi was constituted a school for advanced instruction in all branches of natural history, conducted by twelve eminent professors, each distinguished in his own branch. Scarcely entered on his twenty-fourth year, and very recently having applied himself to the study of mineralogy, Geoffroy was judicially selected by Daubenton for the chair of zoology (section, *vertebrate animals*), an appointment which he more recently shared with Lacépède.

Having thus become the colleague of Daubenton, Fourcroy, Jussieu, Lacépède, Lamarck, Vauquelin, and Latreille, Geoffroy devoted himself with enthusiastic energy to the study of zoology exclusively. For the purpose of extending the sphere of this science, he earnestly and cordially encouraged the efforts of all those who attempted to assist in its progress; and to this zeal it is that Europe owes one of the men who have rendered her pre-eminently illustrious in the science of natural history—the celebrated Cuvier. During the years 1795 and 1796, Geoffroy and Cuvier resided together, sharing with each other everything that could strengthen the already strong natural sympathy of their natures. Soon after this Cuvier was appointed joint professor of comparative anatomy with his bosom friend—an honour which justified the presage that called him to Paris, " pour remplir le rôle d'un nouveau Linné."

In 1798, Geoffroy was selected as one of the great scientific expedition to Egypt; and in the execution of his functions he displayed great firmness in preserving to his beloved Paris immense treasures of precious materials collected and prepared with infinite pains during that memorable expedition in behalf of science and art. After the capitulation of Alexandria, these treasures were only saved by Geoffroy threatening to destroy them when the English general wished to retain them: " We ourselves shall burn our treasures," said he, " and history will not fail to record that you have burned another library in Alexandria." From Egypt Geoffroy transferred to Paris a curious and most interesting collection of ancient animals; and he inserted in the great work upon Egypt learned observations on the natural history, as well as on the civil history and theogony of that interesting and inexhaustible country. On his return to France he continued his course of lectures on natural history. He was one of the first men of science and literature on whom Napoleon bestowed the cross of honour, and in 1807 he became a member of the institute, and soon afterwards associate of the Académie de Médecine, as well as of most of the scientific institutions of Europe; then professor of zoology to the faculty of sciences (1809), still holding at the museum the chair created in 1793.

In 1810 a mission into Portugal for the re-organization of public instruction held out to his courage, his love of science, and his benevolence, a new occasion of manifesting themselves in all their comprehensiveness. Once more, we are told, did the English wish to despoil him of his rich choice collections; but these were saved to him by the intervention of the conservators of Ajuda, who attested to the English commissaries that these collections had been granted to the French naturalist in exchange for minerals brought from Paris, and that the classification of the Cabinet of Ajuda was the fruit of this philosopher's labour. This declaration, with the sacrifice which Geoffroy made of several cases containing his own property abandoned to the exigencies of the people, allowed him to enrich the museum of Paris with a complete collection of the productions of Brazil.

The works of Geoffroy Saint-Hilaire do not constitute a regular system; they are composed of detached Mémoirs in which are contained some new and bold ideas of which no one disputes the originality and depth, though in their application they often lose much of their justness and value. The limits of a brief notice permit only a very brief analysis of the systems he developed in order to arrive at the solution of philosophical and physiological questions of the highest interest.

In psychology, Geoffrey Saint-Hilaire enunciated some negative ideas only. The soul, which he calls a psychological element, is not an entity any more than a metaphysical abstraction, according to his theory. This being, composed at once of a spiritual and a material principle (*spiritus corporeus*) cannot represent the intelligent, since no part of matter can belong to intellectual functions. In this manner he tells us what the soul is not; but what it is he nowhere informs us, nor does he even attempt a solution of the question so often earnestly asked—What is the soul?

In his physiological views, however, Geoffroy is explicit and positive. In formal and direct opposition to the philosophy of final causes, he has exerted all his efforts to demonstrate that it was not with any view to their results that the organs of animated beings have been created. This miserable and arid system, which would prohibit us from contemplating with gratitude the boundless intelligence of the Author of nature, has been too successfully refuted ever to be mooted again with the faintest hope of success.

It was imputed to Geoffroy that his doctrine necessarily led to atheism; because if all the existing species of organic beings could have descended from one antediluvian species, the intervention of creative power was useless; and that if both unorganized matter and organic matter are eternal, the intervention of a creator was impossible. This imputation Geoffroy indignantly scouted and disavowed as necessarily arising out of his doctrines. In his *Notions de Philosophie Naturelle* (1838), he complains that he has been misunderstood; that his doctrine does not suppose the existence of such an antediluvian species; and that by the term " Typal Unity," he means unity of organic composition, which means quite a different thing.

The most important of the published works of Geoffroy Saint-Hilaire are:—*Philosophie Anatomique*, 1823; *Système dentaire des Mammifères et des oiseaux*, 1824; *Histoire Naturelle des Mammifères*, in concert with Cuvier, 1819, second edition, 1828, *et seq.*, 4 vols. 4to; *Cours d'Histoire Naturelle des Mammifères*, 1828; *Des Considérations sur les Singes qui se rapprochent le plus de l'Espèce Humaine*, 1836; *Notions de Philosophie Naturelle*, and some biographical fragments, 1838. Besides all these, there are numerous contributions by him in several literary journals; and he was one of the collaborateurs of the *Dictionnaire des Sciences Naturelles* and of the *Dictionnaire Classique d'Histoire Naturelle*, in which he was chiefly aided by his son, Isidore Geoffroy Saint-Hilaire, M.D., and Member of the *Academie des Sciences.*

Geoffroy Saint-Hilaire died June 19, 1844; and his *Life, Works, and Theories*, have since been published by his son. The title is: *Vie, Travaux, et Doctrine Scientifique D'Étienne Geoffroy Saint-Hilaire; par son fils, M. Isidore Geoffroy Saint-Hilaire*, Paris, 1847. (A. F. F.)

GEOGRAPHY.

INTRODUCTION.

Introduction.

The term Geography, derived from two Greek words, γεα, *the earth*, and γραφω, *I write*, signifies *a description of the earth*. The description to which this title is applied may be more or less general; either embracing such truths only as belong to the earth considered as one whole, or extending to particulars which belong to and distinguish the several countries spread over its surface. In whichsoever of these two aspects the subject be regarded, a vast field opens to the view of the observer. In order to give a full and accurate description of the earth, it would be requisite to consider it in reference to its motion, figure, and magnitude; in reference to its relation to the other bodies of the universe, and more especially to the planetary system of which it forms a part; in reference to its surface, as diversified by land and sea, mountains and valleys, lakes and rivers; in reference to the materials which compose its crust, and to its internal structure; in reference to the constitution of the atmosphere with which it is surrounded, and the effects arising from the variations in atmospherical pressure, temperature, and humidity. Nor would it be enough to consider the earth only as a mass of inert and unorganized matter; it would be necessary to regard it in its relations to vegetable and animal life; and to trace the phenomena which these, in their endless variety, present in its various divisions and provinces. It would still further be necessary to view it as the abode of man himself, and as modified by his existence; divided into states and kingdoms; adorned with cities, and all the noble monuments of civilized life.

Such is an outline of the picture which geography, in the most unlimited meaning of the term, should exhibit of the globe. To fill up this picture in all its parts, it would evidently be necessary to call in the aid of the whole circle of the sciences. But the description is usually of a less extended character, being confined chiefly to the more obvious and striking features of the various regions and countries of the earth.

In the wide range which the subject presents, several divisions and subdivisions are suggested by the different views in which the earth may be considered. The three following divisions are the most important:

1. *Mathematical Geography*, which illustrates, on astronomical principles, the figure, magnitude, and motion of the earth; teaches how to determine the positions of places on its surface; explains the construction of globes, with their application to the solution of problems; and shows how the whole or any portion of the earth's surface may, on the principles of projection, be delineated on a map or chart.

2. *Physical Geography*, which treats of the mutual relations of the diversified objects found on the surface of the earth, including the atmosphere by which it is surrounded; and explains the causes, whether of a chemical or mechanical description, that produce the modifications and changes which are continually taking place in them.

3. *Political* or *Historical Geography*, which describes the earth as divided into countries, occupied by various nations, and improved by human art and industry. It traces the circumstances and character of the different races and tribes of mankind, explaining their social institutions, and ascertaining the place which each occupies in the scale of civilization.

From this general arrangement of the subject, it is evident that geography depends for its rank as a science on its intimate connection with various branches of knowledge, which, taking their rise from investigations instituted in reference to the nature and mutual relations of the objects on the earth, or connected with it, furnish those accurate views which must be obtained before any thing like a precise description can be given of the globe we inhabit, or of any portion of it. With regard to what belongs to Physical Geography, we must refer the reader to the articles Physical Geography, Mineralogy, Meteorology, &c. in this work. What belongs to Political or Historical Geography will be found under the names of the respective countries. The following article will be limited to a view of the progress of Geographical Discovery, and to a brief explanation of the principles of Mathematical Geography.

I.—VIEW OF THE PROGRESS OF GEOGRAPHICAL DISCOVERY.

There are many circumstances in the condition of man which connect him so closely with the globe which he inhabits, as to render absolutely necessary to his existence a knowledge of at least the neighbourhood of the spot where his lot is cast. It is from the earth that he must derive the means of subsistence and accommodation, the materials on which his industry is to be exerted, and those objects in the exchange of which commerce consists. In every stage of his progress, therefore, from barbarism to civilization, he must employ some attention and observation, in order to discover in what respects the objects with which he is surrounded are qualified to contribute to the supply of his wants, and to his comfort and convenience. Even while he roams the forest in the savage state, he must make himself acquainted with many circumstances, a knowledge of which is necessary either to give him success in the chase, or to direct him in retracing his steps to the place where he has fixed his dwelling. But it is not until men have united in society, and that neighbouring communities have begun to hold mutual intercourse, that those feelings and passions are effectually aroused which stimulate to the arduous pursuits of geographical discovery. Commerce and war, with the spirit of adventure which usually accompany them, have without doubt been among the first causes of geographical research. In the train of these have followed the workings of avarice and the aims of ambition. As the human mind has advanced in its career of improvement, curiosity, with an enlargement of views and desires, have been called into action; and voyages have been undertaken for the express purpose of discovering new countries and exploring unknown seas.

In tracing the effects which these causes have produced in the gradual increase of geographical knowledge, it will contribute to distinctness to keep in view a threefold division, which the subject naturally assumes, namely, *ancient* geography, extending from the earliest period of history down to the time when, the Roman empire having been overrun by barbarous nations from several quarters, Europe was overwhelmed in the darkness which preceded the revival of learning; the geography *of the middle ages*, extending from the revival of letters to the fifteenth century, when the discoveries of the Portuguese began to lay a wider foundation for the science; and *modern* geography, which embraces the most recent discoveries, and is progressively improving by the accessions which it is receiving from the labours and science of modern travellers and navigators.

The Phœnicians are the earliest commercial people of whose discoveries we have any correct accounts. This people seem first to have explored the coasts of the Mediterranean. Their navigators at length extending their voyages through the Straits of Gades, now called the Straits of Gibraltar, entered the Atlantic Ocean, and visited the western coasts of Spain and Africa. In many places to which they resorted they planted colonies; and sought, by instructing the inhabitants, in some measure, in their arts and improvements, to open a wider sphere for their commerce. The learned Bochart, led by the analogy between the Phœnician tongue and the oriental languages, has endeavoured to follow the tracks of the Phœnicians, both along the shores of the Mediterranean and those of the Atlantic. These analogies are not always sure guides; but there seems no reason to doubt that Cadiz was originally a Phœnician colony, and it is not likely that this was the only one formed by that enterprising people.

The Arabian Gulf, or Red Sea, offered to the Phœnicians another field of naval and commercial exertion, to the improvement of which the distance of Tyre, the emporium of their trade, was the only obstacle. This induced them to make themselves masters of Rhinocrura or Rhinocolura, the port in the Mediterranean nearest to the Red Sea. Commodities purchased in Arabia, Ethiopia, and India were landed at Elah, the safest harbour in the Red Sea towards the north; thence they were conveyed over land to Rhinocolura; and being there reshipped, they were carried to Tyre, whence they were distributed over the world.

The wealth and power which accrued to the Phœnicians from their being in the sole possession of the lucrative trade of the East, incited the Jews, their neighbours, under the prosperous reigns of David and Solomon, to desire a participation in its advantages. Their conquest of Idumea, which stretches along the Red Sea, put it in the power of Solomon to fit out a fleet; while his alliance with Hiram, king of Tyre, enabled him to command the skill of the Phœnicians for the conducting of the voyage. Passing through the Straits of Babelmandel, they carried on commerce in the Indian Ocean; and so distant were the countries to which they traded, that the voyage occupied no less than three years. But though the Jews thus for a time engaged in the pursuits of trade, yet the tendency of their institutions, which were expressly designed to preserve them a separate people, was unfavourable to the development of the commercial spirit which their monarchs wished to foster among them. This, joined with the division of the kingdom on the death of Solomon, proved fatal to their rising greatness as a commercial people, and excluded them from ranking among the nations who have contributed to the advancement of geographical knowledge. It is perhaps impossible to fix with certainty the limits which bounded the geographical researches of the Phœnicians, on account of the difficulty there is of assigning the precise places marked out by the names then given to the countries to which they traded. The length of time occupied in the voyage, and the nature of the cargoes brought home, with a few other circumstances of the same vague kind, are the only particulars afforded to direct us in the determination. Thus the country of Ophir, to which the Phœnicians navigated the ships of Solomon, must be ascertained by the facts that the voyage thither and homeward occupied three years, and that the cargo consisted of "gold and silver, ivory, and apes, and peacocks." Among the various opinions which have been entertained respecting the position of this distant country, the most probable appears to be that it was situated on the eastern coast of Africa, as far south as Sofala. To this quarter every indication seems clearly to point; and whatever objections may appear to stand in the way, in consideration of the remoteness of the region, and the difficulties to be encountered, these admit of being answered by a reference to the length of time required for the voyage, and to the wealth, naval skill, and ample resources, at the command of the monarchs engaged in the traffic.[1]

The Carthaginians, a Phœnician colony, retained in full vigour the commercial spirit of the parent state. They did not, however, attempt to divide with Tyre the wealth and power which she derived from the monopoly of the trade carried on in the Arabian Gulf. They directed their efforts to the opposite quarter, and sailing through the Straits of Gades, pushed their researches far beyond the bounds which had been reached by the mother country in this part of the globe. They visited not only all the coast of Spain, but likewise that of Gaul, and penetrated at length as far as the south-western coast of Britain, where they obtained tin from the mines of Cornwall or in traffic with the natives. Nor was it only towards the northward that they directed their efforts; they explored also the regions southward of the straits, and sailing along the western coast of Africa almost as far as the northern tropic, they planted colonies, as the Phœnicians of Tyre had formerly done, with a view to prepare the natives for carrying on commercial intercourse. The Atlantic Ocean was destined to conceal for ages from the inhabitants of the old world the immense regions which lie beyond it. But the Carthaginians extended the boundary of navigation westward by the discovery of the Fortunate Islands, now known by the name of the Canaries.

The enlargement of views gradually generated by this spirit of commercial enterprise led at length to voyages of which discovery was the special object. The circumnavigation of Africa was one of the earliest attempts of this kind made by the ancients. The direction which the coast takes beyond the Mediterranean on the one hand, and the Red Sea on the other, suggested the idea of a peninsula which it might be possible to sail round. This voyage was first undertaken by the Egyptians; a people exceedingly averse to engage in naval affairs, but who at this time were ruled over by Necho, a monarch whose active spirit prompted him to engage some Phœnicians to descend the Arabian Gulf, and, coasting along Africa, to endeavour to return by the Straits of Gades. Herodotus narrates in a few words the result of this enterprise, which was undertaken about six hundred and four years before the Christian era. He says, "the Phœnicians, setting sail from the Red Sea, made their way into the southern sea; and when autumn approached they drew their vessels to land, sowed a crop, and waited till it was grown; when they reaped it, and again put to sea. Having spent two years in this manner, in the third year they reached the pillars of Hercules, and returned to Egypt, reporting what does not find belief with me, but may perhaps with some other person; for they said that in passing Africa they had the sun on their right hand. In this manner Lybia was first known."

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[1] The regions always spoken of in Scripture as the most remote with which the Hebrews and Phœnicians were acquainted are, Tarshish, Ophir, the Isles, Sheba, and Dedan, the River, Gog, Magog, and the North. Without entering into any discussion, we may give what appear to be the most probable conclusions with regard to the positions of the countries to which these names were applied. Tarshish is a country from which two voyages are spoken of in Scripture as being made; one by the Mediterranean, bringing iron, silver, lead, and tin, the produce of Spain and Britain; the other by the Red Sea, bringing gold, ivory, and other productions of tropical Africa. These two voyages, though at first sight they appear incongruous if supposed to be made to the same country, may be reconciled by supposing that Tarshish is fundamentally Carthage, which monopolized almost entirely the commerce of Spain and Britain, and was the medium through which the commodities of the west were distributed; and that the name of this great African metropolis was extended to the whole of the continent of Africa. The Isles are the whole southern coasts of Europe, consisting either of real islands or peninsular tracts. Sheba is the southern portion of that part of the coast of Arabia which borders on the Red Sea; while Dedan lies upon the opposite coast, that borders on the Persian Gulf. These countries rose to commercial importance in consequence of the valuable commodities which were imported into the former from the African coast, and into the latter from India. Thence arose the traffic carried on by "the companies of Sheba," or caravans, and by "the travelling companies of Dedanim." The River was the name always applied to the Euphrates. Gog, Magog, and the North, appear to be the high tableland in the interior and north of Asia Minor, Phrygia, Galatia, Cappadocia, and Paphlagonia, regions in which may be recognised the peculiarly rude and formidable aspect which belonged to the countries to which in ancient times the names in question were applied. (See *Encyclopædia of Geography*, by H. Murray, Esq.)

This passage has given rise to much controversy among the learned. But the voyage here so briefly described does not seem to involve any impossibility, notwithstanding the then infant state of navigation; and the circumstance which the historian objects to as incredible is the very point which, from its coincidence with what we know should have happened, renders the story more worthy of belief.

Xerxes king of Persia, according to Herodotus, gave a similar commission, about four hundred and eighty years before the Christian era, to one of his satraps, named Sataspes, who, for a heinous offence, had been condemned to die. If successful in the accomplishment of this voyage, Sataspes was to escape a cruel death; but the difficulties were too great to be surmounted by a navigator brought up amidst the luxury and indulgence of the Persian court. Having procured from Egypt a vessel and crew, he passed through the Straits of Gades, entered the Atlantic Ocean, and, bending his course towards the south, coasted the continent of Africa, until, after several months, he probably reached the coast of Sahara. The frightful and desolate shores along which he sailed, and the tempestuous ocean which beat against them, combined to fill his mind with alarm, and to shake his resolution. He retraced his course to the straits; and hoping perhaps that the labours he had undergone in the partial accomplishment of the task imposed on him would be accepted by his royal master as a sufficient atonement for his offence, or that the offence itself might in a great measure be forgotten, he returned home and presented himself before Xerxes. The cause which he assigned for the failure of the ultimate object of his mission was, that he had encountered a sea so full of herbage that his passage was completely obstructed. This reason (the grounds of which have never been satisfactorily explained, though it *has* been alleged that obstacles of this description occur in that part of the sea which lies between the Cape Verd Islands, the Canaries, and the coast of Africa) appeared so ridiculous to Xerxes, that he ordered the sentence of death by crucifixion, which had been pronounced upon Sataspes, to be immediately executed.

But the most celebrated voyage of antiquity undertaken for the purpose of discovery was the expedition under Hanno, fitted out by the authority of the senate of Carthage, and at the public expense, and that with the view of attempting a complete survey of the western coast of Africa. Of all the voyages performed by the Phœnicians and Carthaginians, this is the only one of which we have an authentic narrative. Mercantile jealousy prevented these two great commercial states from communicating to other nations the knowledge which they acquired of the remote regions of the earth; and from this cause, when the maritime power of the former was annihilated by Alexander's conquest of Tyre, and the empire of the latter was overthrown by the Roman arms, all monuments of their great skill in naval affairs appear in a great measure to have perished. Even the account of the voyage of Hanno (*Periplus Hannonis*) has been considered by its learned editor Mr Dodwell as a spurious work. But the arguments of M. de Montesquieu and of M. de Bougainville appear fully to establish its authenticity, which the learned world now generally admit.

Hanno set sail with a fleet of sixty vessels, so constructed that, according to the mode of ancient navigation, he could keep close in with the coast. We are told that, in twelve days after leaving the Straits of Gades, he reached the island of Cerne; that proceeding thence, and following the direction of the coast, he arrived, in seventeen days, at a bay, which he called *The West Horn.* From this he advanced to another bay, which he named *The South Horn.* The objects which are described as having been seen by Hanno in his progress belong to tropical Africa. But in attempting to ascertain the places which he visited, or the utmost distance which he sailed southward, much difficulty and uncertainty are experienced. Bougainville supposes Hanno to have reached the Gulf of Benin, and contends that this limit, distant as it is, cannot be regarded as beyond what may be conceived to have been accomplished by the most skilful navigator of antiquity. Major Rennell shortens the distance considerably by conceiving the voyage to have been extended no further southward than Sherbro Sound, a little beyond Sierra Leone. He thus obtains the advantage of avoiding a difficulty involved in the hypothesis of M. de Bougainville; namely, the supposition of ancient ships having sailed upwards of seventy geographical miles in a day. At the same time, the arguments which support the one hypothesis are equally applicable to the other.

According to the views of M. Gosselin, however, the voyage must be confined to much narrower limits southward than even those assigned by Major Rennell. He supposes it to have terminated about the river Nun; an opinion which he supports by alleging that, in such a voyage, the progress must necessarily have been slow. The Carthaginian navigator had to encounter all the obstacles and dangers incident to a course held along a shore, and in a sea, which were equally unknown. He must have found himself impeded by the requisite examination of every part of the coast, as well as by the many precautions which the safety of the fleet under his command must have rendered constantly necessary. With regard to the circumstances given in the narrative which appear to point to tropical Africa, M. Gosselin supposes that the same aspect of life and nature may, at that distant period, have belonged to Morocco, then thinly peopled by the rude native tribes, which is now specially characteristic of more southern regions.

Amidst such diversity of opinion among the learned, it is not easy to decide in reference to a subject beset with so many difficulties. If we assume either of the more remote distances assigned for the termination of the voyage, Cerne must be identified with the isle of Arguin; and, on Major Rennell's hypothesis, the Gulfs of Bissago and Sherbro present those numerous islands described by Hanno, to which there are no islands corresponding on any other part of the coast. On the whole, however, the most limited distance seems preferable, if we admit that part of M. Gosselin's hypothesis which assigns to Morocco features of man and of nature that are usually held to be characteristic of tropical Africa.

The circumnavigation of Africa was an enterprise which in ancient times not only called forth the naval efforts of the most powerful maritime states, but which also awakened the ambition of private adventurers. Eudoxus, a native of Cyzicus, being sent on a mission to Alexandria, at that time the seat of naval enterprise and geographical knowledge, his ardent mind, naturally biassed to these pursuits, was aroused to action by the spirit which prevailed in that city. He began his career under the auspices of Ptolemy Euergetes, the reigning Egyptian monarch, who fitted out a fleet, and placed it under his command. According to the destination assigned him, Eudoxus descended the Arabian Gulf, and proceeded probably as far as the southern shore of Arabia. Thence he appears to have returned, after a prosperous voyage, with a valuable cargo of aromatics and precious stones. But of this wealth he appears to have been deprived by Euergetes. After the death of this monarch, which in a short time took place, his widow Cleopatra sent Eudoxus on another voyage, in the course of which he was driven by unfavourable winds on the coast of Ethiopia, where he was kindly received by the inhabitants, and carried on with them an advantageous traffic. After other vicissitudes of fortune, he was induced by circumstances which occurred in his adventurous life to leave the court of Egypt, and repair to the commercial city of Cadiz, in Spain, and there to fit out an expedition for the purpose of African discovery. At Massilia (Marseilles), and other maritime places through which he passed on his way to Cadiz, he took care to make known his views and hopes of success, and to invite all who were actuated by any spirit of enterprise to accompany him. He succeeded in fitting out a ship and two large boats; on board of which he carried not only goods and provisions, but artisans, medical men, and even players on musical instruments. This was no doubt proceeding on a magnificent scale. But his crew was ill calculated to second his bold undertaking. To avoid the danger of stranding, Eudoxus was anxious to keep the open sea. His companions, however, alarmed at the swell, forced him to adopt the usual mode then followed of sailing along the shore; a measure which led to the disaster which he had anticipated. With one vessel of a lighter construction, on board of which was put the more valuable part of the cargo, Eudoxus pursued his voyage until he reached a part of the coast inhabited by a race of people that appeared to him to speak the same language with those whom he had found on the opposite side of the continent. Judging from this circumstance that he had ascertained the main object of his voyage, he returned and endeavoured to obtain the assistance of Bocchus, king of Mauritania. Suspecting, however, treachery on the part of that monarch, he again had recourse to Spain. Here he was again successful in equipping another expedition, consisting of one large vessel fitted for the open sea, and another of smaller size for the examination of the coast. This was a judicious preparation for the accomplishment of the object in view; but with regard to the issue of the voyage no accounts of any authority have been preserved.

Such are the leading circumstances connected with the voyages of Eudoxus, which are narrated by Strabo; and, notwithstanding the scepticism and severe criticisms of that geographer, there is really nothing to which the candid reader can reasonably refuse his belief. Prejudices, founded, for the most part, on his own want of information, led Strabo to treat likewise as fabulous the relation of the only ancient voyage having Europe, and more particularly the British isles, for its object, of which we have any detailed account.

Pytheas, a Massilian navigator, undertook an expedition about three hundred and twenty years before the Christian era. He steered northward; and after examining the coasts of Spain and Gaul, he sailed round the island of Albion; and, stretching still farther to the north, he discovered an island, the *Ultima Thule* of the ancients. What island this was the learned are not agreed. It has been supposed to be the modern Iceland; but this implies too great an extent of open sea for an ancient navigator to traverse; and besides, six days, the period during which he is said to have navigated to the northward of Albion before he made his discovery, are too short a time to admit of his reaching Iceland. Others, amongst whom is Malte-Brun, have considered Jutland as Ultima Thule. But it should be kept in view that Pytheas uniformly regarded Thule as British, a character which he could scarcely conceive to belong to Jutland, seeing he could have reached that peninsula only by a long course along the coasts of Germany, which must have impressed on his mind the idea that he had left far behind him every thing belonging to Britain. On the whole, Shetland seems best entitled to be considered as the ancient Thule, and suits well with the appellation which Pytheas gives it, when he expressly calls it the "furthest of the Britains."

Strabo endeavours to throw discredit on the statements of Pytheas, by starting objections long known to be of the most groundless description; and it is an advantage which the traveller and navigator possess who describe faithfully the grand features of nature, that, however prejudice may dim their reputation for a time, yet will their accuracy as well as veracity at length, in the progress of knowledge, appear, and secure for them the respect and applause of mankind. At the same time, it must be admitted that, in describing what he saw beyond his Ultima Thule, the statement given by Pytheas, as reported by Strabo, assumes a somewhat fabulous character. He asserted, it seems, that beyond Thule there commenced what was neither earth, sea, nor air, but a confused blending of all the three. But even here some allowance is to be made for the workings of imagination under very peculiar circumstances, and a readiness, not unnatural, to believe reports which represented him to have reached the extremity of the habitable globe. If his language is not too literally interpreted, it will be found to convey a strongly figurative, but not altogether imperfect, description of the state of the sea and sky in these climes, which have been so little favoured by nature.

The conquests of Alexander the Great, by making known the East, enlarged the bounds of geographical knowledge. Though the course of his expedition was for the most part by land, his mind was equally intent on commerce and maritime discovery. Checked as he had so long been in the career of his victories by the opposition and efforts of the republic of Tyre, he had an opportunity afforded him of observing the vast resources of a maritime power, and at the same time of forming a judgment respecting the immense wealth to be derived from commerce, especially from that carried on with India, which he found to be wholly in the hands of the Tyrians. With a view to secure this commerce, as soon as he had completed the conquest of Egypt, he founded the city of Alexandria, and thus established for it a station preferable in many respects to Tyre. After his final victory over the Persians, his march in pursuit of Bessus, who had carried off Darius into Bactriana, often led him near to India, and among people accustomed to much intercourse with it, from whom he learned many things concerning the state of the country, that served so to confirm and inflame a desire which he had long cherished of extending his dominion over those regions, that he was induced to conduct his army from Bactria, for the purpose of invasion, across that ridge of mountains which form the northern barrier of India. After passing the Indus, Alexander directed his march to the Ganges, which, from the accounts he heard of it, and of the countries through which it flows, he was eager to reach. The route which he found it necessary to follow, in consequence of being successively engaged in hostilities with various native princes, led him through one of the richest and best peopled countries in India, now called Punjab. In his ultimate object, however, he failed.

His march being performed during the rainy season, his troops had already suffered so much, that notwithstanding the high degree in which he possessed all those qualities that secure an ascendency over the minds of soldiers, he was unable to persuade them to advance beyond the banks of the Hyphasis, the modern Beyah, which was accordingly the utmost limit of Alexander's progress in India.

By this expedition, Alexander first opened the knowledge of India to the people of Europe; and as he was accompanied, wherever he went, by skilful surveyors, Diognetes and Baeton, who measured the length and determined the direction of every route taken by the army, he furnished a survey of an extensive district of it, more accurate than could have been expected from the short time he remained in that country. The memoirs drawn up by his officers likewise afforded to Europeans their first authentic information respecting the climate, the soil, the productions, and the inhabitants of India.

Though Alexander did not penetrate to the Ganges, his expedition prepared the way to the knowledge of that magnificent stream. For soon after, Seleucus, one of his successors, sent Megasthenes as his ambassador to Palibothra, the capital of a powerful nation on the banks of the Ganges. The site of Palibothra was probably the same as that of the modern city of Allahabad, at the junction of the river Jumna with the Ganges. This embassy brought new and opulent provinces of India into view, an acquaintance with which served to raise still higher the idea generally entertained of the value and importance of the country.

The island *Taprobane*, so celebrated among the ancients, which appears, notwithstanding some great mistakes with respect both to extent and position, to be the modern Ceylon, seems not to have been known in Europe even by name before the age of Alexander. In consequence, however, of the enlightened and active curiosity with which he explored every country which he subdued or visited, some knowledge of it was at length obtained; and, after his time, it is mentioned by almost every ancient geographer.

Whilst Alexander was attempting to penetrate into India, a numerous fleet was assembled by officers whom he had left on the banks of the Hydaspes, the modern Behat or Chelum, with orders to build and collect as many ships as they could. The destination of this fleet was to sail down the Indus to the ocean, and from its mouth to proceed to the Persian Gulf, with a view of opening a communication between India and the centre of his dominions.

When Alexander reached the banks of the Hydaspes on his return, he committed the conduct of this expedition to Nearchus. The voyage down the Indus derived splendour from the greatness and magnificence of the armament, which consisted of an army of a hundred and twenty thousand men, and two hundred elephants, and of a fleet of nearly two thousand vessels. Alexander himself accompanied Nearchus in his navigation down the river, with one third of the troops on board; whilst the remainder, in two divisions, one on the right and the other on the left of the river, accompanied them in their progress. Having reached the ocean after the lapse of nine months, Alexander left Nearchus and his crew to pursue their voyage, and conducted his army back by land to Persia. A coasting voyage of seven months brought Nearchus, with the fleet, in safety, up the Persian Gulf into the Euphrates. It was at the mouth of the Indus that the Greeks witnessed for the first time, and that with astonishment and terror, the ebb and flow of the sea; a phenomenon scarcely perceptible in the Mediterranean, to which their navigation had formerly been confined. In the progress of the voyage they were also struck with surprise on observing phenomena belonging to the midsummer of the tropics. At noon objects were observed to project no shadows, or to project small shadows declining to the south. Their attention was still further attracted by the new appearance of the sky. Stars which they had been accustomed to see high in the heavens were now seen near the horizon. Some stars to the north disappeared, while other stars formerly invisible were seen in the south.

The opening of a communication between the Red Sea and the Persian Gulf was with Alexander another great object of ambition. But though with this view he seems to have sent expeditions down both seas, he failed in his attempts to accomplish this project.

Among the Romans, navigation and commerce, the handmaids of geographical science, were never made objects of pursuit, except in so far as they were found to be necessary to forward their schemes of universal dominion. Their conquests opened indeed the west, as those of Alexander had made known the east; and it might be truly said of that great people, that as they were the conquerors, so they were the surveyors of the world. Every new war produced a new survey and itinerary of the countries which were the scenes of action; so that the materials of geography were accumulated by every additional conquest. Some fragments of the itineraries thus composed still remain. The most memorable is that which bears the name of Antoninus, and which may be described as a mere skeleton road-book, exhibiting nothing more than the names of places, and their distances from each other. The Jerusalem Itinerary, which details minutely the route from Bordeaux to that holy city, is of the same description.

A more remarkable monument, however, is the *Peutingerian Table*, which forms a map of the world, constructed on the most singular principles. The map is twenty feet long and only one foot broad, so that we can easily conceive how incorrectly the proportion of the different parts is exhibited. Along the high road which traverses the Roman empire in the general direction of east and west, objects are minutely and accurately represented; but of those objects which lie to the north and south of it, only some general notion is conveyed. The Peutingerian Table serves as a specimen of what were called *Itinera Picta*, the "painted roads" of the ancients, intended for the clearer direction of the march of their armies.

While the Romans by their surveys contributed much to increase the mass of materials out of which the structure of geographical science was to be reared, they never attempted themselves to combine these materials into one harmonious system. They imbibed in no degree the commercial spirit of the great maritime states of the ancient world, Carthage, Greece, and Egypt, which their valour and discipline obliged to submit to their dominion. But whilst the trade of the conquered countries continued to be carried on through nearly the former channels after they were reduced to the form of Roman provinces, the wealth accumulated in the capital of the world gave rise to a demand for luxuries of every description. This, combined with the comparative peace and security which for a long time prevailed after the complete establishment of the Roman dominion, gave new vigour to commercial enterprise. Alexandria continued the great centre of naval affairs. Obstacles which in the time of Alexander were deemed insurmountable, were completely overcome. Trade with India through Egypt acquired new energy, and was carried on to a greater extent. Continued intercourse with the shores of India at length made known to navigators the periodical winds which prevail in the Indian Ocean; and taking advantage of these, pilots were emboldened to abandon the slow and dangerous course along the coasts, and to make the open sea their highway. Their course was from Ocelis, at the mouth of the Arabian Gulf, to Nelkunda (Nelisuram), on the western shores of the Indian continent (the coast of Malabar), which seems to have been the utmost limit of the ancient navigation in that quarter of the globe. The extensive regions which stretch beyond this to the east were very imperfectly known by the reports obtained from a few adventurers who visited them by land.

If we now bring into one view the amount of information possessed by the ancients respecting the habitable globe, we shall find that it was extremely limited. It was at those places on the earth where the human mind displayed greatest activity and enterprise that this knowledge was naturally accumulated. Proceeding from these stations, the boundary which separated the known from the unknown part of the world was gradually enlarged; but the regions comprehended within it constituted still but a small portion of the whole. In Europe the extensive provinces in the eastern part of Germany were but little known, while the whole of that vast territory which now forms the countries of Denmark, Sweden, Prussia, Poland, and Russia, was buried in the deepest obscurity. The inhospitable and dreary climes within the arctic circle were yet unexplored. In Africa little was known beyond the countries stretching along the Mediterranean Sea, and those bordering on the western shore of the Arabian Gulf. In Asia the rich and fertile countries beyond the Ganges, whence the commerce of modern times has drawn the most valuable commodities for the comfort and embellishment of civilized society, were known, if known at all, only by the most vague and uncertain reports. The immense regions on the north occupied by the wandering tribes called in ancient times by the general names of Sarmatians or Scythians, and which are now inhabited by various tribes of Tartars, and by the Asiatic subjects of Russia, seem never to have been penetrated. Add to this, that the fertile and populous regions within the torrid zone were imagined to be uninhabitable; and we have ample proof that the geography of the ancients was very imperfect.

Having thus far given a succinct view of the progressive steps by which the earth's surface, considered merely as tracts of territory inhabited by men, gradually became known, it will be proper next to trace briefly the advances made towards arranging into a systematic form the materials accumulated. Science required that the relative positions of places, with their distances from each other, should be ascertained in such a manner as to furnish fixed principles on which the whole, or any portion, of the surface of the earth might be represented or delineated with due regard to its figure and dimensions.

The first rude attempt made by the early geographers to determine the position of places appears to have depended on the division of the earth into *climates*, distinguished by the species of animals and plants produced in each. Thus the appearance of the negro, the rhinoceros, and the elephant, suggested to them the line of division where the torrid zone began towards the north, and ended towards the south. But instead of this very vague method, another was soon adopted, which consisted in observing at places the length of the longest and shortest day. This was determined with some accuracy by means of a *gnomon*, a method of observation much used by the ancients. An upright pillar of a known height being erected on a level pavement, by observing the lengths of the meridian shadows, they were enabled to trace the progress of the sun from tropic to tropic. The most ancient observation with the gnomon which we meet with is that of Pytheas, in the days of Alexander the Great. Pytheas observed at the summer solstice at Marseilles, that the length of the meridian shadow was to the height of the gnomon as $213\frac{1}{8}$ to 600; an observation which makes the meridian altitude of the sun at Marseilles on that day 70° 27′. The merit of the invention of the gnomon in Greece is ascribed to the astronomical school of Miletus, and particularly to Anaximander and Anaximenes. There is reason, however, to believe that this method of observation was originally invented by the Egyptians; and that Thales, who travelled into Egypt, carried thence the knowledge of it into Greece. It has even been conjectured that the Egyptian pyramids and obelisks were intended for the same purpose with the gnomon; and, though it would be extravagant to imagine that this was their sole use, this opinion appears to be countenanced by the fact of their being placed in the direction of the four cardinal points.

The determination of the length of the meridian shadow at the solstices for different parts of the earth, by observations made with the gnomon, is important as being the first step towards connecting geography with astronomy; and, when combined with just conceptions of the globular figure of the earth, leads, by a simple train of thought, to the notion of latitude by which the position of a place is fixed relatively to north and south. The position with regard to east and west is the only other element necessary for fixing the absolute situation of the place on the surface of the earth. It might have been supposed not to be more than a reflecting mind could easily accomplish, to reach the conception of both these elements, and to apply them to use. Yet so slow was the progress towards the apprehension of the principles on which an accurate system of geography might be founded, that from the days of Thales and his immediate successors, who flourished in the sixth century before the Christian era, there appears to have been little done for the improvement of geography, as a science, until the establishment of the famous astronomical school of Alexandria. Pythagoras had indeed maintained the true system of the world, by placing the sun in the centre, and giving the earth both a diurnal and annual revolution; but this doctrine was so much in advance of the age in which he promulgated it, that it was soon lost sight of.

Eratosthenes was the first who reduced geography to a regular system, and laid its foundations on clear and solid principles. Under the patronage of the Ptolemies, he had access to the materials collected by Alexander, his generals and successors, as well as to the immense mass of documents accumulated in the Alexandrian library. At an early period of the history of astronomical science, the vulgar opinion that the earth is a flat surface, with the heavens resting upon it as a canopy, was rejected; but it was not at once that distinct conceptions of its globular figure were acquired. It was only as astronomical observations increased that the doctrine of its sphericity was fully established. This point had been gained when Eratosthenes began his labours; and what he endeavoured to accomplish was to delineate, in strict conformity with this principle, the known parts of the earth's surface.

With this view, founding his system on the use of the gnomon, he supposed a line to be traced through certain places, in all of which the longest day was known to be exactly of the same length. This line would evidently be a parallel to the equator. But though his method was correct in principle, the want of accurate observations rendered it uncertain in practice. The line was supposed to comprise all the leading positions which lay near it, though they did not actually come within its range. Its western extremity was the Sacred Promontory of Iberia (Cape St Vincent); thence it passed through the Straits of Gades. Proceeding eastward, it passed through the Sicilian Sea, and near the southern extremity of the Peloponnesus, and was continued through the island of

Rhodes, and the Bay of Issus; whence entering Cilicia, and crossing the Euphrates and the Tigris, it was extended to the mountains of India, and terminated at the remote city of Thinæ, situated on the Eastern Ocean. The parallel thus drawn was understood to pass through all those places where the longest day was fourteen hours and a half. It stretched the whole length of what was supposed to be the habitable world, and measured about 70,000 stadia; a distance corresponding, according to the estimate of Eratosthenes, to about 140 degrees, which is rather more than one third of the circuit of the globe.

This first parallel drawn through Rhodes was ever afterwards preferred as the basis of ancient maps; inasmuch as it was traced through the middle of the Mediterranean, along the coasts of which were situated the principal nations of antiquity. Following out the same happy thought which he had thus successfully made the groundwork of his system, Eratosthenes was induced not only to trace other parallels at certain intervals from the first, as one through Alexandria, another through Syene, and a third through Meroe; but also to trace, at right angles to these, a *meridian*, passing through Rhodes and Alexandria southward to Syene and Meroe. As the progress which he thus made towards the completion of what he had so skilfully conceived, naturally tended to enlarge his ideas concerning geographical science, he attempted what seemed a still more difficult undertaking, namely, to determine the circumference of the globe by the actual measurement of a segment of one of its great circles. The method he pursued has already been pointed out in the article Astronomy, page 790. There is a difference among ancient authors respecting the result obtained by Eratosthenes. The great majority, however, state it to be 252,000 stadia, which give exactly 700 stadia for a degree of the equator, and 555 stadia for the degree of longitude upon the parallel drawn through Rhodes.

The knowledge of the circumference of the earth is a necessary element in the construction of maps; and hence the most eminent of the ancient astronomical geographers made repeated endeavours to determine it with accuracy. Possidonius, by an astronomical observation, determined the arc of the meridian between Rhodes and Alexandria to be a forty-eighth part of the whole circumference. With regard to the distance between these two places, 5000 stadia were the reputed distance; but Eratosthenes had made it only 3750 stadia upwards of 170 years before, and betwixt these two Possidonius had to make choice. The former number gives 240,000 stadia for the whole circumference, the latter 180,000 stadia. Of this last result, which gives 500 stadia for a degree of the equator, Possidonius is reported by Strabo to have approved. For want of the knowledge of the true length of the stadium, it is now impossible to judge of the actual quantity assigned either by Eratosthenes or Possidonius as the measure of the earth's circumference; but the great uncertainty about the distance between the points of observation in the case of the determination of the latter astronomer renders his conclusion of no value.

Notwithstanding the soundness of the principles which had now been laid down for the delineation of the globe, much remained to be done, in the way of observation, before an accurate representation of the whole, or a portion of the earth's surface, could be given. Both the latitudes and longitudes of the ancients are erroneous; more especially the latter. This is what might be expected at that early period. But in setting out from the Sacred Promontory of Iberia, the meridian of which the ancients made their first meridian, the errors in longitude accumulate, as we advance eastward, with a regularity, as well as rapidity, which is very surprising. The regularity of their increase induced M. Gosselin to conclude that they were to be attributed, not to the imperfection of independent observations, but to some general cause, which he endeavoured to assign by imagining that Eratosthenes had access to some early map, found probably by Alexander or his generals in some country in the East, where astronomy had been successfully cultivated; and that misapprehensions respecting the principle of delineation employed, which M. Gosselin supposes to have been that on which the plane chart is constructed, had led him into a regular system of errors. In the plane map the length of a degree of longitude is supposed to be the same at all distances from the equator. By taking for granted that Eratosthenes took his distances from a map of this kind, on which the parts of the globe had been accurately laid down, but that he divided the stadia expressing these distances, not by 700, the number of stadia in a degree at the equator, as he ought to have done, but by 555, the number corresponding to the parallel of Rhodes, M. Gosselin obtains results which have a wonderful coincidence with the positions actually given by Eratosthenes. These results, however, are deduced from a hypothesis which is unsupported by any evidence, except what may be supposed to arise from this coincidence. A more probable solution seems to be that Eratosthenes determined his longitudes from the itinerary measures, which he reduced to degrees at the rate of 700 stadia to a degree at the equator, and of 555 to a degree at the parallel of Rhodes; and that the errors are the consequences of the exaggerated accounts which merchants and travellers of that age gave of the distances over which they passed;—their exaggerations, of course, bearing some proportion to the length and hardships of the journeys undertaken.

The knowledge as yet possessed by geographers with regard to the outline of the habitable globe was far from being such as to enable them to delineate it with any degree of precision. This circumstance, combined with the unavoidable errors in latitude and longitude, produced very great distortions in the representations given of the countries on the surface of the globe. Under the guidance of sound principles of science, however, it was now certain that these imperfections would gradually disappear.

The improvements introduced into geography by Eratosthenes were perfected in principle by Hipparchus. This celebrated astronomer, who flourished between a hundred and sixty and a hundred and thirty-five years before the Christian era, was the first who undertook the arduous task of forming a catalogue of the stars, and fixing their relative positions. His object was to transmit to posterity a knowledge of the state of the heavens at the period of his observations. The extremities of the imaginary axis round which the heavens perform their diurnal revolution suggest two fixed points by which the position of the great circle of the celestial sphere called the equator is determined. If a great circle be supposed to pass through these points and any star, the position of the star will be ascertained if we measure in degrees and parts of a degree the arc of the meridian circle intercepted between the star and the equator, and also the arc of the equator intercepted between a given point in it, and the meridian circle passing through the star. Upon this principle did Hipparchus arrange the stars according to their places in the heavens, a work in which he appears, however, to have been in some measure anticipated by Timocharis and Aristillus, who began to observe about two hundred and ninety-five years before the Christian era. The great improvement which he introduced into geography consisted in this, that he applied to the determining of the position of any point on the surface of the earth the same artifice which he had already so happily introduced in the arrangement of the constellations; and thus furnished the means of ascertaining the relative situations of places with a precision which no itinerary measurements could possibly attain. If we suppose the earth to be a globe concentric with the celestial sphere, and intersected by the planes of the celestial equator and meridian, the principle on which the application of this artifice to the terrestrial sphere depends becomes at once obvious. Hipparchus made a considerable number of observations of latitude, and pointed out how longitudes might be determined by observing the eclipses of the sun and moon. Great as this improvement was, its importance seems not to have been duly estimated until the days of Ptolemy; for none of the intermediate authors, such as Strabo, Vetruvius, and Pliny, have given the least hint of the latitude and longitude of any one place in degrees and minutes, though all of them have given minutely the geographical position of places according to the length and shadows of the gnomon. Strabo, indeed, even justifies his neglect of the astronomical principles introduced by Hipparchus. "A geographer," says he, "is to pay no attention to what is out of the earth; nor will men engaged in conducting the affairs of that part of the earth which is inhabited, deem the distinction and divisions of Hipparchus worthy of notice."

The true principles of geography being pointed out by the application of latitude and longitude to places on the earth, the way was opened for the improvement of maps, which, with the single exception of the map drawn by Eratosthenes, had hitherto been little more than rude outlines and topographical sketches of the different countries.

No maps more ancient than those formed to illustrate Ptolemy's geography have reached modern times; but the earliest of which there is any account are those of Sesostris, of whom it is said, that having traversed great part of the earth, he caused his marches to be recorded in maps; and that he gave copies of these maps not only to the Egyptians, but to the Scythians, whose astonishment he thus greatly excited.

Some have imagined that the Jews made a map of the Holy Land when they gave the different portions to the nine tribes at Shiloh. For on that occasion, as we are informed by the sacred historian, men were sent "to walk through the land, and to describe it:" and when they had accomplished the object of their mission, by describing "it by cities into seven parts, in a book," they returned unto Joshua. What is here said, however, does not fully determine whether their mensuration of the land was only recorded in numbers, or regularly projected and digested into the form of a map.

The first Grecian map on record is that of Anaximander, mentioned by Strabo, which some have conjectured to have been a general map of the then known world. It has further been imagined to be the same with that referred to by Hipparchus under the designation of *The Ancient Map*, and which in some few particulars he preferred to that of Eratosthenes.

But some idea of the nature of the maps of those early days will be best obtained from the map of Aristagoras, king of Miletus, which is minutely described by Herodotus. The historian tells us that this map, which was traced on brass or copper, Aristagoras showed to Cleomenes, king of Sparta, in order to induce him to attack the king of Persia, even in his palace at Susa, for the purpose of restoring the Ionians to their ancient freedom. It contained the intermediate countries to be traversed in that march. We must not interpret, however, the words of Herodotus too literally, when he describes it as containing "the whole circumference of the earth, the whole sea or ocean, and all the rivers." Keeping in view the state of geography at that period, it may justly be concluded, that notwithstanding this pompous form of expression, *the sea* meant only the Mediterranean, and therefore *the earth* or land the coasts of that sea, and more particularly Asia Minor, extended towards the middle of Persia: by *the rivers* must be meant the Halys, the Euphrates, and the Tigris, which Herodotus mentions as necessary to be crossed in the expedition in question. The map contained one straight line, called the *royal highway*, embracing all the stations or places of encampment between Sardis and Susa, so that it was properly an itinerary.

The principle on which Eratosthenes constructed his map we have already considered. With regard to its extent, it seems to have contained little more than the states of Greece, and the dominions of the successors of Alexander, digested from the surveys of the marches of that great general. He had some faint idea respecting the western parts of Europe, which he had acquired from the voyage of Pytheas; but not such a conception as to enable him to delineate their outline on a chart. According to the report of Strabo, he was quite unacquainted with Spain, Gaul, Germany, and Britain, he was equally ignorant of Italy, the coasts of the Adriatic, Pontus, and of all the countries toward the north. His errors with regard to the distances of places were in some instances enormous. The distance of Carthage from Alexandria he represents at 15,000 stadia, instead of 9000.

It was not until Ptolemy commenced his labours that the improvements pointed out by Hipparchus were effectually applied to perfect the system which Eratosthenes had so happily begun. Ptolemy composed his system of geography, which escaped amidst the general wreck that consumed so many other ancient books of science, in the reign of Antoninus Pius, about 150 years after the opening of the Christian era. At this period the Roman empire had reached its utmost extent, and all the provinces had been surveyed, and were well known. The materials then in existence, and in the possession of Ptolemy for completing his great work, were the proportions of the height of the gnomon and its shadow, at the time of the equinoxes and solstices, taken by different astronomers; calculations founded on the length of the longest days; the measures or computed distances of the principal roads contained in the surveys and itineraries; and the various reports of travellers and navigators, whose determinations of the distances of places often rested, however, on no better foundation than hearsay and conjecture. Among these various particulars, there evidently existed considerable differences in point of authority. But Ptolemy undertook the difficult and laborious task of comparing, and reducing into one system, which should possess the order and beauty of science, this apparently incongruous mass. He converted and translated the whole into a new mathematical language, expressing in degrees and minutes the latitude and longitude of each place, according to the principles laid down by Hipparchus, but which had been allowed by geographers to lie useless for upwards of two hundred and fifty years. It is in Ptolemy's work, which consists of eight books, that we find for the first time the mathematical principles of the construction of maps, both general and particular, as well as of several projections of the sphere.

Notwithstanding that the light of accurate science thus directed the steps of the first geographer of antiquity, he was far from reaching the precision at which he aimed. This arose from the imperfection of the original materials upon which his work is based in reference to its details. With regard to the remoter boundaries of the then known world, in all its quarters, a wonderful advancement in knowledge had been made since the days of Eratosthenes and of Strabo. But still that additional information was not fitted to make up for the want of astronomical observations, by which alone accuracy could be secured. Besides, in relation to places situated beyond the limits of the Roman empire, and therefore out of the range alike of astronomers and surveyors, it was almost impossible for Ptolemy not to commit mistakes. Thus his errors arose from the ignorance of the age; and are of such a character as to admit of being removed only as opportunities are afforded of obtaining the requisite data by the strict application of the principles derived from mathematical and astronomical science.

Ptolemy adopted the measure of a degree at 500 stadia, according to the standard of Possidonius, instead of following the measurement of Eratosthenes, which gives 700 stadia to a degree. But M. Gosselin has accused him of an error of a more serious kind; because, if really committed, it would have indicated a strange neglect of what a geographer should make his first care. This error consists in assuming one measure for the degree of latitude (the measure of Eratosthenes, 700 stadia) and another for the degree of longitude at the equator. Such a hypothesis would evidently be inconsistent with the globular figure of the earth. It may reasonably be doubted, however, whether M. Gosselin's accusation is well founded; for, though it seems supported by the fact, that while Ptolemy has changed materially all the longitudes of Eratosthenes, the latitudes along the great line remain the same, and are in general correct, this circumstance may be accounted for sufficiently from other causes. Rhodes, and several other points of this great line, were fixed with regard to latitude by observations approximating to the truth, while the elements for determining the longitudes were derived entirely from the itineraries. To the north and south of the great central line, which alone was fixed upon sound data, errors in latitude accumulate as rapidly as those in longitude are found to do in proceeding eastward.

One of the most remarkable errors in the geographical work of Ptolemy is the great length assigned to the Mediterranean. Reckoning from the Straits of Gades to the bottom of the Bay of Issus, where Alexandretta, or Scanderoon, now stands, he makes the difference of longitude no less than sixty-two degrees, which is upwards of twenty and a half degrees above the truth. This amazing error, which affected all our maps more or less until the beginning of the last century, was produced in consequence of his having put too much confidence in the supposed surveys of different persons of reputation recorded by Strabo, and who appeared to confirm the accuracy of each other's computation. According to their united testimony, the whole length of the Mediterranean was about 26,500 stadia, which, being converted into degrees of longitude according to the method of Ptolemy, of allowing 400 stadia to a degree of longitude on the parallel of Rhodes, give about 66° 15′. This is 4° 15′ more than what are given by Marinus, whom in this particular Ptolemy strictly follows.

Pliny quotes from Agrippa a computation of the length of the Mediterranean, which makes it 3440 Roman miles; but in quoting it he adds a suspicion that there is an error in the numbers. When converted into degrees of longitude, the result of this computation gives 58° 20′. As, however, the length given by Strabo amounted, as we have seen, to 66° 15′, Ptolemy seems to have chosen a middle path between these two erroneous computations, and to have adopted 62° for the difference of longitude in question. But there is another ancient computation quoted also by Pliny from Polybius, according to which the length of the Mediterranean is stated to be 2440 Roman miles. Had Ptolemy followed this estimate, he would have obtained for a result 41° 4′, which is not far from the truth.

Thus we see that the circumstances under which Ptolemy wrote rendered it impossible for him to avoid mistakes, and that he might be misled even when more accurate results were within his reach.

The great obstacle with which the ancients had to contend was the finding of the longitude with accuracy, a problem for the solution of which it was long before there was discovered any method sufficiently exact. This accounts for the erroneous longitudes of Ptolemy, and more especially for the length of time, even many centuries, during which the remarkable error with regard to the length of the Mediterranean remained undiscovered and uncorrected.

We have now traced the history of geography from the earliest period of which we have any information, to the time when it assumes a scientific character. We shall conclude our account of ancient geography by shortly noticing the principal geographers of antiquity, some of whom have not yet been mentioned, while others have only been quoted in tracing the rise and progress of the science.

The intimate connection between geography and the sciences of geometry and astronomy, rendered the former an object of attention to many who anciently cultivated the latter. We have already mentioned Anaximander and Anaximenes, of the school of Miletus. Democritus, Eudoxus of Cnidus, and Parmenides, are also reported to have improved geography; and to the last is attributed the division of the earth into zones. These were followed by Eratosthenes, who lived about two hundred and forty years before the Christian era; by Hipparchus about eighty years afterwards; by Polybius, Geminus, and Possidonius. Eratosthenes wrote three books on geography, some passages of which Strabo criticises, though he frequently defends him against Hipparchus, who appears to oppose his opinions with some degree of affectation. Polybius also wrote on geography; as did likewise Geminus and Possidonius, who are frequently quoted by Strabo. Polybius, according to Geminus, argued with considerable acuteness for the possibility of the torrid zone being inhabited; and he even adduced plausible arguments to prove that the countries under the equator enjoy a more temperate climate than the countries do that are situated near the tropics.

We must not here omit a geographer and geometer who lived about the time of Alexander the Great. This was Dicearchus of Messina, a disciple of Theophrastus, who wrote a description of Greece in iambic verses, of which some fragments yet remain. But what chiefly renders him remarkable is, that he measured geometrically several mountains, to which an excessive height had been before assigned.

With Dicearchus we may notice another geometer, Xenagoras, a disciple of Aristotle, mentioned by Plutarch in his life of Paulus Æmilius, who occupied himself in the measurement of mountains. He found the height of Mount Olympus to be fifteen stadia.

In some of the latter periods which preceded the Christian era there were several writers on geography, as Artemidorus of Ephesus, who wrote a geographical work of eleven books, of which nothing remains; Scymnus of Chio, author of a description of the earth in iambic verses, which remain in a very mutilated state; Isidorus of Charax, who gave a description of the Parthian empire; and Scylax of Caryades, author of a voyage round the Mediterranean, which is still extant.

The works of all these geographers are, however, but small in comparison with the Geography of Strabo; a work in seventeen books, which has come down to us entire. This is one of the most valuable works of antiquity, both from the spirit of discussion which runs through it, and the number of curious particulars which the author has collected from different geographers and navigators who preceded him, and of whose works nothing remains except these extracts. Strabo lived in the reigns of Augustus and Tiberius, and was nearly contemporary with Pomponius Mela. This latter geographer wrote a work *De Situ*

Orbis, which, though little more than a bare summary, is valuable as it gives us a sketch of what was known in his time respecting the state of the habitable globe. Besides Mela, Rome produced in the most flourishing era of its literature another eminent geographer, Pliny. He devoted two books of his extensive work on natural history to a system of geography. His intimate connection with the imperial family, and with many of the most eminent commanders of the time, appears to have given him access to all the military measurements, as well as to the general survey of the Roman empire. Thus furnished with a greater store of authentic materials than any former writer, he has introduced a great number of itinerary details, which are for the most part accurate and valuable. Julius Solenus has also treated of geography in his *Polyhistor*, a compilation sufficiently valuable from the number of curious particulars which are there collected. Marinus of Tyre was another geographer who appears to have been distinguished, though his works have perished. Even under the Roman empire Tyre continued to be the seat of an extensive commerce; indeed the commercial relations of her citizens appear to have extended over a wider portion of the earth's surface than ever. The enlarged materials furnished by the lengthened journeys of his countrymen, which brought them even to the confines of China, Marinus collected, and sought to apply to them the astronomical principles of Hipparchus, so that he might give to geography a new and more accurate form. Ptolemy, whom Marinus preceded by a short time, employs a great part of his first book in discussing the means employed by the Tyrian geographer for fixing the relative position of places; and from the references and extracts it appears that the system of Marinus partook largely of the imperfections of a first effort.

The enlarged and scientific views of Ptolemy we have already considered. Some time after Ptolemy lived Dionysius, commonly called the *Periegetic*, from the title of a work in verse composed by him, namely, his *Periegesis*, or Survey of the World. This work was translated into Latin verse by Priscianus, and afterwards by Avienus. There is, besides, a description by Avienus, of the maritime coasts, in iambic verses, of which there remain about seven hundred.

The difficulty of procuring the small and scattered pieces of most of these authors, with those of a few others not here enumerated, induced the learned Hudson to collect them into one work, consisting of four volumes octavo, which were published in the years 1698, 1702, 1712, under the title of *Geographiæ veteris Scriptores Græci minores.* The originals are accompanied with Latin translations, and notes and dissertations on each by Dodwell. This is a very valuable collection.

We now proceed to consider the progress of geography during the middles ages. From the days of Ptolemy until the revival of letters in Europe, little was done for its solid improvement. The calamities that ere long overwhelmed the Roman empire, were followed by a general intellectual darkness which settled down on the world and extinguished even the imperfect knowledge possessed by the ancient geographers. While barbarous nations poured in from several quarters, art and science ceased to be cultivated. The union by which the Roman power had bound together mankind being now dissolved, Europe was divided into small and independent, and, for the most part, hostile communities, which had but vague conceptions respecting the situation of each other, while no intercourse subsisted between their members. With regard to remote regions all knowledge was lost; their situations, their commodities, and almost their names, were unknown.

Amidst this ignorance there were but few channels open through which knowledge could be obtained. One circumstance, however, prevented commercial intercourse with foreign nations from being altogether suspended. The opulence and luxury of imperial Rome had long given life and energy to commercial enterprise: that stimulus was now withdrawn; but Constantinople still remained, the last refuge of ancient arts, and taste, and elegance, when the rest of Europe was overspread with barbarism. Fortunately that city had escaped the destructive rage of the fierce invaders; and there, under the cherishing influence of a demand for foreign productions and luxuries, commerce continued to flourish. Alexandria continued to be the emporium whence were imported the commodities of the East Indies, until Egypt, falling under the power of the Arabians, ceased to be a province of the Roman empire. After this event the industry of the Greeks succeeded in discovering a new channel by which Constantinople might still be supplied with the productions of India. These were first conveyed up the Indus as far as that river is navigable, thence by land-carriage they were brought to the Oxus, and were carried down that river to the Caspian Sea. Entering there the Volga, they were conveyed up it, and thence were again transported by land until they reached the Tanais, down which they were conveyed to the Euxine Sea, where vessels from Constantinople awaited their arrival. By this circuitous route was a channel of intercourse kept open with the most distant countries of the East; and an extensive knowledge of remote regions was still preserved in the capital of the Greek empire, while the rest of Europe was sunk in the grossest ignorance.

The missions sent for the conversion of the northern pagans to Christianity served somewhat to illustrate the geography of Europe; though there is sufficient proof that the monks employed were, in many instances, themselves grossly ignorant, some not even knowing the capital of their own country, or the cities nearest to their own. Something was also done by the great sovereigns of Europe towards dispelling the prevailing ignorance of the age on matters connected with geography. Nor did the piratical exploits of the Danes and Norwegians under their great sea-kings fail to make them acquainted with the seas and maritime coasts where they carried on their devastations. But it was in the East that a gleam of light and knowledge began now to appear, which was the harbinger of the noon-day splendour of science that was destined to succeed the darkness of ignorance which had so long oppressed the human mind. Under the influence of a fanaticism which prompted them to own no law but the Koran and the sword, the followers of Mohammed had rushed from the heart of Arabia, and had carried their conquests over half the world. At length, however, under a race of humane and polished princes, having contracted a relish for the sciences of the people whose empire they had contributed to overturn, they stood for some time distinguished as the most learned of nations. They translated into their own language the books of several of the Greek philosophers. The valuable work of Ptolemy was one of the first; and hence the study of geography became an early object of their attention. But the advancement which the science made in their hands towards precision was slow; for they copied and retailed all Ptolemy's principal errors. Still, in all the countries that were under Mohammedan dominion numerous observations were made, which, though not always strictly correct, were entitled to be considered as a step beyond the calculations made merely from the itineraries by the Alexandrian geographers. In the beginning of the ninth century, under their caliph Almamon, who may rank among the most distinguished patrons of science that ever filled a throne, they measured a degree of latitude on the plains of Sinjar, or Shinar, near Babylon, with a view to determine the circumference of the earth. The tables of Abulfeda and Ulug Beg, and of Nazir Eddin, edited by Græevius, and republished by Hudson, furnish materials that are still of use in the construction of the maps of the interior of Asia.

The progress and success of the Moslem arms removed the obscurity in which many countries had until then been concealed, as well as the barbarism in which they had been sunk. And even beyond the limits of the Mahommedan world they pushed their researches, by sending missions both to the east and to the west, which they explored to their remotest limits. At that time Europe remained ignorant of the improvements made by the Arabians, though she was destined in subsequent ages to perfect their discoveries.

At length the long period of barbarism which accompanied and followed the fall of the Roman empire, during which the traces of whatever had embellished society, or contributed to the comfort and convenience of life, were almost entirely effaced, drew to a close. Industry began again to shed its blessings on mankind, and Italy was the country where its benign influences were first perceptible. Having from the operation of various causes again obtained liberty and independence, the Italians soon began to feel the impulse of those passions which serve most powerfully to arouse men to activity and enterprise. The reviving demand for the comforts and luxuries of life led to the revival of foreign commerce. The valuable commodities of the East were at first obtained at Constantinople. But the exorbitant price demanded at that mart, in consequence of the circuitous route by which they were conveyed thither, induced the Italians to resort to other ports, as Aleppo and Tripoli, on the Syrian coast, and at length to Egypt itself. After the Soldans had revived the commerce with India in its ancient channel by the Arabian Gulf, Venice, Genoa, Pisa, rose from inconsiderable towns to wealthy and populous cities. Their trade extended to all the ports in the Mediterranean, and even beyond the straits to the towns on the coasts of Spain, France, the Low Countries, and England; and from these points they diffused through Europe a taste for the luxuries and enjoyments of civilized life, which they at the same time furnished the means of gratifying.

It was not long ere an event occurred, the most extraordinary perhaps in the history of human society, which gave a new impulse to the European mind, and forcibly directed its view eastward to the regions of Asia. Under the influence of a high-wrought enthusiasm, the martial spirit of the Europeans was aroused, and vast armies, composed of all the nations of Christendom, marched towards Asia on the wild enterprise of delivering the Holy Land from the dominion of Infidels. The crusades, however blind the zeal from which they took their rise, had a very favourable influence on the intellectual state of Europe, and prepared it for receiving the light of science which was soon to dawn upon it. Interesting regions, known hitherto only by the scanty reports of ignorant and credulous pilgrims, were now made the object of attention and research. Not only was the way opened for the European nations acquiring a correct knowledge of the Holy Land, with the kingdoms of Jerusalem and Edessa, founded by the victorious crusaders; but the extensive regions over which the Saracens and the Turks had extended their empire began to be explored. Search was now made in the writings of the ancient geographers; nor is it improbable that some light was derived even from the Arabian writers. Religious zeal, the hope of gain, combined with motives of mere curiosity, induced several persons to travel by land into remote regions of the East, far beyond the countries to which the operations of the crusaders extended. Prompted by superstitious veneration for the law of Moses, and by a desire of visiting his countrymen in the East, whom he hoped to find possessed of wealth and power, Benjamin, a Jew of Tudela, in the kingdom of Navarre, set out from Spain in the year 1160, and travelling by land to Constantinople, proceeded through the countries to the north of the Euxine and Caspian Seas. He then journeyed towards the south, and traversed various provinces of the further India, until, having reached the Indian Ocean, he embarked and visited several of its islands; and at length, after thirteen years, returned by the way of Egypt to Europe. In his progress he had acquired much information respecting a large portion of the globe, until then altogether unknown to Europeans.

Various missions were sent by the pope and by Christian princes, for purposes which led them to traverse the remote provinces of Asia. Father John de Plano Carpini, at the head of a mission of Franciscan monks, and Father Ascolino, at the head of another mission of Dominicans, were in the year 1246 sent by Innocent IV. to enjoin Kayuk Khan, the grandson of Zengis, who was then at the head of the Tartar empire, to embrace Christianity, and to cease from desolating the world by his arms. In fulfilling the commands laid upon them by the head of the Christian church, the mendicants had an opportunity of visiting a great part of Asia. Carpini, having taken his route through Poland and Russia, travelled through the northern provinces as far as the extremities of Thibet; whilst Ascolino, who appears to have landed somewhere in Syria, advanced through the southern provinces into the interior parts of Persia.

Father William de Rubruquis, a Franciscan monk, having been sent in the year 1253 on a mission by St Louis of France, in search of an imaginary personage, a powerful khan of the Tartars, who was reported to have embraced the Christian faith, made a circuit through the interior parts of Asia more extensive than that of any European who had hitherto explored them. He had the merit of being the first modern traveller that gave a true account of the Caspian, which had been correctly described by the early Greeks as an inland separate sea; but a notion afterwards prevailed that it was connected with the Northern Ocean. Rubruquis ascertained that it had no connection with the ocean or any other sea. The account of his journey was so little read, however, that the old error was repeated in books of geography long after his time.

While the republics of Italy, and, above all, the state of Venice, were engaged in distributing the jewels, the spices, and the fine cloths of India over the western world, it was impossible that motives of curiosity, as well as a desire of commercial advantage, should not be awakened to such a degree as to impel some to brave all the obstacles and dangers to be encountered in visiting those remote countries where these precious and profitable commodities were produced. A considerable number of persons accordingly are recorded as having penetrated a greater or less depth into the interior of Asia. But the fame of all the other old travellers is eclipsed by that of Marco Polo, who has always ranked among the greatest discoverers of any age. This extraordinary man was a noble Venetian, whose family, according to the custom of his country, engaged in extensive commerce. Nicolo Polo, and Maffeo Polo, the father and uncle of Marco, were merchants, who, in partnership, traded chiefly with the East; and in pursuit of their mercantile speculations had already visited Tartary. The recital of their travels on their return fired the youthful imagination of Marco, then between seventeen and eighteen years old. Having, when in the East, gained the confidence of Kubali Khan, the great conqueror of China, at whose court they had resided for a long time, they were sent back by him to Italy, accompanied by an officer of his court, that they might repair to Rome as his ambassadors to the pope, of whom, and the potentates of the western world, they had given him an ample account. After many delays they were now, about the year 1265, to set out on their return to the court of Kublai, bearing the papal letters and benediction; and it was resolved that young Marco should accompany them. After a journey that occupied no less than three and a half years, and in the progress of which they passed through the chief cities in the more cultivated parts of Asia, they reached Yen-king, near the spot where Pekin now stands, where they were honourably and graciously received by the grand khan. Struck with the appearance of young Marco, the khan condescended to take him under his protection, and caused him immediately to be enrolled among his attendants of honour. By prudence and fidelity Marco gained so high a place in the esteem and confidence of his protector, that for seventeen years, during which he remained in his service, he was employed in confidential missions to every part of the empire and its dependencies. He made more than one voyage on the Indian Ocean, and traded with many of the islands. Besides what he learned from his own observation, he collected from others many things concerning countries which he did not visit. Considering the very favourable circumstances in which he was placed for geographical research, as well as his passion for travelling, which seems to have increased with his opportunities of gratifying it, it is not surprising that, after the long period of his wanderings in Asia, he should have returned to Europe possessed of the knowledge of many particulars, until his time unknown, respecting the eastern parts of the world. Marco, being afterwards made a prisoner by the Genoese, was induced, with a view to beguile the tediousness of his confinement, to dictate a narrative of his travels. His information was so far in advance of the age, that his veracity was exposed to the most injurious suspicions. But, if we make allowance for some tincture of credulity, characteristic of the times in which he lived, his narrative is supported in all its essential points by modern information.

While great accessions were thus made to the stock of knowledge possessed by the nations of Europe respecting the habitable globe, their ideas were at the same time gradually enlarged; and an adventurous spirit was generated, which prepared them for attempting further discoveries. Still their efforts were limited by certain bounds, in consequence of the imperfect state of navigation. Whatever conceptions a daring mind might venture to form respecting the existence of unknown regions, separated from the known continents by the mighty expanse of the Atlantic Ocean, mankind had not yet so obtained the dominion of the sea as to be able to bring such conceptions to the test of experiment. It was not until the fortunate discovery of the polarity of the magnetic needle, and the consequent construction of the mariner's compass, that man was enabled to visit every part of the globe which he inhabits. This important discovery was made by Flavio Gioia, a citizen of Amalfi, a town of considerable trade in the kingdom of Naples, about the year 1302. Encouraged by the possession of this sure guide, by which at all times and in all places he could with certainty steer his course, the navigator gradually abandoned the timid and slow method of sailing along the shore, and boldly committed his bark to the open sea. At the commencement of the fifteenth century, however, navigation appears to have advanced very little beyond the state which it had reached before the downfall of the Roman empire. But it was now destined to make rapid progress. The growing spirit of enterprise, combined with the increasing light of science, had prepared the states of Europe for entering upon that great career of discovery, of which the details constitute the materials for the history of modern geography.

Portugal took the lead in this new and brilliant path. Her first attempt was to discover the unknown countries situated along the western coast of Africa. Notwithstanding the vicinity of that great continent, and the strong inducement afforded, in the fertility of the countries already known in it, to its further exploration, Cape Non had hitherto limited the researches of the Portuguese, and had been regarded as an impassable barrier. In the year 1412, however, ships sent out for discovery doubled this formidable promontory, and reached Cape Bojador, a hundred and sixty miles to the southward, which became in its turn the boundary of Portuguese navigation; and it continued to be so for upwards of twenty years. Under the coasting system, which still continued to be practised, it was not likely that the obstacles presented by its rocky cliffs, which stretch a considerable way into the Atlantic, would soon have been overcome. But a sudden squall of wind having driven out to sea the vessel next dispatched, this event fortunately led to the discovery of the small island Porto Santo; whence in a little time Madeira was discovered, being first mistaken for a small black cloud in the horizon; and at length, when the Portuguese by their voyages thither had gradually become accustomed to a bolder navigation, Cape Bojador was doubled. Thus, by repeated efforts, the Portuguese navigators gradually approached the northern boundary of the torrid zone. Here their progress was for some time arrested, not by any physical difficulties, but in consequence of the influence which the opinion of the ancient mathematicians and geographers, whom they had hitherto followed as their guides, had upon their minds, by leading them to believe that excessive heat rendered the middle regions of the earth uninhabitable. Experience, however, at length enabled them to triumph over ignorance and prejudice. A powerful fleet, fitted out in 1484, after discovering the kingdoms of Benin and Congo, advanced above 1500 miles beyond the equator. Their intercourse with the natives enabled them to obtain information concerning those parts of the country which they had not visited. Not only had they detected the error of the ancients in reference to the torrid zone, but they found also that the direction of the coast was very different from what the description given by Ptolemy had led them to expect. They saw reason to conclude that the continent gradually became narrower as they proceeded southward; so that there was room to believe that the ancient accounts respecting the circumnavigation of Africa were really founded in truth. New and more extensive prospects were thus opened to them; and the finding of a passage to India by sailing round the southern extremity of Africa became a favourite project. In the year 1488 the lofty promontory which terminates that continent was descried by Bartholomew Diaz; but it was not until about ten years afterwards that it was doubled, and the coast of Malabar reached, by Vasco de Gama.

Meanwhile the Cape de Verd Islands, which are said to have been known to the ancients, but afterwards lost sight of, had been discovered in 1446; and soon after the Azores Isles. When we consider the distances at which these two groups of islands lie from the land, the former being upwards of 300 miles from the coast of Africa, and the latter distant 900 miles from any continent, it may be concluded that the Portuguese when they entered so boldly into the open seas, had made no inconsiderable progress in the art of navigation.

But brilliant as is the lustre which these discoveries shed around the Portuguese name, their glory would have been still more dazzling had they seconded the profound views of Christopher Columbus, which led him to the discovery of the New World. That illustrious man and skilful navigator, by revolving in his mind the principles on which the Portuguese had founded their schemes of discovery and carried them into execution, was led to conceive that he could improve on their plan, and accomplish discoveries which they had hitherto attempted in vain. From the time that they had doubled Cape Verd, the great object at which the Portuguese aimed was to find a passage by sea to the East Indies. The direction in which their efforts were made implied necessarily a long and hazardous voyage, should they even be successful in accomplishing their design. But as the Atlantic Ocean stretched westward to an unknown distance, was it not possible that it might reach the shores of those very countries to which it was thought so desirable to find a naval route? This supposition was perfectly consistent with the known globular figure of the earth; and it was evident, on the same principle, that the farther India stretched to the east, the nearer it must approach to the western shores of Europe and Africa. Such was the idea suggested to the mind of Columbus, by the knowledge which he possessed of navigation and geography, both in theory and practice. While he found his views confirmed by a careful comparison of the observations of modern pilots with the hints and conjectures of ancient authors, he became thoroughly convinced that the navigator who should have the boldness to cross the Atlantic Ocean would have his toils rewarded by the most important discoveries.

These ideas had presented themselves to the mind of Columbus as early as the year 1474; but it was not until the year 1492, after several years of fruitless solicitation, and of discouragements and disappointments of the most vexatious kind, that he obtained the patronage of Ferdinand and Isabella, who then governed the united kingdoms of Castile and Arragon, and was by them put in possession of the means of carrying his schemes of discovery into execution. With no more suitable an armament for his great enterprise than three small vessels, having ninety men, mostly sailors, on board, and victualled for twelve months, he sailed from the port of Palos in Andalusia on the 3d day of August, and steered for the Canaries. Taking then his departure from Gomera, one of the most westerly of these islands, he stretched into unknown seas; and holding his course due west, reached Guanahani, one of the Bahama Islands, on the 12th day of October. After employing some time in making further discoveries, he returned to Spain to announce the success of his undertaking, the fame of which soon spread over Europe, and excited general attention. It was no easy matter to determine what relation the newly-discovered countries bore to the regions formerly known. Columbus's own views on the subject were in strict conformity with the idea which had taken so firm a hold of his mind, namely, that India might be reached by sailing towards the west. He imagined that the islands he had visited were some of those which were said to lie contiguous to the remote shores of Asia. In this opinion he was confirmed by the coincidence which he thought he could trace between certain names given to places by the natives and the appellations known to belong to countries situated in India. He thought he could recognise, in the answer given to his inquiries after the situation of the mines which yielded gold, the name *Cipango*, by which Marco Polo and other travellers in the East designated the island Japan. Ignorant of their language, and unaccustomed to their pronunciation, he even supposed that they spoke of the great khan; and hence concluded that the kingdom of Cathay or China, described by Marco Polo, was not far off. The same erroneous opinion was still further riveted in his mind, by what he supposed an identity between the animal and vegetable productions of the East Indies and those of the countries which he had discovered.

His second voyage led to the discovery of several more of the group of islands now called the West Indies, a name given them in conformity with the original notions of the discoverer. It was on his third voyage that he discovered the vast continent of America. Having unexpectedly found the island of Trinidad, with the neighbouring land, he encountered, before he was aware of danger, the adverse currents and tumultuous waves occasioned by the resistance which the waters of the Orinoco oppose to the tides in the ocean. His attention was thus forcibly called to the immense body of water which is here poured into the Atlantic. This he was convinced was vastly too great to be supplied by any island; and hence he concluded that he had now reached the continent which he had sought through so many dangers.[1]

The tenacity with which an ingenious and enterprising mind adheres to a scheme which it has once proposed to itself as an object of pursuit, was strikingly evinced by Columbus, whose thoughts still dwelt with eagerness on his original and favourite plan of opening a new passage to India. It was not enough that he had astonished mankind by finding a new continent; he conceived the idea that beyond it there might lie a sea extending to the coasts of Asia, and that by diligent search some strait might be found which would conduct him into this sea, or some narrow neck of land, by crossing which it might be reached. To determine this important point, though hitherto his services had met with the most unworthy returns, though years crept upon him, though worn out by fatigue and broken with infirmities, he still undertook with alacrity another voyage. By a lucky conjecture he directed his efforts towards the east of the gulf of Darien; but he searched in vain for a strait; and though he frequently went on shore and advanced into the country, he never penetrated so far as to enable him to descry the great Southern Ocean.

After the first steps had been taken, the progress of discovery over the globe was astonishingly rapid. No expense or danger deterred even private adventurers from fitting out fleets, crossing oceans, and encountering the rage of savage nations in the most distant parts of the earth. Before Columbus had reached the continent at the mouth of the Orinoco, Newfoundland had been discovered by Cabot, a Venetian by descent, but sailing under the auspices of England. He had also coasted along the present territory of the United States, perhaps as far as Virginia. In the next two or three years, the Cortereals, a daring family of Portuguese navigators, began the long and unavailing search of a passage round the northern extremity of America. They sailed along the coast of Labrador, and entered the spacious inlet of Hudson's Bay. Two of them unfortunately perished in this enterprise. In the year 1501 Alvarez Cabral, a Portuguese navigator, destined for India, having stood out to sea in order to avoid the variable breezes and frequent calms which he was sure to meet with on the African coast, to his surprise, came upon the shores of an unknown country, the coast of Brazil, which he claimed for Portugal. Amerigo Vespucci, a Florentine gentleman, who had already sailed along a great part of Terra Firma and Guyana, now made two extensive voyages along the Brazilian coast. Soon after his return he drew up and transmitted to one of his countrymen an account of his adventures and discoveries, in which he insinuated that to him belonged the honour of having first discovered the continent in the New World. His performance, which was the first description published of the newly-discovered countries, circulated rapidly, was read with admiration, and became the means of procuring for its author the high honour of giving his name to the whole continent. Not many years elapsed before the conjecture of Columbus respecting the existence of an ocean beyond the continent which he had discovered was found to be true; and his favourite project of opening a passage to India by steering westward was actually accomplished. By crossing the narrow isthmus of Panama, Nuñez Balboa reached the Pacific Ocean in the year 1513; and in 1521 Magellan discovered and sailed through the famous straits which bear his name. After twenty days occupied in navigating this dangerous channel, he beheld spread out before him the boundless expanse of the great Southern Ocean. Directing his course to the N.W., he continued his voyage for nearly four months without discovering land. From want of provisions and from sickness, he and his crew suffered dreadful distress. But when about to sink under their sufferings, they fell in with the Ladrone Islands, where they found refreshments in abundance. From these isles he proceeded on his voyage, and was not long of discovering the Philippines. Here, in an unfortunate quarrel with the natives, he was slain, with several of his principal officers. But his surviving companions, pursuing their voyage, and returning to Europe by the Cape of Good Hope, solved the great problem of the circumnavigation of the earth.

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[1] The American continent in its northern portions had been discovered in or before the eleventh century. Towards the close of the ninth century a Norwegian pirate, while attempting to reach the Faroe Islands, which had already been visited by the Irish, was driven by storms to the coast of Iceland. This led to the first settlement of the Norwegians in Iceland in 875. From that time the Faroe Islands and Iceland may be regarded as intermediate stations and starting points for attempts to reach the northern shores of America. Greenland was early seen; but it was not until 983 that it was peopled from Iceland. Colonization was carried through Greenland in a south-western direction to the new continent, and for some length of time an inconsiderable intercourse was maintained with the newly colonized countries. But a strong line of separation must be drawn between this early discovery of some parts of the high northern latitudes of America, and the discovery of its tropical regions by Columbus in the close of the fifteenth century. In consequence of the uncivilized condition of the people by whom the former discovery was made, as well as the nature of the countries to which it was limited, it produced no important or permanent results in relation either to commerce or science; the latter, on the other hand, has been attended with events of the utmost importance to mankind, as it has proved the opening of a new source of wealth, glory, and knowledge. The discovery of the new continent in the west, like the original discovery of its northern regions, may be said to be accidental, inasmuch as the object which Columbus had in view was to find a western passage to India. But the expedition under Columbus possessed this distinguishing feature, that it manifested the perfect character of being the following out of a plan sketched in accordance with the principles of science, and intelligently conducted to a successful issue.

After the discovery of the Pacific Ocean by Balboa, the investigation of the western coasts of America went speedily forward. Expeditions were soon sent out both northward and southward; so that nearly a full view was obtained of the immense range of coast which the American continent presents to the Pacific Ocean, and at the same time of its great interior breadth.

On the other hand, discovery in the Eastern World was no less rapid. Within twenty years from the time that Gama reached India by the way of the Cape of Good Hope, all the coasts of Hindustan, those of Eastern Africa, of Arabia, and Persia, had been explored. Navigators had penetrated to Malacca and the Spice Islands. They had learned the existence of Siam and Pegu; and it was only the characteristic jealousy of the rulers of the Celestial Empire that prevented them from entering the ports of China.

The scientific geographer had now abundance of materials to arrange and digest into one systematic whole. He was now called upon to give such a delineation of the earth's surface as should connect together the ranges of eastern and western discovery, and should exhibit the true outline and relative positions of countries, as these had been demonstrated by the astronomer and navigator. The ancient system of geography, to which the Arabs seem closely to have adhered, was founded on the idea of the whole earth being surrounded by an ocean as by a great zone. This the Arabians characterized as the "Sea of Darkness," an appellation most usually given to the Atlantic; while the northern sea of Europe and Asia, as inspiring still more gloomy and mysterious ideas, was styled the "Sea of Pitchy Darkness." Such notions could not now keep possession of the human mind, though it was only by degrees that mankind could be expected to be enlightened by doctrines which were not only new, but seemed likewise to be contradicted by the evidence of sense. The fundamental principles of a systematic arrangement had, as we have already seen, been known from the time of Hipparchus, and had been reduced to practice by Ptolemy. But the want of astronomical observations, or even of accurate surveys, which navigators seldom furnished, and for which science had not indeed yet provided suitable instruments, placed it still beyond the resources of modern geography to give anything like a just representation of the two hemispheres. The Venetian geographers were the first who attempted a systematic arrangement of the immense regions recently discovered, adjusting them to each other, and to the mass of information previously possessed. But a series of Venetian maps, preserved in the king's library, show how much their skill was counteracted by the difficulties with which they had to contend. Instead of exhibiting the vast ocean which separates the east coast of Asia from the west coast of America, the two continents are represented either as meeting, or as separated only by a narrow strait. The voyage of Magellan across the Southern Ocean had not shown with sufficient distinctness the presentation of the opposite coasts, to enable the geographers of the time to avoid this error. When maps of different dates are compared, we find, as we descend towards modern times, a gradual progress towards accuracy in the representations given of the earth's surface. This is what might be expected; for all maps should be considered as unfinished works, in which there will always be something to be corrected, or something new to be inserted.

At the period of the revival of letters in Europe, the latitudes and longitudes as given by Ptolemy were universally received with implicit confidence. When checked, however, by actual observation, they were found to differ materially from the truth. The latitudes in many instances were found very erroneous; that of Byzantium, for example, exceeded the truth by two degrees. As nearly the same excess was found to exist in some other cases, many geographers, unwilling to renounce the authority of Ptolemy, concluded that this difference had arisen from a change having taken place in the position of the earth's axis, in consequence of which the latitudes of all the places in Europe were increased. The progress of observation showed that this opinion was untenable, and that before geography could rest on a sure basis, a general revision of ancient graduation was indispenably necessary. The only observations employed by the ancients for determining longitudes were those of the eclipses of the moon; but it was found that the results derived from this source could not be depended on. In the year 1610, Galileo, having discovered three of Jupiter's satellites, pointed out the use which might be made of their eclipses for finding longitudes. But this method, which gives the greatest degree of accuracy, was turned to little account, until 1668, when Cassini published his tables of the revolutions and eclipses of these satellites. Three years afterwards, by means of simultaneous observations made by him and Picard at Paris, and by Tycho Brahe at Copenhagen, the difference of longitude of these two important points, which had been long a matter of dispute, was finally determined. Since that time, other accurate methods of finding the longitude have been discovered; and the instruments employed in observation have been brought to a high degree of perfection. The refinements and improvements of modern science have been brought to bear upon the great problem of determining the figure of the earth, which, though nearly, is not exactly spherical. (See Figure of the Earth.) The labours of scientific men to obtain accurate results on this subject, have contributed much to the improvement of geography. The expeditions sent out under Maupertuis to the arctic circle, and under Condamine to the equator, afforded an opportunity of making various observations of latitude and longitude in regions of which no delineation resting upon proper data had hitherto been given. Within the last fifty years, trigonometrical surveys of France and England have been executed, which have nearly completed the delineation of these countries.

Much advantage has accrued to geographical science, in point of accuracy and precision, from the application in modern times of a sound and judicious criticism to the immense mass of materials which had been accumulating for ages. The labours of M. d'Anville, in the eighteenth century, were employed with great success in this department. He undertook the revision of the whole system on which the delineation of the world, and of the countries into which it is divided, had hitherto been made; and by unhesitatingly rejecting every particular that did not rest on positive authority, he removed many false or uncertain features, and clearly distinguished the known from the unknown parts of the globe. Major Rennell has skilfully arranged and illustrated the important materials collected respecting India. Various authors have in modern times cultivated another interesting field of inquiry, the comparison between ancient and modern geography, and the tracing of the rise and progress of early discovery. These researches were diligently pursued by Vossius, Bochart, and other learned men of the seventeenth century, and with still more success by Rennell, Vincent, and Mannert, who appear to have pushed them as far as they admit, though much darkness still rests on some parts of the inquiry. Gosselin, notwithstanding that he has applied to the subject a great extent of investigation, as well as much skill and force of criticism, has failed, on account of the peculiar views in which he indulged, to make any solid addition to the science.

The discoveries made by the Spaniards and Portuguese had greatly increased the stock of geographical information. Still much remained to be done. The desire of finding a short and convenient route to India continued to supply a stimulus to exertion in the way of discovery. The English and Dutch made extraordinary efforts, and encountered fearful dangers and disasters, with the expectation of effecting a passage by the north-east, along the northern shores of Asia. A coast beset with the ices of the Polar Seas presented, however, obstacles too formidable to be overcome; though recent researches show that no barrier of land intervenes. But there was still another quarter where an attempt might be made; and to this point the commercial nations of Europe failed not to direct their efforts. The jealousy of Spain long prevented the other European states from visiting the north-western coast of America, so that they remained ignorant of the vast breadth to which the continent spreads out as it advances towards the north. They adopted, indeed, the opinion that, like the southern extremity, the northern terminated in a point or cape. This left room to hope for a north-western passage into the Pacific Ocean, by sailing round the imaginary cape. The English took the most decided lead in the exploratory voyages to which these views gave rise. In the reign of Queen Elizabeth, Frobisher and Davis were sent out on three successive voyages, which led to the discovery of the entrance into Hudson's Bay by the former navigator, and of the entrance into Baffin's Bay by the latter. These two capacious basins were afterwards discovered by the intrepid navigators whose names they bear. In sailing round the great sea which he had discovered, Baffin mistook the great opening into Lancaster Sound for a mere gulf; a misapprehension which checked for a time any further attempts in that quarter, as navigators were led to expect success only through the channel of Hudson's Bay. In 1631, Fox explored a part of that great opening on the north of Hudson's Bay, called Sir Thomas Roe's Welcome, which seemed now to hold out almost the only hope of accomplishing the object sought. The assertion of Middleton, an officer in the service of the Hudson's Bay Company, that he had discovered the head of the Welcome to be completely closed, and the circumstance of two other navigators, who were sent out the following year, failing to effect anything, produced an impression on the public mind that the passage so long sought had no existence.

The discoveries of Cook in the North Pacific Ocean, where he found the American coast stretching away in a north-westerly direction, joined to the circumstance that, when he penetrated through the strait discovered early in the last century by Behring and Tchirikof, which separates America from Asia, the coast appeared there to extend indefinitely to the north, seemed not only to confirm the conclusion that no passage into the North Pacific Ocean was here to be expected, but also that the American continent extended northward in one unbroken mass, perhaps even to the pole. The groundlessness of these views became apparent when, in the year 1771, Mr Hearne, who had been despatched by the Hudson's Bay Company to explore the limits of the coast in this direction, sailed down the Copper-Mine River, and discovered its entrance into the sea; and again, when, in 1780, Sir Alexander Mackenzie traced also to the sea another river about twenty degrees farther to the west. Thus were there furnished strong grounds to believe that the pole was surrounded by an ocean which separated the northern coasts of Asia and America, making these two continents altogether distinct from each other; and that through this ocean lay the long-sought course which would certainly conduct the navigator who should succeed in forcing his way through the ice and storms of the polar regions, from the Atlantic into the North Pacific Ocean.

The determination of this great geographical question, so long agitated, has recently called forth the utmost efforts of the British government. In 1818 an expedition was sent out to Baffin's Bay under the command of Captain Ross, without leading to any important result, as he was led to conclude that no opening existed. Lancaster Sound had, however, forcibly attracted the attention of the late Sir Edward Parry, at that time lieutenant and second in command; and on returning with a new expedition under his immediate command, he succeeded in penetrating through Lancaster Sound, which he found gradually to widen till it opened into the Polar Sea. He found a chain of large islands to lie parallel to the American coast; and among these he continued his navigation until the accumulation of ice in the straits and channels through which he had to pass stopped his further progress. This circumstance induced him to make his next attempt through Hudson's Bay, by the channel of the Welcome, which had as yet been but imperfectly explored. Here he succeeded in reaching a point considerably beyond that at which Middleton had represented the bay as terminating. He found at length a narrow strait communicating with the Polar Sea, but so encumbered with ice as to preclude the hope of its ever affording an open passage. He was therefore again sent out to renew his efforts in the first direction, where he had already obtained partial success. But the obstacles which he had formerly been unable to overcome still continued, and prevented him from making any material addition to his former discoveries. Whilst these skilfully-conducted voyages were in progress, Sir John, then Captain Franklin, was sent out at the head of two successive expeditions by land, and, by actual survey, ascertained three-fourths of the boundary coast; his operations terminating at a point beyond the 149th degree of west longitude. On the other hand, an expedition under Captain Beechy, sent to meet Captain Franklin on his second toilsome journey, passed the Icy Cape of Cook, and penetrated nearly as far as the 156th degree of west longitude, leaving only seven degrees, or 160 miles, between the farthest point thus reached and the utmost limit reached by Captain Franklin. The results of this investigation appeared to prove that the whole of the northern coast of America extends in a line not varying much from the parallel of the 70th degree of north latitude. The problem of a passage between the Atlantic and Pacific Oceans, to the north of the American continent, has now been finally solved: but this discovery, so well fitted in itself to afford satisfaction to the British nation, which has always taken the lead in such enterprises, has been made under circumstances of a very saddening kind. In 1845 Sir John Franklin and Captain Crozier were sent out on a voyage of discovery to the Arctic Seas. No tidings having been received of this expedition, it became, after two or three years, a subject of painful anxiety and suspense. Hence various expeditions were fitted out and sent in search of the missing voyagers, to succour them if still within reach of human aid, or, if otherwise, to ascertain their fate. In the course of these praiseworthy endeavours, Captain M'Clure was appointed to command the Investigator, under Captain Collinson of the Enterprise, and proceeded with that officer to Behring Straits in the early part of 1850. When on the eve of sailing, Captain M'Clure emphatically declared that he would find Sir John Franklin and Captain Crozier, or make the north-west passage. The latter part of this pledge he has, geographically speaking, redeemed; but the impenetrable mystery which from the first enveloped the fate of these gallant commanders remains the same. Captain Collinson failed in his attempts to penetrate the pack ice that season, and so was separated from Captain M'Clure, who, notwithstanding a signal of recal from Captain Kellett of the Herald, the chief officer on that station, dashed onward with a bold determination to force a passage to the north-east—taking on himself all the responsibility of disobeying orders. Fortunately his daring has been crowned with success. He rounded Point Barrow on the 5th August 1850: continuing his course eastward along the coast, he reached Cape Parry on the 6th September, whence he steered through a channel called Prince of Wales Strait; which, running north-east, appeared a most promising course for reaching the sea south of Melville Island. Near the northern extremity of this strait, the Investigator was frozen in from the 8th of October, and remained stationary during the winter. Parties being sent out to explore, it was soon ascertained that the channel opened into Barrow's Strait; and thus was the existence of a north-west passage established. On the 14th July 1851 the Investigator was again fairly afloat, the ice having opened without any pressure. The great object now to be gained was to pass through the strait; but notwithstanding their utmost exertions, the expedition was completely arrested by strong north-east winds, driving great masses of ice to the southward. Thus baffled, Captain M'Clure resolved on running to the southward of the island, forming the western boundary of Prince of Wales Strait, which he had named Baring Island, and then to sail northward along its western side. This navigation, in which he was subjected to many delays and encountered many formidable obstacles, he accomplished, and succeeded in reaching the north side of the island on the 24th of September. Had open water existed to the east the rest of the passage might have been easily performed in this way, for Barrow's Strait lay before them, the navigation of which from their position to Lancaster Sound was known to be practicable. The hopes of this intrepid navigator were destined again to be disappointed. On the night of the above mentioned day the Investigator was frozen up, and at this point, in latitude 74° 6′ N. and longitude 117° 54′ W., they had their winter quarters in 1851, 1852, 1853. In April 1852 a party crossed the ice to Melville Island, and deposited there a document giving an account of their proceedings, and of the position of the Investigator. This document was happily discovered by the officers of Captain Kellett, who had been the last person with whom Captain M'Clure held communication when he entered the ice on the west, and was now, singularly enough, the person to rescue him at the expiration of three years on the side of Melville Island on the east. Steps were immediately taken to communicate with the party in their ice-prison, Lieutenant Pim being appointed by Captain Kellett to the service. Eventually it was found necessary that Captain M'Clure and his gallant companions should abandon their ship, however unwillingly; so that the navigation of the north-west passage has not yet been accomplished.

The discovery of a new continent greatly enlarged, as we have seen, the views of mankind respecting the constitution of the globe. But imagination, no longer limited in its range by the notion of a circumambient ocean that could not be passed, soon gave rise to the belief of a southern continent, which was supposed necessary to balance the land in the northern regions of the earth. The immense body of water that was found to occupy so large a portion of the known regions of the southern hemisphere gave ample room for supposing this unknown continent to be of vast dimensions. It was imagined that it might equal in extent as well as in wealth the American continent. Nor was it considered necessary to exclude it from the map of the world till its existence should be proved. It appears in all the early maps as an immense mass of land surrounding the south pole, and presenting to the ocean one unbroken coast. The discovery of certain great insular tracts in the South Seas, which, from ignorance of their true nature, navigators might mistake for continental promontories or portions of coast, no doubt at first gave some countenance to the belief of the existence of antarctic land. But the delusion was gradually dispelled before the light afforded by further discovery. The Portuguese, in less than twenty years after their passage of the Cape of Good Hope, pushed their researches to the most remote islands in the Indian Ocean, including Java and the Moluccas. They appear also to have observed some part of the coast of New Guinea. The Spaniards during their early and adventurous career put forth strenuous exertions to explore the Southern Ocean, and several of the groups of islands scattered over its surface were discovered by their navigators. In 1607, the Dutch having wrested from the Portuguese Java and the Spice Islands, established in them the centre of their Indian dominion. A great maritime power being thus placed so near to the northern shores of the largest portion of land on the globe that is regarded as an island, it became almost impossible that New Holland could long remain unknown. It was discovered early in the seventeenth century, and was long supposed to form a part of the great southern continent. Van Diemen, the Dutch governor of India, sent out several vessels successively to explore its coasts. Hertog, Carpenter, Nuytz, and Ulaming made very extensive observations on the northern and western shores, but found them so dreary and uninviting that no settlement was attempted. In the year 1642 Abel Jansen Tasman was commissioned to proceed on a voyage to ascertain its extent. On the 14th August he sailed from Batavia, directing his course first towards the Isle of France. He again set sail on the 3d October, and proceeding southward and eastward, beyond the limits reached by his predecessors, he discovered and doubled the southern extremity of Van Diemen's Land, to which he gave its name; but he failed to discover that it is a separate island. Pursuing afterwards his course eastward, having reached about 42°10′ S. Lat. and 170° E. Long., he found himself in view of a high and mountainous country, which he named Staaten Land, but which is now known as New Zealand. He sailed along the coast towards the north-east, and after being detained by the variableness of the weather, he resumed his voyage and returned home by the Friendly Islands, discovering many islands in his progress. He arrived at Batavia on 15th June 1643. Tasman's voyage proved that New Holland was no part of the southern continent, even if such a continent should be found to exist. Cook, who had been appointed in 1767 to conduct a voyage into the South Pacific Ocean for astronomical and geographical purposes, sailed southward in 1769 in quest of the unknown continent. Lofty mountains were seen on the 6th October, and it was supposed that the object of their search was found. But the land proved to be New Zealand. This land he circumnavigated, and found that it consisted of two large islands separated by a narrow channel. After six months employed in this manner, he directed his course westward, and reached the eastern side of New Holland early in 1770. By his extensive operations in that quarter—having run down the coast from latitude 38° to its northern extremity at Torres Strait—he left little more to be done there in the way of discovery. Passing between New Holland and New Guinea, he continued his voyage by Timor and the south coast of Java to Batavia; whence, after repairing the ship, he sailed for England, and reached the Downs on the 12th June 1771, with his crew weakened and reduced in number by the fatigue and hardships of their long voyage. By this voyage it was proved there was no such continent as that supposed to exist to the northward of 40° south latitude. But as many ingenious and well-informed men still adhered to the opinion that there did exist a southern continent, government determined to send out a second expedition under Cook, to make such an exploration of the Pacific Ocean in the higher southern latitudes as should finally and satisfactorily settle this much-agitated question. Cook was instructed to circumnavigate the globe in high latitudes, prosecuting his researches as near to the South Pole as possible, and to traverse every part of the Southern Ocean where the supposed continent could possibly lie. The expedition sailed from Plymouth 13th July 1772, and quitted the Cape of Good Hope 22d November. Pursuing his course eastward, Cook, during three years, employed the summer months in those regions (corresponding to our winter months) in navigating high latitudes towards the South Pole, and the winter months in adding to his discoveries in the South Pacific Ocean. Notwithstanding, however, that he varied his course, and traversed in every direction which he thought afforded the slightest likelihood of finding land, and actually got so far south as 71° 10′ of latitude, he was unsuccessful. Having thus scrupulously and completely accomplished the object for which he was sent out, he directed his course homeward. He had encompassed the globe in high latitudes, and was led to conclude that the Southern Pole is surrounded only by isles and firm fields of ice, so that the hypothesis of an austral continent had no foundation. He reached the Cape of Good Hope 22d March 1775, and anchored at Spithead on the 30th July, having, in the space of three years and eighteen days, sailed 20,000 leagues, mostly in unhospitable climates and unknown seas. In the course of this and his former voyage the same great navigator secured glory to his country and to himself by likewise completing the survey of the Great Pacific Ocean. Some of the interesting groups of islands scattered over its vast surface had already been made known by the previous voyages of Byron, Wallis, and Carteret. Cook fully traced the great chain of the Society Islands and the Friendly Islands. He determined also the form and relations, not only of New Zealand, but of New Caledonia and other lands and islands in that region of the globe.

The extensive island of New Holland has recently become doubly interesting from the important relations which now subsist between it and Europe. In the year 1788 the establishment of a British colony on the east coast paved the way for a more complete survey. By the different expeditions undertaken from 1795 to 1799, chiefly under the direction of Bass and Flinders, the east coast, together with Van Diemen's Land and Bass's Strait, which separates that island from New Holland, were accurately explored. In 1801 an expedition was sent out by the British government under the command of Captain Flinders, for the purpose of surveying a large portion of the coast. These surveys were prosecuted with unremitting ardour and perseverance. At the same time that Captain Flinders was carrying on his survey, the French captain Baudin was employed on the same service, and in some parts the discoveries of these navigators intermingle. Some additional observations have more recently been made; and by these various expeditions the whole coast of New Holland and Van Diemen's Land has been accurately surveyed, the position of every point has been ascertained, and every inlet and bay has been traced to its termination.

The strong presumption which the researches of Captain Cook in the Southern Ocean furnished of the non-existence of an austral continent, seemed to leave no room to expect that any further doubt would be entertained on the subject. Lieutenant C. Wilkes, commander of the expedition fitted out in 1838 by the government of the United States, for the exploration of the antarctic regions, has, however, claimed for his country and for himself the honour of at length discovering a continent within the antarctic circle. While this claim is pertinaciously adhered to, no distinct and unequivocal proof is produced that the continent alleged to have been seen by the American Expedition has a substantial existence. No continent or island was landed on; and, on the other hand, there is no doubt that the British Expedition under the command of Sir James C. Ross sailed over the very spot in south latitude 66°, and east longitude 163°–166°, where Lieutenant Wilkes supposed he saw mountainous land. This latter expedition was fitted out by the British government for scientific purposes in 1839, and arrived in Van Diemen's Land in August 1840. The French government had likewise sent an expedition into the southern seas, under the command of Captain Dumont d'Urville, about the same time. To avoid interference with the French and American discoveries, Sir James Ross determined on a more easterly meridian—that of 170° E.,—in which to endeavour to penetrate to the southward. The expedition sailed from Hobart Town on 13th November 1840, and on 27th December encountered a chain of icebergs. On the 5th January 1841 they entered the pack-ice, through which having forced their way, the ice having at the same time somewhat slackened, they found themselves on the 7th January again in a clear sea. Soon after 2 o'clock A.M. of the 11th January they discovered land, which, as they advanced southward, was found to extend continuously from the 70th to the 79th degree, with several adjacent islands. This land they called Victoria Land. It presented to their view ranges of mountains whose lofty peaks, covered with eternal snow, rose to elevations from seven to ten or even twelve thousand feet above the level of the ocean. The intervening valleys were filled with glaciers, which, descending from near the mountains' summits, projected in many places several miles into the sea, and terminated in perpendicular cliffs. The rocks breaking through in a few places their covering, afforded the only indication that land formed the nucleus of this, to appearance, enormous iceberg. On the 28th January, when they had nearly reached their highest latitude, about 78° S., they found that what appeared when first seen at a distance to be a high island, was a mountain 12,367 feet in height, emitting flames and smoke in great profusion. This volcano lies in latitude about 77½° S., and in longitude about 167° E. From the most eastern point of land at a cape not far from the foot of this mountain, an icy barrier was found to extend eastward as far as the eye could discern. This barrier was a perpendicular wall of ice from 150 to 200 feet in height, and stretched 250 miles in one unbroken line, as was found on a second visit to the same interesting locality in February 1842; nor were they able to turn its extremity, so as to reach a higher latitude. At a point where the height of the barrier diminished to about 80 feet, they perceived from the mast-heads that it gradually rose to the southward, presenting the appearance of very lofty mountains perfectly covered with snow, but with a varied and undulating surface. And hence Sir James Ross, with nearly all his companions, felt assured that the presence of land there amounts almost to a certainty. Still, Sir James is of opinion that the recent discoveries in the antarctic regions made by the French and American navigators, and by himself, do not prove the existence of a great southern continent, but rather of a chain of islands.

In tracing the history of geographical discovery, it cannot fail to be observed that while discovery by sea admits of being pursued with great advantage, on account of the rapidity of its progress and the extent of its range, it does not supersede the slower and more confined operations of the discoverer by land, which are no less necessary to make known the interior features and circumstances of the different countries.

The British dominion in India has led to much additional information respecting the interior of Asia; information which is, however, in many respects, only the revival of ancient knowledge. The great mountainous chain which forms the northern boundary of India has been traced and found in many places to tower to such heights as to exceed the Andes, long supposed to be the highest mountains in the world. The source of the Ganges, and that of the Indus, with the early courses of these great rivers, have been found to be situated quite differently from what had been supposed to be their position by modern geographers. The mountainous territories of Cabul and Cashmere, the high interior tableland of Thibet, and the vast sandy plains of Meckran, have all been more or less explored. Information of an authentic character has also been recently obtained respecting the formerly celebrated capitals, Bochara and Samarkand. But a wide field still remains for future research.

The continent of Africa, however, is the quarter of the globe which, more than any other, has baffled the efforts of those who would explore its interior. The vast sandy deserts, high mountains, and impenetrable forests which occur on its surface, joined with the unremitting wars carried on between the petty tribes, as well as the deeply-rooted antipathy of the African Mohammedans towards the Franks, have presented obstacles of the most formidable kind. The ancients, whose knowledge of the African coasts was very imperfect, except where they border on the Mediterranean and the Red Sea, were accustomed to penetrate into the inland provinces, and are said to have been acquainted with many parts of it which are now altogether unknown. At an early period of modern history, reports that Prester John, the Christian prince, who had been sought for in vain in the East, was to be found in the interior of Africa, induced the Portuguese to explore Abyssinia; but the accounts which they gave of the extent of that country were greatly exaggerated. From the western coast they despatched embassies into the interior in quest of the object of their search; and on one occasion they appear to have reached the city of Timbuctoo, and to have obtained at Benin some information concerning the great interior kingdom of Ghana. The maritime nations of south-western Europe early formed settlements on the west coast of Africa, and, for commercial purposes, were naturally prompted to seek a knowledge of the neighbouring nations. But it was not until the formation of the African association in 1788 that any well-sustained efforts were made in the prosecution of discovery in the interior. There were two objects connected with the interior of Africa which had for a long time fixed the attention and awakened the curiosity of the nations of Europe. These were the city of Timbuctoo and the great central river, the Niger. Timbuctoo has been for many centuries the grand emporium of the central trade of Africa, and hence there has prevailed throughout Europe, ever since the rise of discovery and commercial enterprise, a strong desire to visit it, and to establish with it a friendly intercourse. The discovery of the course and mouth of the Niger has now opened up to commercial speculation what it is hoped will give a ready access to Timbuctoo as well as other places of traffic. The interest with which, in a geographical point of view, however, the Niger has been regarded, has arisen from the remarkable nature of the regions through which it flows, and still more from our ignorance, combined with the various and contradictory rumours which were so long abroad, respecting its course and termination. Herodotus is the earliest author who affords any ideas applicable to this subject. He mentions an expedition into the interior of Africa, undertaken by some Nasamonian youths, who, being made prisoners, were carried to a great city inhabited by negroes, and situated on the banks of a river which flowed from west to east. This stream he conjectures to be the remote source of the Nile, but the particulars given appear to leave little doubt that it was the Niger. A similar hypothesis was adopted by Strabo, Mela, and Pliny, identifying the waters of these two great rivers. But Ptolemy, whose residence in Alexandria afforded him ample means of information, rejects altogether the idea of any communication between them. He describes the Niger as terminated on the west by Mount Mandrus (Mandingo), and as giving rise to several extensive lakes as it proceeds in its course. His statements do not, however, involve anything positive as to the direction in which it flows. The Saracens or Arabians are the next great source of information; for, in the course of the dissensions which took place among their dynasties in Northern Africa, large bodies crossed the desert and founded kingdoms on the eastern part of the shore of the Niger, of which the kingdom of Ghana was the most splendid. According to their testimony, the Niger flows from east to west, and discharges itself into the sea, by which they understood the Atlantic, or great circumambient ocean. With regard to its source, they generally regarded it as the same with that of the Egyptian Nile, identifying the two rivers in the early part of their course. Some were of opinion that the waters of the Niger did not reach the sea; so that they must have supposed them to be discharged into a lake. The system adopted by modern Europeans was derived from Leo Africanus, who retained the delineations of the Niger as flowing from east to west, and falling into the ocean; but, instead of deriving it from the Nile, supposed it to rise from a lake lying deep in the interior of Africa. Following this hypothesis, all the early European navigators, when they saw the two broad estuaries of the Senegal and Gambia, concluded that one or both gave egress to the waters of the Niger. In the beginning of the seventeenth century, the French and English, having each formed a settlement, the one on the Senegal and the other on the Gambia, were induced by the hope of gain to seek a route up these rivers to the city of Timbuctoo; and in this enterprise they proved the falsity of the opinion which had been so long held. The streams were traced so near to their source as to become little more than rivulets; whilst the explorers were still far from the great central emporium of Africa, and from the great plain through which the Niger was understood to flow. This result led the two great French geographers, Delisle and D'Anville, to construct maps in which the Niger, after the lapse of so many ages, was again represented as flowing to the eastward. Instead of a single stream pursuing a course across the whole breadth of Africa and falling into the Atlantic, D'Anville distinguished three rivers—the Senegal, flowing westward; the Niger, flowing eastward into a lake in Wangara; and another river still farther east, and flowing in the opposite direction. The data on which this scheme rests were never fully made public.

Still new doubt was thrown around this subject by the reports collected by Mr Lucas, who travelled under the auspices of the African Association, and who was assured at Tripoli, by a native merchant, that the river flowed with rapidity in a westerly direction. The time, however, at last arrived, when these conflicting opinions were to be silenced, and when new light was to be thrown on the subject, by the labours of our illustrious modern traveller, Mr Mungo Park. In his first expedition, in 1795–96, he proceeded from the west coast in the direction of the river Gambia, until at Medina he left it, and turned to the north. Having passed through the kingdoms of Bondou, Kasson, and Kaarta, he reached Sego, the capital of Bambarra, where he beheld " the long-sought majestic Niger glittering in the morning sun, as broad as the Thames at Windsor, and flowing slowly to the eastward," directing its course into the depths of the interior of Africa. This stream, he found, was called by the natives the Joliba, or Great Water. Park advanced beyond this point to another town called Silla on the same river, and acquired also some valuable information respecting the further course of the stream which was the object of his research, as well as respecting the position of Timbuctoo, which he was told was not more than 200 miles from Silla. Following upwards the course of the Joliba until he reached Bammakoo, which was stated to be about ten days' journey from its source, he returned to the Gambia by a more southerly tract. In 1805 this adventurous traveller was sent out at the public expense on his second expedition. After reaching Silla, he embarked at a place in its neighbourhood on the Joliba or Niger, with the determination of sailing down the stream until he should reach its mouth, whithersoever its course might conduct him. He is ascertained to have passed successively the cities of Jenné, Timbuctoo, Yaour or Yaouri, and to have reached Boussa, a short distance farther down, where he was killed. No part of his journal, however, after he embarked on the river, has been recovered. In the meantime, a strong and general interest being now excited in reference to African geography, information flowed in from various sources respecting the regions in the interior, as well as some parts nearer the coast. Many particulars became known concerning the countries to the east of Timbuctoo, especially the kingdom of Bornou, then the most powerful state of Central Africa. The knowledge possessed of the people of the interior was also considerably increased. These circumstances prepared the way for a more successful attempt than any hitherto made to explore the interior of Africa, when Major Denham and Lieutenant Clapperton were sent out in 1822. Setting out from Tripoli with a caravan of Arab merchants, these travellers crossed the desert, and reached the great inland sea or lake called Tchad, which is the receptacle of immense volumes of water collected from the most distant recesses of inner Africa. Major Denham examined the coasts of this lake to the east and south; while Lieutenant Clapperton directed his researches westward, through the kingdom of Bornou and the country of the Fellatahs, until he arrived at Sackatoo, situated on a stream which probably flows into the Joliba. In the course of this journey Clapperton obtained a great mass of information concerning those hitherto unvisited regions which lie eastward of Timbuctoo; but with regard to the course of the unexplored part of the river Niger (or Quorra, as it was called at Sackatoo), he heard little that could be depended upon. Having returned to England, he was again sent out by the government in command of a new expedition, with instructions that he should endeavour to penetrate to the scene of his former adventures from the coast of Guinea. In the execution of this plan of research he reached the Niger at Boussa, where Park perished; and, after traversing some of the adjoining regions on the farther side of the river, as far as the great commercial city of Kano, the capital of Houssa, where he had been in his former journey, he turned again to the west, and having reached Sackatoo, there died. His servant, Richard Lander, with a praiseworthy zeal, embarked on one of the branches of the Niger for the purpose of finally determining, if possible, its termination by sailing down the stream; but he was stopped by the natives, and compelled to turn back. The city of Timbuctoo was in the meanwhile reached by Major Laing, who succeeded, in August 1826, in making his way thither across the desert from Tripoli. In this famous city he spent some weeks, but was murdered in the desert on his return; nor did the results of his inquiries and observations ever reach Europe. Such are the formidable difficulties and dangers which have hitherto encompassed the path of discovery in the interior of Africa. Still, by renewed efforts, the object of research has been gained. The grand question of the termination of the Joliba, Quorra, or Niger, has at length been fully resolved—a discovery which is the result of the fortunate and well-conducted enterprise on which Richard Lander and his brother were sent out in 1830. Having followed nearly the same route which had been taken by Clapperton in his second journey, these two travellers reached Boussa on the 17th June. They first ascended the river as far as Yaouri, and then returned to Boussa. After remaining there for some time, they embarked on the river to follow the stream in its course downward, hoping that it would conduct them to the sea. In this expectation they were not disappointed; for they reached the Bight of Benin by the larger branch, which is there called the river Nun. There is another great branch a little farther to the south; and by these two outlets, with several smaller channels, the river known in Europe by the name of Niger discharges its waters into the Atlantic.

The zeal for discovery in Africa, which has been so active during the last sixty years, has sent forth a succession of travellers (missionaries and others) to explore the southern regions of that vast continent. We can mention briefly only the most remarkable results of their researches.

It is now (1855) about six years since intelligence was received in Europe of the discovery of snowy mountains in Eastern Africa. The discovery was in itself so remarkable, that the report was not at first universally credited. It was, however, subsequently confirmed. The mountains in question are Kilimanjaro, in about latitude $3\frac{1}{2}^\circ$ S. and longitude 37° E.; and Kenia, in about latitude 1° S., and longitude $38\frac{1}{2}^\circ$ E. They were discovered by the missionaries Rebmann and Krapf, stationed near Mombas. Kilimanjaro is an isolated and very conspicuous peak, probably connected on its western side with the tableland of inner Africa. The missionaries have become acquainted with its eastern, southern, and northern aspects; but Mount Kenia has been seen only from the south, at a distance of six days' journey, or about 80 geographical miles.

Another important discovery made in the interior of Africa within the same time is that of Lake N'Gami, by the missionary the Rev. Dr Livingston, accompanied by Mr Oswell and Mr Murray. It seems to be situated about 19° south latitude—about 560 miles N.N.W. of Kolobeng, the scene of Dr Livingston's missionary labours, and the headquarters of the Baquain tribe. These and other explorers have made us in some measure acquainted with an extensive system of rivers, between 10° and 22° south latitude, running eastward, which, when farther research shall have made them fully known, may be found capable of being rendered subservient to commercial intercourse with the surrounding countries, and to their consequent civilization. Dr Livingston is at present extending his explorations to the north of Lake N'Gami.

An important expedition to Central Africa, headed by Mr James Richardson, left Tripoli in March 1850. It was sent out under the orders and at the expense of the British government. The object of this mission was to survey Lake Tchad, and to explore the neighbouring countries. The scientific interests of the expedition were entrusted to two German gentlemen, Dr Barth and Dr Overweg. Instead of travelling from Tripoli across the desert with the great caravan, the mission formed a small caravan of its own, amounting to about one hundred persons and as many camels. The journey from Tripoli to Murzuk and thence to Ghat is less interesting than that from the latter place, where they entered on entirely new ground. But even in the former part of the march many important discoveries were made, as the travellers selected new routes not before explored, and thus rendered every part of the journey subservient to the purposes of the mission. At Ghat their personal danger was increased to such a degree that they found it necessary to trust for protection to the friendship of the sultan of the Keloës, in whose country they were detained about three months, during which time Dr Barth made an interesting journey to Agadez, while much valuable information was also collected by Mr Richardson and by Dr Overweg who had remained. At the close of 1850 the party reached Zinder, where the three travellers separated, each proceeding with his followers by another route. Mr Richardson took the direct way to Kuka, not far from the shores of Lake Tchad, and the capital of the empire of Bornou. At Kuka all the three hoped again to meet very soon afterwards, but this hope was disappointed. Mr Richardson was of a weak constitution, yet his health appeared to suffer little from the fatigue of crossing the desert; but he sunk before he reached Lake Tchad, which was the termination of his mission, and from which he was to return by direct road to Tripoli. He died in the country of Bornou at Ungurutua, a place six days' journey from Kuka, during the night intervening between the 3d and the 4th of March 1851. Thus was added another name to the large number of those who have fallen a sacrifice to the cause of African discovery.

The two surviving travellers, undaunted by the prospect of danger, proposed as the plan of their operations to approach the Upper Nile, as soon as they had explored the vicinity of Lake Tchad,—provided they were supported by the British and Prussian governments; and to be ready even to pursue their researches from Kuka to the Indian Ocean. The route in a straight line to Mombas lies nearly south-east; but from all they could learn, the route more to the south, in the direction of Lake Nyassi, seemed more practicable. The gigantic journey which they thus contemplated lay through many powerful kingdoms, densely peopled, intersected by numerous rivers, very fertile, and abounding in forests, but where the most formidable obstacles were to be expected from the warlike dispositions of the surrounding nations.

In the meantime they prosecuted with zeal the immediate objects of the mission, embracing every opportunity of collecting information. On the 29th May 1851, Dr Barth started from Kuka to visit the kingdom of Adamana, which, from the accounts he had received, he judged to be the most beautiful country of Central Africa. He reached Yola, the capital, on the 22d June, where he was permitted to remain only three days. He was kindly received, however, both by the sultan and by the inhabitants, and at his departure was treated with consideration and honour. Four days' journey before reaching Yola, he had to cross at the point of their junction the two principal rivers of Adamana, the Benueh and the Faro, the latter being a tributary of the former. The Benueh he describes as the largest and most imposing stream which he had seen since leaving Europe. He found it half a mile broad and about ten feet deep. The distance of the source from the point at which he crossed it was said to be nine days' journey. This magnificent river is in fact the upper course of the Tchadda, which itself falls into the Quorra or Niger, not far from its mouth. The discovery thus made of the identity of the two streams, the Benueh and the Tchadda, has opened up a way of access to the very heart of inner Africa which seems destined eventually to become the line from the west along which the blessings of commerce and civilization are to flow to the surrounding nations. The consideration of the immense importance of following up this discovery, and of the advantages which might be expected to accrue from it, suggested the idea of sending out a steamboat expedition from England to ascend the Tchadda. Former attempts to reach Central Africa by ascending the Quorra had been attended with very disastrous consequences. But the expedition which left the British shores in May 1854 to ascend the Tchadda was eminently successful, while not a single life was lost. It reached the mouth of the Quorra in the beginning of July, and, entering the Tchadda, ascended the stream to within about 50 miles of the confluence of the Benueh and the Faro. Thus it has been fully proved that this important river is navigable to Yola, the capital of Adamana.

While Dr Barth was prosecuting this journey his fellow-traveller was employed in surveying Lake Tchad. This lake is described as an immense marsh, the only portion fit for navigation being a deep channel formed by the river Shary, which pours into the lake a vast volume of water. What Major Denham has described as small islands were found to be extensive meadow-lands of much greater surface than the lake itself. The explorations of Dr Overweg led to results considerably at variance with what had been reported by Denham; but the discrepancies are perhaps more apparent than real, and may find their explanation in the fact that the lake is augmented during the rainy season to an immense body of water; but during the season of drought is so much reduced by evaporation as to appear at times to be almost dried up.

In the course of the summer of 1852, Dr Barth, setting out from Kuka, made a journey in a south-easterly direction towards the Nile; and so near did he approach to the eastern boundary of the basin of that great river that he was able to collect information likely to throw light on some intricate questions connected with it. He succeeded also in exploring a portion of Bagirmi, a powerful kingdom between Lake Tchad and the Upper Nile, which had never before been visited by any European. In uniting, by means of his itineraries, Bagirmi with Dar Fōr, he has completed a line of direct route across Central Africa from the Quorra to the Nile; and thus from the Gulf of Guinea to the Red Sea and the Indian Ocean.

Dr Overweg left Kuka at the same time with Dr Barth, but took a south-westerly direction towards the Quorra. Between the end of March, the time of his setting out, and the end of May when he returned, he successfully performed an important journey, which brought him within 150 English miles of Yacoba, the great town of the Fellatahs. Dr Barth's journey occupied a considerably longer time; and it appears that Dr Overweg's anxiety to await the return of his companion, which was not until the 20th August, induced him to remain at Kuka, notwithstanding the danger to be apprehended from too long exposure to the influence of the unhealthy season. The consequence was, that his constitution became so seriously affected, that though he set out, immediately after Dr Barth's arrival, on an excursion to healthier regions, yet the advantage derived proved only temporary. He died on the 27th September 1852 at Maduāri, about ten miles east of Kuka, and near Lake Tchad.

As it was known that the travellers had expected to be ready to start from Kuka towards the Indian Ocean in August or September 1853, it was intended by their friends in England, that before they left Kuka they should be joined by an additional fellow-labourer to take a part in their arduous undertaking. Dr Vogel, an astronomer and botanist, was accordingly sent out, accompanied by two chosen volunteers from the corps of the Sappers and Miners. By a singular coincidence, on the very morning on which Dr Vogel and his companions went on board the vessel which was to take them to Malta on their way to Tripoli, letters from Dr Barth were received in London announcing the death of Dr Overweg.

Though now left alone, as being the only surviving member of the mission, Dr Barth continued to prosecute with zeal the work in which he was engaged. Up to the 23d November 1852 he was still at Kuka; but he had fixed on the 25th of the same month to leave that place, and to enter on his journey to Timbuctoo. All his journals and papers, arranged and completed up to that date, he intended to forward to Tripoli, there to be deposited with the English consul. By the beginning of March 1853 he had performed more than one-third part of his journey, and had reached the capital of the territories of the Fellātahs, whose friendship and assistance he had secured. After being subjected to the disappointments and delays incident to the traveller in that part of the world, he reached at length the termination of his perilous journey. During his stay at Timbuctoo his life was exposed to great danger, from the influence of unfavourable climate, and much more so from the hostile disposition towards Christians of the most fanatical Mohammedan population of Northern Africa. He thus describes his distressing situation during his sojourn in that magnificent city,—the "Queen of the Desert," as it is justly called by the natives:—"Like a helpless vessel on the ocean waves am I thrown about on a sea of uncertainty between the power and passion of contending parties. Every day brings something new,—now of a satisfactory kind, then again of the reverse. Death, captivity, safe return home, are my visions by turns, and it is yet impossible to say which shall be my fate." To have left Timbuctoo without sufficient protection, would have been to expose himself to certain death. Hence his stay in this place of danger was unavoidably protracted to nearly a year, when he was at last succoured by Auáb, the chief of a Tuarick tribe inhabiting the regions east of Timbuctoo, along the Quorra, who came with an escort of a hundred horsemen, and conducted him in safety through his dominions on his way hack to Sackatoo.

The news of Dr Vogel having been despatched from Europe to join him had reached Timbuctoo before Dr Barth left that place. On the 1st December 1854 he had the inexpressible pleasure of meeting him at Bundi, a small town situated at about 200 geographical miles due west of Kuka. Once more he looked on the face of a European—his countryman—and grasped the hand of a friend in whom he could place implicit confidence. Exactly six years had elapsed since he left Europe, in company with Mr Richardson and Dr Overweg. Since the decease of the latter he had been isolated from civilized society, and had been left to contend single-handed with manifold hardships and dangers. To revisit Europe he now considered as indispensable for the preservation of life and health; and accordingly he moved on to Kuka, whence he intended to proceed homeward without further delay. We are happy to say that he arrived at Marseilles early in September 1855.

The limits of the great unexplored region of Africa may be roughly indicated as extending between the parallels of 10° north and south of the equator, and from Adamaua in the west to the Somauli country in the east. This extensive region has just been touched by the routes of recent travellers. But in all parts of the habitable globe the spirit of research, which has already done so much, is still active; nor is it directed only to the determining of the outlines of continents and countries, or to the marking of the leading features of mountains, rivers and cities, with their relative positions and distances. These are regarded by the geographical inquirer merely as affording a proper basis on which to rest the description of the earth considered as the habitation of man, and as affording him amply the means of improvement and happiness. The picture can be completed only by the continued labours of the scientific observer, who makes the earth, with its various productions, whether natural or artificial, the treasures hid in its bosom, the animals found upon its surface, and, above all, the human beings who people its different regions (and these in all their mutual bearings and relations), the objects of attentive examination and study.

II.—MATHEMATICAL GEOGRAPHY.

CHAP. I.—PRINCIPLES AND DEFINITIONS: OF THE TERRESTRIAL SPHERE.

We have already stated that mathematical geography treats of the figure, magnitude, and motion of the earth; its relations to the other bodies of the system to which it belongs; the relative positions of places on its surface, and the methods of delineating the whole or any part of its surface. Several of these topics belong as much to astronomy as to geography; for the former science regards the earth, on the one hand, as the grand observatory whence the phenomena of the heavens are contemplated by man; and, on the other hand, as itself constituting a portion of the planetary system, the laws of which it is the object of the astronomer to investigate and explain. It is only, indeed, by celestial observation that the position of a point on the surface of the earth can be accurately determined; so that the first principles of geographical science must necessarily be drawn from astronomy.

We take for granted, then, the doctrine of the celestial sphere; the globular form, the magnitude and motion of the earth, with the phenomena arising out of and depending upon its motion. These points are fully discussed in the article ASTRONOMY, part ii. It will be necessary, however, for the sake of distinctness, to state briefly such of the results derived from the reasoning there employed as belong specially to the subject of this article.

The doctrine of the earth's rotundity is that with which the student of geography must first make his mind familiar. To the eye the earth appears a circular plane, at the centre of which the spectator imagines himself placed; whilst the heavens, spread over his head like a magnificent canopy, seem to meet the earth all round in a circle which bounds the view. The space comprehended within this circle is found to present often a very irregular surface, rising into mountains, or sinking into cavities, so as apparently to exclude the idea of its bearing any resemblance to a portion of a globe or sphere. This is, however, nearly its true figure. Were we placed at such a distance from the earth that the eye would be able to take in at one glance the vast mass in its full dimensions, it would present the appearance of a circular disc, of greater or less diameter according to our distance. If viewed on all sides, its circular form would remain unchanged; a property characteristic of no other body but a globe or sphere. The highest mountains would be found to bear so little proportion to the whole bulk, as to cause no perceptible deviation from the globular form; and the same thing may be said of the difference which exists between the polar and equatorial diameters, though that quantity amounts to about twenty-eight miles.

The portion of the earth, then, seen from any point above its surface, is to be regarded as the segment of a sphere, which, increases in extent according as the eye is more elevated. When the semidiameter of the earth, and the height of the eye above the surface are known, it is easy to find the diameter of the circle which bounds our view on the earth; supposing, as is the case at sea, that no object intervenes to obstruct our vision. Thus, let AB be the height of a mountain on the earth's surface. From A draw the line AD, a tangent to the surface in any direction; D will be the most distant point seen by a spectator whose eye is placed at A, the summit of the mountain. If the line AD be supposed to be carried round the point A, while it at the same time continues to be a tangent to the surface, until, having passed through every possible position, it returns to that from which it set out, the point D will trace the circumference of the circle which bounds the terrestrial view, and of which the radius will not differ much from AD. Now AD being a tangent to the arc BD, we have $AD^2 = (2BC + AB) \times AB = 2BC \times AB$ nearly, since AB must always be very small compared with 2BC, the diameter of the earth. Assuming the diameter equal to 7912 English miles, we have $AD^2 = 7912 \times AB$; or, if AB is expressed in feet, $AD^2 = \frac{7912}{5280} \times AB$, in miles. Hence we obtain

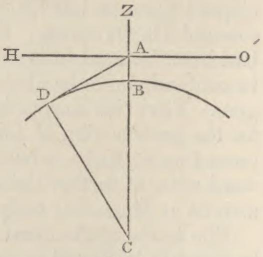

Fig. 1.

$$AD = 1{\cdot}224126\sqrt{AB}.$$

The result obtained from this formula will deviate from the truth in consequence of the effect of refraction; which, at a medium, may be considered as increasing the distance by about $\frac{1}{14}$, or ·0714 of the whole. Applying this correction to the above formula, it becomes

$$AD = 1{\cdot}3115\sqrt{AB}.$$

For example, if the Peak of Teneriffe is 12,358 English feet in height, then $AD = 1{\cdot}3115\sqrt{12358} = 145{\cdot}8$ miles is the radius of the circle which bounds the view from that elevation.

The circle bounding terrestrial vision, which we have now been considering, does not, except when the eye is close to the surface of the earth, coincide with the sensible horizon as determined by a plane passing through the eye along the line HO and perpendicular to the vertical line CZ. The angle contained between the visual ray AD and the horizontal plane is called the *dip* of the horizon. For ordinary purposes, however, it is sufficiently accurate to say that the *sensible horizon* is the circle which bounds the view, where the heavens and the earth appear to meet. To this circle the *rational horizon* is parallel, being determined by a plane passing through the centre of the earth perpendicular to the vertical line CZ, and continued in every direction to the sphere of the heavens.

Let NESQ be the terrestrial sphere, of which C is the centre; and let HO be the rational horizon of the point M. The rotatory motion of the earth determines the position of the line NS on which it revolves, and which is called its *axis.* The two points N, S, in which the axis meets the surface, are called the *poles of the earth.* The circle EQ upon the earth, the plane of which passes through C the centre, and is perpendicular to NS the axis, is called the *equator* or *equinoctial line.* This circle is equidistant from the poles of rotation, and its plane coincides with the plane of the celestial equator. The rational horizon and equator being two great circles of the terrestrial sphere, that is, the plane of each passing through the centre, they are mutually bisected. This is a property which belongs to all great circles. Any great circle NPS passing through the two poles is called a *meridian.* Any given point P may have a meridian passing through it; and the plane of that circle will coincide with the plane of the celestial meridian which passes through the zenith of that point. Every meridian cuts the equator at right angles.

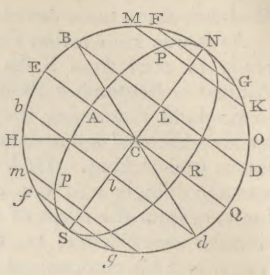

Fig. 2.

The horizon HO corresponding to any point M upon the globe, is divided into four equal parts by the equator and the meridian passing through that point. The points of division are called the four *cardinal points.* Those through which the meridian passes are called the *north* and *south* points of the horizon. Those points, again, through which the equator passes are called the *east* and *west* points.

The earth is divided by the horizon into two hemispheres, called the *upper* and *lower* or *under hemispheres;* by the equator it is divided into the *northern* and *southern hemispheres;* and by the meridian, into the *eastern* and *western hemispheres.*

The position of any point P on the surface of the earth is determined by referring it to the co-ordinate circles, the equator and meridian. The distance PA of the place P from the equator, measured in degrees and parts of a degree on the meridian passing through the place, is called its *latitude,* which is said to be north or south, according as the place is situated in the northern or southern hemisphere. The arc EA of the equator, intercepted between the meridian passing through the place P and some particular meridian NMS, called the *first meridian,* as being that fixed on from which the reckoning is to commence, is called the *longitude* of the place in question; and is east or west, according as the place is situated in the eastern or western hemisphere in reference to the first meridian. The difference of longitude between two places is the arc of the equator intercepted between their meridians; and is found by subtracting or adding the longitudes, according as the places are on the same or on opposite sides of the first meridian. The ancients assumed for their first meridian that of the Fortunate Islands, which they conceived to be the western limit of the habitable world. In later times, the meridian passing through Ferro, one of the Canary Islands, was used as the first meridian by the geographers of many countries. It nearly coincided with that of the ancients. But in modern systems of geography the first meridian is usually that which passes through the capital of the country to which the geographer belongs; or if there is an observatory in or near the capital, the meridian of the observatory is assumed as the first. By British geographers the meridian of the observatory at Greenwich is reckoned the first meridian. It is usual to call the semicircle NPS, passing through the two poles and a given place, the meridian of that place; and the other semicircle NRS passing through the opposite point on the globe, the opposite meridian. All places lying under the same meridian have the same longitude, and at all of them noon or any other hour occurs at the same instant of absolute time. As the sun in his apparent diurnal revolution moves over fifteen degrees in an hour, it is evident that difference of longitude, which causes difference in the rela-

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tive time, may be estimated in time, allowing fifteen degrees to an hour, or one degree to four minutes.

If a small circle MPK, or *mpk*, be drawn parallel to the equator at any distance from it, all the places through which that small circle passes will have the same latitude. Such small circles are accordingly called *parallels of latitude.* The difference of latitude between two places is the arc of the meridian intercepted between their parallels of latitude, and is found by subtracting or adding the latitudes, according as the places lie on the same or on opposite sides of the equator.

On the hypothesis of the earth being a perfect sphere, the degree of latitude must be assumed as everywhere of the same length. Actual observation shows that this is not exactly the case, but that the length of the degree increases slightly as we proceed from the equator towards either pole (see FIGURE OF THE EARTH), so as to indicate a flattening of the surface in the latter regions, or that the earth is of a spheroidal figure. This, however, we do not at present take into view. With regard to the degree of longitude, it is at the equator of the same length with the degree of latitude. But on both sides of the equator it decreases gradually on account of the meridians approaching each other until they intersect at the poles. At the equator a degree of longitude is the 360th part of the circumference of a great circle of the terrestrial sphere; at every point to the north or south of the equator it is the 360th part of the circumference of a small circle, of which the radius is equal to the cosine of the latitude. Now, since similar portions of the circumferences of circles are to one another as their radii, if we put L for the length of the degree of longitude at the equator, and L′ for its length in a latitude denoted by l, we have rad. : cos. l : : L : L′. Hence, radius being unity, we obtain

$$L' = L \times \cos. l.$$

From this formula the following table is calculated; the length of the degree of longitude at the equator being assumed equal to 69·06 English miles.

Table showing the Length of a Degree of Longitude for every Degree of Latitude, in Geographical and in English Miles.

Lat.	Geo. Miles.	Eng. Miles.	Lat.	Geo. Miles.	Eng. Miles.	Lat.	Geo. Miles.	Eng. Miles.
1	59·99	69·05	31	51·43	59·20	61	29·09	33·48
2	59·96	69·02	32	50·88	58·57	62	28·17	32·42
3	59·92	68·96	33	50·32	57·92	63	27·24	31·35
4	59·85	68·89	34	49·74	57·25	64	26·30	30·27
5	59·77	68·80	35	49·15	56·57	65	25·36	29·19
6	59·67	68·68	36	48·54	55·87	66	24·40	28·09
7	59·55	68·55	37	47·92	55·15	67	23·44	26·98
8	59·42	68·39	38	47·28	54·42	68	22·48	25·87
9	59·26	68·21	39	46·63	53·67	69	21·50	24·75
10	59·09	68·01	40	45·96	52·90	70	20·52	23·62
11	58·90	67·79	41	45·28	52·12	71	19·53	22·48
12	58·69	67·55	42	44·59	51·32	72	18·54	21·34
13	58·46	67·29	43	43·88	50·51	73	17·54	20·19
14	58·22	67·01	44	43·16	49·68	74	16·54	19·04
15	57·96	66·71	45	42·43	48·83	75	15·53	17·87
16	57·68	66·38	46	41·68	47·97	76	14·52	16·71
17	57·38	66·04	47	40·92	47·10	77	13·50	15·54
18	57·06	65·68	48	40·15	46·21	78	12·47	14·36
19	56·73	65·30	49	39·36	45·31	79	11·45	13·18
20	56·38	64·90	50	38·57	44·39	80	10·42	11·99
21	56·01	64·47	51	37·76	43·46	81	9·39	10·80
22	55·63	64·03	52	36·94	42·52	82	8·35	9·61
23	55·23	63·60	53	36·11	41·56	83	7·31	8·42
24	54·81	62·09	54	35·27	40·59	84	6·27	7·22
25	54·38	62·59	55	34·41	39·61	85	5·23	6·02
26	53·93	62·07	56	33·55	38·62	86	4·19	4·83
27	53·46	61·53	57	32·68	37·61	87	3·14	3·61
28	52·98	60·98	58	31·79	36·60	88	2·09	2·41
29	52·48	60·40	59	30·90	35·57	89	1·05	1·21
30	51·96	59·81	60	30·00	34·53	90	0·00	0·00

Mathematical Geography.

If a great circle B*d* be supposed to be drawn on the terrestrial sphere, cutting the equator obliquely at an angle of about 23½ degrees, this circle will mark out the course of the sun through the year, and is called the *ecliptic.* It corresponds with the celestial ecliptic, and is divided in the same manner into signs and degrees. The parallel of latitude which passes through the point of the ecliptic in which the sun is placed on any particular day, shows to what points of the earth's surface the sun is vertical on that day. The two parallels BLD, *bld,* which touch the ecliptic at the points where it recedes farthest from the equator to the north and south, are called the *tropics;* the one, BLD, the northern tropic, or the tropic of Cancer; and the other, *bld,* the southern tropic, or the tropic of Capricorn; because they touch the ecliptic in the first points of these signs. These circles lie in the planes of the corresponding circles in the celestial sphere.

Of the two poles, that which lies in the northern hemisphere is called the *north* or *arctic pole;* and the opposite, lying in the southern hemisphere, is called the *south* or *antarctic pole.* The two parallels of latitude FG, *fg,* which encircle these poles respectively at an angular distance equal to the obliquity of the ecliptic, are called the *polar circles,* the one the north or arctic, and the other the south or antarctic.

Suppose a great circle to be drawn on the terrestrial sphere everywhere equally distant from that point on the surface to which the sun is vertical at any given time; this circle is called the *circle of illumination,* because it separates the enlightened from the dark hemisphere of the earth. It is upon the position of the circle of illumination that the equal or unequal lengths of the days and nights throughout the year depend over the face of the earth. At every season of the year this circle bisects the equator, so that under the equator the days and nights are always equal. When the sun is over either of the equinoctial points E, Q, the circle of illumination bisects not only the equator, but likewise all the parallels to the equator, in consequence of cutting them at right angles; and hence, as the parallel of latitude passing through any point on the earth's surface may be regarded as the path along which that point is carried by the diurnal motion of the earth, at that season of the year the days and nights are equal over all the earth. When the sun is over any other point of the ecliptic, the parallels of latitude are cut obliquely by the circle of illumination, so that they are divided by it into two unequal parts, and hence the days and nights are unequal all over the earth, except at the equator. If the sun is in north declination, at all places to the north of the equator the days are longer than the nights; but at all places to the south of the equator, the nights are longer than the days; because with regard to places to the north, the larger portion of the parallel of latitude lies within the enlightened hemisphere, while with regard to places to the south the larger portion lies within the dark hemisphere. The reverse has place when the sun is in south declination. When the sun is over the northern tropic BD, or over the southern tropic *bd,* the day is then the longest or shortest of the year; and the adjacent polar circle is wholly in the light, and the opposite one wholly in darkness.

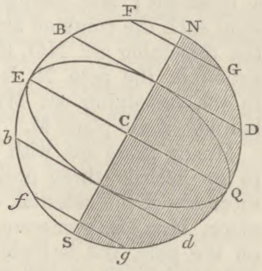

Fig. 3.

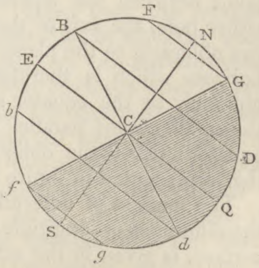

Fig. 4.

Mathematical Geography.

Mathematical Geography.

Thus within the arctic and antarctic circles the inhabitants have their light and darkness extended to a great length; the sun sometimes skirting round a little above the horizon for many days together, and at another season never rising above the horizon at all, but making continual night for a considerable length of time.

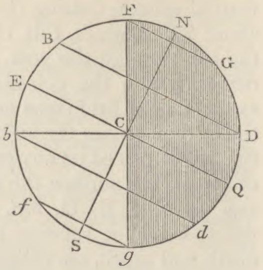

Fig. 5.

Such are the circles supposed to be drawn on the terrestrial sphere. Though these circles are altogether imaginary, and have really nothing corresponding to them on the earth's surface, yet as the positions of the corresponding circles in the heavens can be accurately determined by observation on the celestial bodies, they become actually as effective for fixing the relative positions of places on the globe of the earth, and for other purposes of geography, as if that globe were reduced to such a magnitude as to admit of its being grasped by the hand of man, and surveyed by a single glance of his eye.

The height NO of the pole adjacent to any place M above HO the horizon of that place, is equal to the latitude of the place; for the arcs MO and EN are equal, each being a quadrant; and taking away from each the common arc MN, the remaining arc NO, the elevation of the pole N, is equal to the remaining arc ME, the latitude of the place M.

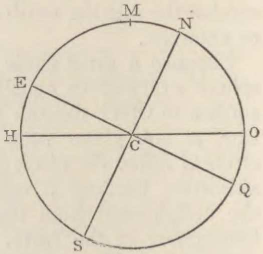

Fig. 6.

Hence there are, with regard to the horizon, three positions of the terrestrial sphere, as there are of the celestial, depending on the latitude of the place. If an observer were placed on the pole, the latitude being 90°, his horizon would coincide with the equator, and all the parallels of latitude would be parallel to the horizon. This is the parallel position of the sphere, which is represented in fig. 7. Again, if an observer were placed on any point of the equator, the latitude being 0, the poles of the earth must be in the horizon; and from the properties of the sphere, the equator, and all the small circles parallel to the equator, must be at right angles to the horizon. This is the right position of the sphere, which is represented in fig. 8. With regard to an observer placed at any point between the equator and either pole, the axis of the earth lies obliquely to the plane of his horizon, which is therefore cut obliquely by the equator and all the small circles parallel to the equator: this is the oblique position of the sphere, and is that represented in figure 2.

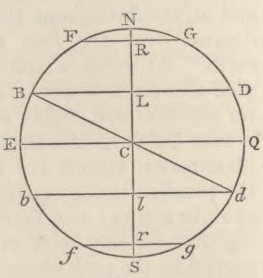

Fig. 7.

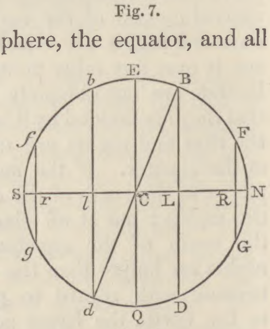

Fig. 8.

The method of determining the latitude of a place, and the difference of longitude between two points on the earth's surface, is given in the article ASTRONOMY, part iv. chap. i. prob. ix. and x. The latitudes and longitudes of two points on the surface of the earth being given, the angular distance may be found; and hence the length of a degree on the earth's surface being known, the distance between the points may be expressed in miles. Thus, let A and B be two points on the earth's surface, let P be the adjacent pole, and PA, PB the meridians passing through A and B; then PA and PB will be the complements of the latitudes, and therefore given; and the spherical angle APB will be the difference of the longitudes, and therefore also given. In the spherical triangle PAB, the base AB of which is the distance required, we have therefore two sides and the included angle, so that the base AB can be found. Put D and D' for the complements of the given latitudes, and P for the difference of the given longitudes; then, by spherical trigonometry, we have

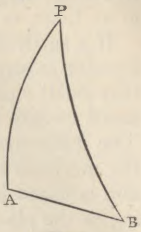

Fig. 9.

$$\text{Cos. AB} = \text{cos. D cos. D}' + \text{sin. D sin. D}' \text{ cos. P.}$$

By assuming tan. ϕ = tan. D cos. P, this formula may be reduced to the more convenient form

$$\text{Cos. AB} = \frac{\text{cos. D cos. }(\text{D}' - \phi)}{\text{cos. }\phi}.$$

From the above expression the number of degrees and parts of a degree contained in the arc intercepted between the points A and B are to be found; and allowing for each degree 69·06 English miles, the distance will be obtained, expressed in English miles, which will necessarily differ a little from the truth, in consequence of the earth not being truly spherical. To determine the distance between two points on the earth's surface with precision, requires the application of some of the most refined improvements in modern mathematics. See FIGURE OF THE EARTH.

As an example of the above formula, let it be required to find the distance between Edinburgh and Constantinople.

Colat. of Edinburgh......34° 3' = D : its long. 3° 12' W.

Colat. of Constantinople 48° 59' = D': its long. 28° 55' E.

Difference of longitude......= 32° 7' = P.

Tan. D = tan. 34° 3' = 9·829805

Cos. P = cos. 32° 7' = 9·927867

Tan. φ, 29° 47'.......... 9·757672

D' = 48° 59'

D' — φ = 19° 12'.......... Its cosine = 9·975145

Cos. D = 9·918318

Arith. compl. cosine φ = 0·061525

Cos. AB, 25° 38'...= 9·954988

Hence the arc of a great circle of the sphere intercepted between Edinburgh and Constantinople is 25° 38', or 1770 English miles nearly.

Each of the four quadrants into which the horizon is divided by the equator and the meridian is supposed to be divided into eight equal parts; so that the whole circumference is divided into thirty-two equal parts, which are called *points of the compass*; and to each point of division a name is given indicating its position with regard to the four cardinal points.

The position of one place with regard to another, as estimated by the points of the compass, is called the *bearing* of the former from the latter. Thus, when a place is said to bear N.E. (north-east), N.N.E. (north-north-east), &c. the meaning is, that it lies in the direction of those points in the horizon from the present position of the observer. If a series of points be assumed on the earth's surface, so situated that all of them, when taken in regular succession, lie towards any the same point of the compass, except either of the four cardinal points, the assumed points lie, not in the circumference of a circle of the sphere, but in a sort of spiral line, the characteristic property of which is, that it cuts all the meridians at the same angle. This line is called a *rhumb line*; and, whilst it continually approaches the pole, it can never arrive at it, except after an infinite number of revolutions. In passing, therefore, from one point of the surface of the globe to another, by pursuing the direction in which the latter lies from the former, we do not take the shortest way, which is an arc of a great circle, but move over a portion of a rhumb line, passing through the two points. This is the line described by a ship whilst her course is continually directed towards one and the same point of the compass.

CHAP. II.—OF THE SURFACE OF THE EARTH, AND ITS GENERAL DIVISIONS: DEFINITIONS.

The surface of the earth contains about 196,663,400 square miles. By much the larger portion of this space is water, which is, indeed, more than twice the extent of the land. The surface of the land is exceedingly diversified, almost everywhere rising into hills and mountains, or sinking into valleys, and sometimes stretching out into plains of great extent. Amongst the most extensive plains are the sandy deserts of Arabia and Africa, the internal part of European Russia, and a tract of considerable extent in Prussian Poland. But the most remarkable extent of level ground is the vast table-plain of Thibet in Asia, which is the most elevated tract of level ground on the globe. The principal mountain ridges are the Alps and Pyrenees in Europe, the Altai and Himalaya Mountains in Asia, the mountains of Atlas in Africa, and the Andes or Cordilleras in South America. The greatest concavities of the globe are those which are occupied by the waters of the ocean; and of these by far the largest forms the bed of the Pacific Ocean, which, stretching from the eastern shores of Asia and of New Holland to the western coast of America, covers nearly half the globe. The concavity next in extent is that which forms the bed of the Atlantic Ocean, extending between the new and the old worlds; and a third concavity is occupied by the Indian Ocean. The Arctic and Antarctic Oceans fill up the remaining concavities.

Smaller collections of water which communicate freely with the oceans are called *seas*; and of these, the principal are the Mediterranean, the Baltic, the Euxine or Black Sea, and the White Sea. Seas sometimes take their names from the countries near which they flow; as the Irish Sea, the German Ocean. Some large collections of water, though they have no immediate connection with the great body of waters, being on all sides surrounded by land, are yet called seas; as the Caspian Sea.

A part of the sea running up into the land, so as to form a large hollow, is called a *bay* or *gulf*, as the Bay of Biscay, the Gulf of Mexico; but if the hollow be small, it is called a *creek*, a *road*, a *haven*.

When two large bodies of water communicate by a narrow pass between two adjacent lands, the pass is called a *strait* or *straits*, as the Straits of Gibraltar, the Straits of Dover, the Straits of Babelmandel. A channel is a wider kind of strait. The water usually flows through a strait with considerable force and velocity, forming what is called a *current;* and frequently this current, as in the case of the Straits of Gibraltar, flows continually in the same direction.

A body of fresh water entirely surrounded by land is called a *lake*, as the Lake of Geneva, Lake Champlain.

A considerable stream of water rising inland, and draining a portion of country more or less extensive, discharging its waters into the sea, is called a *river*. A smaller stream of the same kind is called a *rivulet*, or *brook*.

Of the land, which forms the rest of the surface of the globe, two portions of vast extent are called *continents;* the one the eastern continent, or the old world, comprehending Europe, Asia, and Africa; the other the western continent, or new world, comprehending North and South America. New Holland is a third portion of land, however, which has by some been also reckoned a continent on account of its great extent.

A portion of land, of comparatively small dimensions entirely surrounded by water is called an *island*, as Britain, Ireland, Jamaica, Madagascar. New Holland is the largest portion of land which is called an island. When a number of smaller islands lie near each other they are said to form a *group* of islands.

A portion of land which is almost entirely surrounded by water is called a *peninsula*, as the peninsula of Malacca, the Morea or Grecian Peloponnesus, &c. The term peninsula is often applied to a large extent of country. Thus we speak of Spain as a peninsula.

The narrow neck of land which joins a peninsula to the mainland, or which connects two tracts of country together, is called an *isthmus*. The most remarkable isthmuses in the world are the Isthmus of Suez which joins Africa and Asia, and the Isthmus of Darien which connects the continents of North and South America.

A narrow tract of land stretching out into the sea, and appearing to terminate in a point, is called a *cape*. The most remarkable capes are, the Cape of Good Hope, at the southern extremity of Africa; Cape Horn, at the southern extremity of South America; and the North Cape, at the northern extremity of Europe. A large portion of land jutting out into the sea is called a *promontory*.

Until of late, in systems of geography, the earth used to be considered as divided into four quarters; Europe, Asia, Africa, and America. A classification in which the whole world is arranged under seven divisions has now, however, been very generally adopted: These divisions are, Europe, Asia, Africa, North America, South America, Australasia, and Polynesia. With regard to the last two, the one, Australasia, or South Asia, comprehends certain of the great islands, particularly New Holland, which are usually considered as belonging to Asia; and the other, Polynesia, signifying many islands, comprehends all the smaller islands which are scattered over the great expanse of the Pacific Ocean.

This classification of the parts of the earth's surface is founded on the most obvious points of distinction. We shall now explain two divisions employed by the ancients, which are founded upon different principles; that into zones, and that into climates.

The division into zones is suggested by the different degrees of temperature which prevail in different regions of the earth. The temperature of a country depends on a variety of circumstances (see PHYSICAL GEOGRAPHY); but of these, one of the most obvious is the position of the sun with regard to the zenith. The more nearly his rays are received vertically, the higher will be the temperature; and, on the contrary, the more obliquely they fall, the less effect will they produce in raising the temperature. Now to every point of the earth's surface between the tropics the sun is vertical twice in the year. It is in this region, then, that the highest temperature will prevail. Again, within the polar circles the sun's rays at all times fall very obliquely; and for a length of time they do not reach these two regions of the globe at all. Here, then, the temperature must be lower than anywhere else, as all other places enjoy more of the sun's genial influence. In the two regions between the tropics and the polar circles, a medium temperature is found, increasing as we approach the former, and diminishing as we approach the latter. Thus is the earth's surface divided, by the two tropics and two polar circles, into five *zones*, distinguished from one another by the prevailing temperature in each. That between the tropics is called the *torrid zone*, because there the heat is understood to be extreme. This region, which has the equator passing through the middle of it, the ancients, indeed, considered as uninhabitable. The two regions comprehended within the arctic and antarctic polar circles are called the northern and southern *frigid zones*, on account of the severity of the cold which there prevails. The two regions situated between the tropics and the polar circles, the one in the northern hemisphere, bounded by the tropic of cancer and the arctic circle, the other in the southern hemisphere, bounded by the tropic of capricorn and the antarctic circle, are called the northern and southern *temperate zones*, because there neither the heat nor cold is excessive; but the heat reaches the highest temperature of summer, and the cold sinks to the lowest temperature of winter, without either becoming extreme.

As each tropic lies about $23\frac{1}{2}°$ from the equator, the breadth of the torrid zone is about 47°, or nearly 3240 English miles. The breadth of each of the frigid zones, that is, from the circumference of the polar circle to the pole, is $23\frac{1}{2}°$, or nearly 1620 miles; so that there remains for the breadth of each of the temperate zones about 43°, or nearly 2970 miles. The superficial content of each zone is easily calculated by the ordinary rules of mensuration. Let s be the surface of a segment of the sphere, d the diameter of the sphere, and h the height of the segment; then

$$s = 3{\cdot}1416\,dh.$$

To apply this formula; let NESQ be the sphere divided into five zones. It is evident that, for the torrid zone, h must be equal to $\mathrm{L}l$, or to twice the sine of BE to the radius EC; that for each of the temperate zones h must be equal to LR or lr, the difference of the sines of FE and BE to the same radius CE; and that for the space comprehended within each polar circle, h must be equal to NR, the excess of the radius NC above CR, the sine of FE corresponding to that radius. Hence, if we put m for twice the natural sine of the arc BE; for the difference of the natural sines of the arcs BE and FE; and for the excess of radius above the natural sine of FE, successively;—since in the case of the terrestrial sphere CE or CN is equal to 3956 miles, we have $h = 3956\ m$. Putting, therefore, instead of d, its value, 7912, and giving the above formula a logarithmic form, we obtain

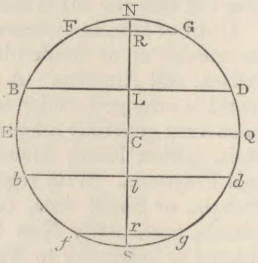

Fig. 10.

$$\text{Log. } s = \text{log. } m + 7{\cdot}9926935.$$

Now, for the torrid zone, $m = 2$ nat. sin. $23° 30' = {\cdot}7975$. Hence,

$$\text{Log. } m = \bar{1}{\cdot}9017307$$
$$7{\cdot}9926935$$

$$s = 78419520 \ldots\ldots\ldots\ldots \text{log.} = 7{\cdot}8944242.$$

The torrid zone contains, therefore, about 78,419,500 square miles.

Again, for each of the temperate zones, we have m = nat. sin. $66° 30'$ − nat. sin. $23° 30 = {\cdot}51831$. Hence,

$$\text{Log. } m = \bar{1}{\cdot}7145896$$
$$7{\cdot}9926935$$

$$s = 50966300 \ldots\ldots\ldots\ldots \text{log.} = 7{\cdot}7072831.$$

So that each of the temperate zones contains about 50,966,300 English square miles.

Lastly, for the space contained within each of the polar circles we have m = rad. − sin. $66° 30' = 1 - 0{\cdot}91706 = {\cdot}08294$: Hence,

$$\text{Log. } m = \bar{2}{\cdot}9187640$$
$$7{\cdot}9926935$$

$$s = 8155630 \ldots\ldots\ldots\ldots \text{log.} = 6{\cdot}9114575.$$

The portion of the surface of the globe comprehended within each polar circle is therefore nearly equal to 8,155,600 square miles.

It is evident that the superficial content of any other zone of the terrestrial sphere may be found by the above formula, by putting m equal to the difference of the natural sines corresponding to the latitudes of the parallels by which the zone is bounded.

If it is required to find the area of a segment of a zone bounded at both extremities by meridians, it is only necessary to find first the area of the whole zone, and then to multiply the result by the number of degrees and parts of a degree in the length of the segment, and to divide by 360. Thus, the number of square miles contained in the portion of the torrid zone terminated by two meridians which are separated from each other by 8° 45′ is equal to $78419520 \times 8\frac{3}{4} \div 360$, which gives 272,290 square miles. By dividing any particular country or district into segments of zones by means of parallels of latitude, its area can easily be calculated.

The division of the earth's surface into climates was employed by the ancients for ascertaining the situation of places. They supposed the northern and southern hemispheres to be each divided into small zones, to which they gave the name of *climates*, the breadth of each zone being such as to make half an hour of difference in the length of the longest day at the two parallels of latitude by which the climate was bounded. Proceeding from the equator, where the length of the day is always twelve hours, they thus divided the space between it and each polar circle into twenty-four climates. Having reached the polar circles northward and southward, where the longest day is twenty-four hours, they divided the space within each polar circle in such a manner as to make the difference in the length of the longest day at the beginning and termination of each climate one month. Hence, as the poles are alternately illuminated for six months, there were just six climates within each polar circle.

Table of Climates.

	Climates.	Latitnde of the Higher Parallel.		Breadth of the Climate.		Longest Day under the Higher Parallel.	
		Deg.	Min.	Deg.	Min.	Hours.	Min.
Between the equator and either polar circle.	I.	8	34	8	34	12	30
	II.	16	43	8	9	13	0
	III.	24	10	7	27	13	30
	IV.	30	46	6	36	14	0
	V.	36	28	5	42	14	30
	VI.	41	21	4	53	15	0
	VII.	45	29	4	8	15	30
	VIII.	48	59	3	30	16	0
	IX.	51	57	2	58	16	30
	X.	54	28	2	31	17	0
	XI.	56	36	2	8	17	30
	XII.	58	25	1	49	18	0
	XIII.	59	57	1	32	18	30
	XIV.	61	16	1	19	19	0
	XV.	62	24	1	8	19	30
	XVI.	63	20	0	56	20	0
	XVII.	64	8	0	48	20	30
	XVIII.	64	48	0	40	21	0
	XIX.	65	20	0	32	21	30
	XX.	65	46	0	26	22	0
	XXI.	66	6	0	20	22	30
	XXII.	66	20	0	14	23	0
	XXIII.	66	28	0	8	23	30
	XXIV.	66	32	0	4	24	0
						Months.	
Between the polar circle and the pole.	I.	67	23	0	51	1	
	II.	69	50	2	27	2	
	III.	73	39	3	49	3	
	IV.	78	31	4	52	4	
	V.	84	5	5	34	5	
	VI.	90	0	5	55	6	

Besides dividing the surface of the globe into zones and climates, the ancients likewise distinguished the inhabitants of the different regions of the earth by the particular direction in which the shadows of bodies are projected in each region, and by some other circumstances depending on the position of the sun relatively to the zenith or to the meridian. The inhabitants of the torrid zone have their shadows at noon projected, sometimes towards the south and sometimes towards the north, according to the position of the sun in the ecliptic. They were therefore called by the ancients *Amphiscii*, a term derived from αμφι, *about*, and σκια, *a shadow*. In the temperate zones, the sun is at noon always on the same side of the zenith. Hence the shadows of objects at noon always fall in the same direction; in the northern temperate zone towards the north; and in the southern temperate zone towards the south. The inhabitants of these regions were accordingly called *Heteroscii*, from ἑτερος, *different*, and σκια. Within the polar circles the sun does not always rise and set every twenty-four hours, as in the other zones; but for a certain number of days in our summer he never sets to places within the arctic polar circle, nor rises to places within the antarctic; and the contrary takes place for a certain number of days during our winter. The number of days during which the sun is present or absent increases as we advance from the polar circle towards the pole. When the sun continues above the horizon for twenty-four hours or upwards, the shadows will make a complete circuit round the objects from which they are projected; hence the inhabitants of the frigid zones were called *Periscii*, from περι, *about*, and σκια.

Again, the inhabitants of two places which lie under the same meridian, and have the same latitude, but are situated on opposite sides of the equator, were called, relatively to each other, *Antœcii*, from αντι, *opposite to*, and οικια, *a habitation*. At such places the hours of the day will always correspond, but the seasons of the year will be opposite. The inhabitants of two places which have the same latitude, and are situated on the same side of the equator, but under opposite meridians, were called *Periœcii*, from περι, *about*, and οικια. They have always the same season of the year at the same time; but any hour of the day at the one place corresponds to the same hour of the night at the other. The inhabitants of two places which have the same latitude, but are situated on opposite sides of the equator, and under opposite meridians, are called *Antipodes* to each other, from αντι, *opposite to*, and πους, *a foot*. They have always opposite seasons and opposite hours.

CHAP. III.—DESCRIPTION AND USE OF THE GLOBES.

When geographers became familiar with the doctrine of the sphericity and motion of the earth, it was an obvious step to have recourse to an artificial sphere for illustrating that doctrine. From a very early period, accordingly, the instruments called the *terrestrial* and *celestial globes* have been employed for this purpose. A sphere made of metal, ivory, plaster, paper, pasteboard, or some other convenient substance, is suspended in a brass ring, of somewhat greater diameter, on two pins, upon which it can be made to revolve. The sphere, thus suspended, is placed in a frame, which may be in many respects variously constructed, according to the taste of the workman; but its upper part always consists of a broad ring made of metal or wood, and supported in a horizontal position. The inner circumference of this ring is equal to that of the brass circle in which the globe is suspended; and two notches in its inner edge, diametrically opposite to each other, receive the brass ring, which also rests in a groove below, in such a position that the plane of the horizontal ring bisects the sphere. By this arrangement the globe can be made to revolve on its axis, and the brass circle can be made to slide round in its own plane. On the surface of the globe are delineated the equator or equinoctial line, situated exactly in the middle between the two points on which the globe is suspended, and divided into 360 degrees; the ecliptic, divided into twelve signs, and each of these subdivided into thirty degrees; the two tropics; the two polar circles, with as many more parallels to the equator as are found convenient; and generally twenty-four meridians passing through the points of suspension, which represent the poles. The first meridian is usually made to pass through the intersections of the equator and ecliptic, the points of the vernal and autumnal equinoxes; and from the former of these points the reckoning of the degrees on the equator and ecliptic begins. The brass circle in which the globe hangs may be made to represent the meridian of any given point on the surface of the globe, by simply bringing the given point under it by turning the globe round on its axis. Hence the brass circle is called the *universal meridian*. It is divided, by the equator and two poles, into four quadrants, each of which is graduated; and on the one semicircle the degrees are reckoned from the equator towards either pole, while on the opposite semicircle they are reckoned from either pole towards the equator. On the broad horizontal circle of the frame in which the globe stands are drawn several concentric circles, the outer of which is divided into 365 equal parts, answering to the number of days in the year; whilst the other circles are graduated, the innermost (or rather another circle concentric with it, but larger) being, besides, divided into thirty-two equal parts corresponding to the points of the compass. The circle next the outer edge forms the calendar, and it has the names of the months arranged in order around it, whilst the divisions are distributed so as to mark the number of days in each. The adjacent circle contains the signs and degrees of the ecliptic, so arranged that against each day of the year is found the point of the ecliptic in which the sun is situated on that day. The innermost circle represents the horizon; and the two notches in which the brazen meridian rests pass through the north and south points. It is divided into four quadrants by the cardinal points; and the degrees of the two quadrants, which form the northern semicircle, are reckoned from the east and west points towards the north; while the degrees of the other two quadrants are reckoned from the east and west towards the south.

Such is a general view of the parts which belong alike to both globes, the terrestrial and the celestial. A more minute description seems unnecessary, as a careful inspection of the globes themselves, with their appendages, will convey a much more distinct conception of them than can be given either by description or by drawings. It will be necessary, however, to describe shortly the horary or hour circle, the quadrant of altitude, and the compass.

The hour-circle is a small circle of brass, divided into twenty-four equal parts corresponding to the hours of the day, the divisions being reckoned in two twelves to suit the hours before and after noon. The circle is fixed on the axis of the globe, having its centre coinciding with the north pole. It can be adjusted with the hand to any meridian, but is at the same time tight enough to be moved along with the globe. Some globes have the hour-circle fixed on the meridian, with an index that admits of being adjusted with the hand, but is carried round with the globe.

The quadrant of altitude is a thin flexible slip of brass, equal in length to one-fourth part of the circumference of a great circle on the globe. It is graduated on one side, and is furnished with a nut and screw at one end, for the purpose of making it fast to the brazen meridian. Its use is to measure degrees on the surface of the globe in any direction.

The compass is simply a magnetic needle suspended over the centre of a circle, on the circumference of which are marked the thirty-two points of the compass. It is fixed to the under part of the frame in which the globe is suspended, and is used for the purpose of placing the meridian due north and south.

On the terrestrial globe the land and water which compose the surface of the earth are delineated, with the various divisions belonging to each. If we suppose the globe to be six or seven feet in diameter, the true height of the mountains on the earth's surface must be reduced, in order to be represented on the globe in due proportion to its bulk, in the ratio of 7912 miles to six or seven feet; that is, the height of the protuberance on such a globe which shall represent any particular mountain must be somewhat about the six-millionth part of the actual elevation of the mountain above the general surface of the earth. Apply this to the highest mountain in the world, which does not exceed five and a half miles in height; the elevation of the protuberance representing it on a globe of the supposed dimensions would be about one-seventeenth part of an inch above the general surface. It is seldom, however, that globes are made of this size. One-third of the supposed diameter is more near to the ordinary dimensions. Hence we see with what propriety the earth is represented by a globe having a smooth surface.

But in order to render the representation more complete, it may be supposed necessary that the terrestrial globe should be inclosed in a hollow sphere which would represent the heavens surrounding the earth on all sides. In conformity with this idea the *armillary sphere* was contrived, in which the several circles of the system of the world, put together in their natural order, are represented, with a small globe in the centre of the sphere to represent the earth. The ordinary way, however, of representing the heavens, proceeds on the supposition that the eye of the observer is placed, not in the centre of the celestial sphere, but beyond its bounds, so as to look down on a *convex* surface. Thus are the stars and constellations represented in their relative positions on the celestial globe, with which the concave surface of the visible heavens is easily compared.

Besides answering the general purposes of illustration, the globes furnish also the means of resolving with facility, and with a degree of accuracy sufficient for ordinary purposes, many problems in geography and practical astronomy. It is only requisite to consider the circumstances on which the solution of a problem depends, and to arrange on the globe these circumstances, according to their natural order and dependence, and the result is at once obtained. We proceed to give a few of the more useful problems, with their solutions by the globes.

I. *Solution of Problems by the Terrestrial Globe.*

Prob. 1. To find the latitude and longitude of a given place.

Bring the place under the graduated edge of the brazen meridian, then the degree of the meridian immediately over it is its latitude north or south, and the degree of the equator cut by the meridian is its longitude east or west.

Prob. 2. The latitude and longitude of a place being given, to find the place itself on the globe.

Bring the point of the equator corresponding to the given longitude to the brazen meridian; under the degree of latitude on the meridian the place is found.

Prob. 3. To find the distance between any two places on the globe.

Lay the quadrant of altitude over the two places, and mark the number of degrees between them. The degrees may then be converted into English miles, if required, by multiplying by 69·06.

Prob. 4. The hour at any one place being given, to find what hour it is at any other place; or to find the difference of longitude between the places in time.

Bring the place at which the hour is given to the brazen meridian, and set the index, or the hour-circle, to that hour; then turn the globe till the other place comes under the meridian, and the index, or the hour-circle, will show the hour required. The difference between the time found and the time given is the difference of the longitudes of the places in time.

Prob. 5. To rectify the globe for a given place.

Elevate the pole that is adjacent to the place as many degrees above the wooden horizon as are equal to the latitude.

Prob. 6. To find at what hour the sun rises and sets at a given place, for any given day.

Rectify the globe for the latitude of the place; find from the wooden horizon the sun's place in the ecliptic for the given day, and bring it to the meridian. Set the index to XII., and turn the globe till the sun's place comes to the eastern edge of the horizon, the index will show the hour of rising; then turn the globe till the sun's place comes to the western edge of the horizon, and the index will show the time of setting.

By doubling the hour of sunrise, we obtain the length of the night; and by doubling the hour of sunset, we obtain the length of the day. It is evident also that the same arrangement of the globe will give the point of the compass on which the sun rises and sets, by simply observing what point of the circle of rhumbs, on the wooden horizon, is cut by the sun's place in the ecliptic at the time of rising and setting. Further, by observing when the sun is about eighteen degrees below the eastern and western parts of the horizon, the time of the beginning of the morning twilight, and of the ending of the evening twilight, is found.

Prob. 7. To find the sun's declination for a given day of a given month, and to what places the sun will be vertical on that day.

Find, on the wooden horizon, the sun's place in the ecliptic for the given day; bring that point of the ecliptic to the meridian, the degree immediately over it on the meridian is the declination north or south. Turn round the globe till it has made a complete revolution; and to every place which passes under that degree of the meridian, the sun will be vertical on that day.

Prob. 8. The hour and day being given at a particular place, to find where the sun is then vertical.

Find the sun's declination by the preceding problem; bring the given place under the meridian, and set the index to the given hour; then turn the globe till the index points to XII. noon; and all the places under the meridian will have noon at the given time; and that place which is under the degree of the meridian that corresponds with the sun's declination will have the sun in the zenith.

Prob. 9. The hour and day being given at a particular place, to find where the sun is then rising or setting, and where it is noon or midnight.

Rectify the globe for the given place; and having previously found by last problem the place to which the sun is vertical at the given time, bring that place to the meridian. Then, to all the places under the western edge of the horizon the sun is rising, and to those under the eastern he is setting; to those under the upper half of the meridian it is noon, and to those under the lower half it is midnight.

Prob. 10. A place in the torrid zone being given, to find on what two days of the year the sun will be vertical to that place.

Find the latitude of the place; turn round the globe, and note the two points of the ecliptic which pass below the degree of latitude on the meridian. Find in the calendar circle of the wooden horizon the days corresponding to these two points of the ecliptic, and these are the days required.

Prob. 11. To find the sun's meridian altitude at a given place on a given day.

Rectify the globe for the latitude of the place; bring the sun's place for the given day to the meridian; count the number of degrees between that place and the horizon for the altitude required.

Prob. 12. To find the altitude of the sun at any given place and hour.

Rectify the globe for the latitude; bring the sun's place to the meridian, and set the index to XII. noon; turn the globe till the index point at the given hour; fix the quadrant of altitude on the meridian at the degree of latitude, and lay it over the sun's place; count the number of degrees on the quadrant between that point and the horizon for the altitude required.

Prob. 13. To find all the places to which a lunar eclipse is visible at any instant.

Find the place to which the sun is vertical at the given time; rectify the globe for the latitude of that place, keeping the place under the meridian; set the index to XII. noon; then turn the globe till the index point to XII. midnight; the eclipse will be visible to all those places which are above the horizon.

Prob. 14. Any place in the north frigid zone being given, to find how long the sun shines there without setting, and how long he is totally absent.

Rectify the globe for the latitude of the place; bring the ascending signs of the ecliptic to the north point of the horizon, and note at what degree the ecliptic is intersected by that point; find on the wooden horizon the day and month corresponding to that degree; from that day the sun begins to shine continually. Next, bring the descending signs to the north point of the horizon, and by observing at what degree the ecliptic is now cut, and referring to the horizon, we find the time when the sun ceases to shine without setting, which is the termination of the longest day. By proceeding in the same manner with the southern point of the horizon, we will find the beginning and end of the longest night.

Prob. 15. Two places being given, to find tne angle which a great circle passing through them makes with the meridian of each.

Rectify the globe for both places successively, bringing in each case the place for which the globe is rectified to the meridian; fix the quadrant of altitude in each operation on the meridian over the place for which the globe is rectified, and lay it over the other place; the two arcs intercepted successively on the horizon between the quadrant and the meridian measure the angles required. It is evident, that if both places lie on the same meridian the angle is 0; and that if both lie on the equator the angles will be each 90°

If a ship be supposed to sail from the one place to the other, on a great circle of the terrestrial sphere (which supposition implies that the ship's course is altered every instant), then the one angle found by this problem will be the course with which the ship left the one place, and the other angle the course with which she arrived at the other place. The arc of the great circle intercepted between the places would be the distance sailed.

Prob. 16. To construct a horizontal dial by the globe for a given latitude.

Rectify the globe for the latitude; bring the first meridian under the brazen meridian, and note the arcs of the horizon intercepted between the southern point and the several meridians in the eastern and western hemispheres. If the number of meridians drawn on the globe be twenty-four, which is usually the case, the arcs intercepted on the horizon will measure the angles which the hour-lines make with the meridian. To find the angles corresponding to half-hours and quarters, turn the globe gradually from its position in which the first meridian was under the brazen meridian, noting for each arc of 3° 15′ of the equator that passes under the brazen meridian, the arc of the horizon intercepted between the southern point and the first meridian; the arcs thus found give the positions of the lines corresponding to the half-hours and quarters. The style of the dial represents the axis of the earth, and must therefore make with the plane of the horizon an angle equal to the latitude of the place.

A direct north or south dial for any latitude may be constructed in the same manner, by considering it as a horizontal dial for a latitude which is the complement of the given latitude.

II. *Solution of Problems by the Celestial Globe.*

Prob. 1. To find the latitude and longitude of any star.

Bring the pole of the ecliptic to the meridian. Then having fixed the quadrant of altitude over the pole, place it over the given star; the number of degrees between the ecliptic and the given star is the latitude; and the number of degrees on the ecliptic between the edge of the quadrant and the first point of Aries indicates the longitude.

Prob. 2. To find a star's place in the heavens, its latitude and longitude being given.

Place the extremity of the quadrant of altitude on the pole of the ecliptic, and make its graduated edge cut the ecliptic in the longitude of the star; then the star will be found under the degree of the quadrant that denotes its latitude.

Prob. 3. To find the right ascension and declination of the sun or of a star

Bring the sun's place, or the star, to the meridian; the degree of the equator cut by the meridian gives the right ascension, and the degree of the meridian over the sun's place, or the star, shows the declination north or south.

Prob. 4. The latitude of a place, the day and hour being given, to arrange the celestial globe so as to exhibit the appearance of the heavens at that place and time.

Rectify the globe for the latitude of the place; bring the sun's place for the given day to the meridian; set the index to XII.; then turn the globe till the index point to the given hour. In this position, the globe will represent the actual appearance of the heavens.

Prob. 5. To find the time when any of the heavenly bodies rises, sets, or comes to the meridian, on a particular day at a given place.

Rectify the globe for the latitude of the place; bring the sun's place to the meridian, and set the index to XII.; then turn the globe till the star comes to the eastern edge of the horizon; the index will show the time of rising. Next, turn the globe till the given star comes to the western edge of the horizon; the index will show the time of setting. Lastly, bring it to the meridian, and the index will show the time of its culmination or southing.

Prob. 6. To find on what day of the year any given star comes to the meridian at a given hour.

Bring the given star to the meridian, and set the index to the given hour; turn the globe till the index points to XII. noon, and note the degree of the ecliptic cut by the meridian; the day of the month which corresponds to that degree is the day required.

Prob. 7. The latitude of a place, the altitude of a star, and the day of the month, being given; to find the hour of the night.

Rectify the globe for the latitude; bring the sun's place to the meridian, and set the index to XII.; fix the quadrant in the zenith, then move the globe and the quadrant till the star comes under the degree of the quadrant which denotes the given altitude, and the index will show the hour required.

Prob. 8. The year and day being given, to find the place of a planet.

Find the sun's place for the given day, and bring it to the meridian; set the index to XII.; then find in the Nautical Almanac for the year the time when the planet passes the meridian on the given day, and turn the globe till the index points to the hour thus found; find in the almanac the declination of the planet for the same day, and under it on the globe is the place of the planet.

These are a few of the more important problems that can be resolved by the globes, and will be sufficient to illustrate the principle of solution. The solution of problems by the armillary sphere depends upon the very same principles.

CHAP. IV.—OF THE CONSTRUCTION AND USE OF MAPS.

In representing the geographical divisions of the earth's surface, two objects are to be kept in view; on the one hand, to exhibit accurately to the eye the relative position of the different countries; and on the other hand, to give a delineation sufficiently minute to furnish a distinct knowledge of the necessary details. As a globe has very nearly the exact figure of the earth, the representation which it affords of the surface fulfils the first of these objects in the most perfect manner; but to attain the second it would be requisite to enlarge the globe beyond all convenient size. A globe of the ordinary dimensions serves almost no other purpose in this respect, but to convey a clear conception of the earth's surface as a whole; exhibiting the figure, extent, position, and general features of the great continents and islands, with the intervening oceans and seas. To obtain a detailed representation of any part of the earth's surface, geographers have therefore found it necessary to have recourse to *Maps*, in which countries are delineated on a plane, while the mutual proportions of the distances of places are preserved as nearly as possible the same as on the globe.

For the construction of maps different mathematical hypotheses have been adopted.

By one method of construction, that of *projection*, the boundaries of countries, and their more remarkable features, are represented according to the rules of perspective, on the supposition of the eye being placed on some point of the sphere, or at some given distance from it, which may be increased indefinitely. Wherever the eye is supposed to be situated, the representation thus obtained answers very well, provided the surface to be represented is of small extent, and the point of view, or *projecting point*, is nearly over the centre; but when the surface is of great extent, for example, a whole hemisphere, those places which are situated near the border of the projection are in all of them much distorted.

Another method, that of *development*, is founded on the supposition that the spherical surface to be represented is a portion of a cone, of which the vertex is situated somewhere in the polar axis produced, and the conical surface is supposed either to touch the sphere in the middle parallel of the map, or to fall within the sphere at the middle parallel, and without it at the extreme parallels. The surface of the cone is then supposed to be spread out into a plane.

A third method, which depends on the development of a cylindrical surface, is that according to which maps are so delineated as to have the parallels of latitude and circles of longitude respectively represented by parallel straight lines. By this method marine charts are constructed. As the rhumb makes equal angles with every meridian, it necessarily, according to this method of delineation, becomes a straight line. Such a representation of the earth's surface is commonly called *Mercator's Chart*, although the invention is due to an English mathematician, Edward Wright.

These are the three principal methods employed to represent to the eye the several countries on the surface of the earth.

I. *Construction of Maps by Projection.*

The representation of any portion of the earth's surface obtained by projection, varies, of course, its character according to the several situations of the eye and of the plane of projection, in relation to the meridians, parallels, and various points or places so represented. It is usual to assume the plane of a great circle of the sphere as the plane of projection, and to suppose the eye situated at some point in a straight line perpendicular to this plane, and passing through the centre of the circle. If the distance of the eye from the plane of projection be supposed indefinitely great, the projection is called the *orthographic;* if it is supposed to be upon the surface of the sphere, the projection is called the *stereographic;* and if the eye is supposed to be in such a position that the projections of the meridians and parallels of latitude are nearly equidistant, as the meridians and parallels themselves are upon the globe, the projection is called the *globular.* In order to apply these projections to the construction of maps, we must attend to the properties of each.

1. *Orthographic Projection of the Sphere.*

The fundamental principle in this projection is, that the representation of any point on the sphere is where a perpendicular from that point meets the plane of projection. Hence it follows that the projection of a line of any kind is determined by supposing perpendiculars to fall from every point in that line upon the plane of projection, and a line to pass through the points of intersection of these perpendiculars with that plane.

If the proposed line be a straight line, its orthographic projection will also be a straight line, being the intersection of the plane of projection with the plane perpendicular to it passing through the proposed line.

If the proposed line be the circumference of a circle parallel to the plane of projection, its orthographic projection will also be a circle of the same diameter; since the circle and its projection are the equal and parallel extremities of the cylinder formed by the perpendiculars falling upon the plane of projection.

If the proposed line be the circumference of a circle, of which the plane is perpendicular to the plane of projection, its orthographic projection will be a straight line equal to its diameter.

If the proposed line be the circumference of a circle, of which the plane is neither parallel nor perpendicular to the plane of projection, its projection will be an ellipse, being the curve in which the plane of projection intersects the cylinder formed by the perpendiculars falling upon it from every point in the circumference of the circle.

An accurate idea of the orthographic projection of any line or figure may be obtained by holding it up in the light of the sun, and observing the shadow formed on a plane perpendicular to the direction of the sun's rays. The rays which pass close to the figure are the perpendiculars to the plane of projection, and the shadow is the orthographic projection of the figure.

From the nature of this projection, the orthographic representation of half the surface of the globe shows nearly the true figure and proportions of countries about the middle of the map, that is, directly opposite to the supposed position of the eye; but towards the extremities the true figure and position of the countries are imperfectly exhibited. For this reason this method of projection is seldom employed in geography, but in astronomy it is frequently used. We shall give, however, the orthographic projection of the sphere on the plane of the equator and on the plane of the meridian.

To project the Sphere orthographically on the Plane of the Equator. From any point C as a centre, with any radius CA, describe the circle ABD. Let this circle represent the equator, upon the plane of which it is required to project the sphere orthographically. It is evident that the centre C will be the projection of the poles of the equator, and that since the planes of the meridian circles are perpendicular to the plane of the equator, these circles will be projected into diameters, making with each other the same angles as do the planes of the meridians. Let A 90, B 180, be two perpendicular diameters; they will represent two meridian circles at right angles to each other: divide the semicircle B 90 D into twelve equal parts at the points 15, 30, 45, &c., and let diameters be drawn through the points of division; then the twenty-four radii CB, C 15, C 30, &c. will be the projections of the twenty-four meridians usually drawn upon the globe, any one of which, as BC, may be considered as the first meridian.

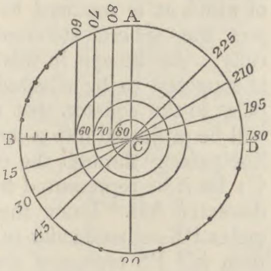

Fig. 11.

Next, it is evident that the parallels of latitude will be projected into circles, which have C for their common centre, and of each of which the radius will be equal to that of the corresponding parallel of latitude, or to the cosine of the latitude of the parallel. Let us suppose that a parallel is drawn on the globe for every tenth degree of latitude; then divide the quadrant AB into nine equal parts, at the points 80, 70, 60, &c.; from these points of division let fall perpendiculars upon BC, meeting it in the points 80, 70, 60, &c.; the lines C 80, C 70, C 60, &c. are equal to the cosines of the arcs B 80, B 70, B 60, &c. to the radius BC. From the centre C, therefore, describe circles with these lines as radii; and these circles will be the projections of the parallels corresponding to the 80th, 70th, 60th, &c. degrees of latitude.

Lastly, the projections of the polar circles and of the tropics may be found by setting off from the point A towards B, and from the point B towards A, twenty-three and a half degrees, drawing perpendiculars to BC through these points of division, and describing circles from C as a centre through the points in which these perpendiculars cut BC.

Thus will the projection of the sphere upon the plane of the equator be completed. The representation given of the polar regions in a map of this description is tolerably correct, but the countries towards the equator are very much distorted.

To project the Sphere orthographically on the Plane of the Meridian. From any point C as a centre, with any distance CA, describe a circle PASB, to represent the meridian circle, on the plane of which it is required to project the sphere orthographically. Draw the diameters PS and AB at right angles to each other: then may PS be assumed as the projection of the meridian which is at right angles to the plane of projection; and AB will be the projection of the equator, since that circle cuts all the meridians at right angles. The other meridians cutting the projecting plane obliquely are projected into ellipses, having PS for their common transverse axis, and the cosines of their inclinations to the projecting plane for their several semiconjugate axes. Let the quadrant AS be therefore divided into six equal parts in the points 15, 30, &c. from which let $15m$, $30n$, &c. be drawn perpendicular to AC, and meeting it in m, n, &c. Describe the ellipses PmS, PnS, &c. having a common transverse axis PS, and Cm, Cn, &c. for their semiconjugate axes: these ellipses are the projections of the meridians passing through every fifteenth degree of the equator.

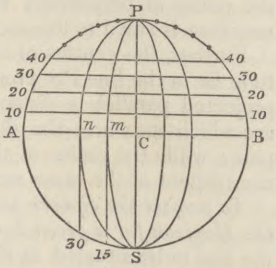

Fig. 12.

Again, to project the parallels of latitude: Divide either of the quadrants AP or BP into nine equal parts, in the points 10, 20, 30, &c. and draw through the points of division straight lines parallel to AB, the projection of the equator: these lines are the projections of the parallels on the one side of the equator to every tenth degree of latitude. The parallels on the other side of the equator are to be drawn in the same manner; as are also the tropics and polar circles, the former at 23½° on each side of the equator. and the latter at 23½° from the poles.

In this projection there is great distortion in the appearance of the regions about the poles, and of all the countries near the meridian PASB. It is as we approach the centre of the map that this distortion begins so far to disappear as to allow a projected portion of the earth's surface to acquire any considerable resemblance to its delineation on the globe.

2. *Stereographic Projection of the Sphere.*

In the stereographic projection of the sphere the eye is supposed to be situated at one of the points where the surface of the sphere is intersected by a straight line passing through the centre, and perpendicular to the plane on which the projection is to be made. This plane, as we have already remarked, is that of a great circle of the sphere; so that the point on the sphere at which the eye is supposed situated will be everywhere 90° distant from the circumference of that circle whose plane is assumed as the plane of projection. In order that the lines and circles on the sphere may be visible to the eye in this position, it will be necessary to suppose the sphere to be transparent. Let, then, ABEC be a great circle drawn on a sphere of this description, and let it pass through the eye at E. Let FG be a plane passing through a, the centre of the sphere, in such a manner as to cut the plane of the circle ABEC at right angles in the diameter HK, and to make each of the arcs EH, EK, equal to 90°: then FG will be the plane of projection. Draw EA the diameter of the sphere passing through the eye; also draw EB, EC, to B and C, any two points in the circumference of the circle ABEC; and let the lines EA, EB, EC, intersect the plane FG in the points a, b, c. By the fundamental principle of the stereographic projection, namely, that the representation of any point is where the straight line drawn from it to the eye intersects the plane of projection, the points a, b, c are the projections of the points A, B, C. It is evident also that the line bc, in which the planes EBC and FG intersect each other, is the projection of the line BC, or of the arc BAC; and that the lines ab, ac, are the projections of the arcs AB, AC.

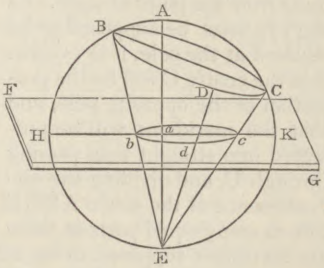

Fig. 13.

Since Eab is a right angle, ab is the tangent of the angle aEb to the radius Ea. But the angle aEb is measured by half the arc AB: hence ab is the tangent of half the arc AB, or the semitangent of AB. Thus it appears, that if a great circle pass through the projecting point E, any arc of it reckoned from the opposite point of the sphere is projected into a straight line passing through the centre, and equal to the semitangent of that arc.

Let BDC be any circle drawn on the sphere, and having BC for a diameter. Take D any point in the circumference of that circle, and draw ED intersecting the plane FG in the point *d*. If the point D be carried round the circumference BDC, the line ED will trace the surface of a cone of which BDC is the base; and the line *bdc* (the intersection of the plane FG with the conical surface), which is traced by the point *d*, is the projection of the circle BDC.

Now, it can be demonstrated that the angles EBC, ECB, are equal to E*cb*, E*bc*, each to each; so that the cones EBC, E*bc* are similar. Hence the projection *bdc* is a circle, whose diameter *bc* is found by taking *ab* and *ac* equal to the semitangents of the arcs AB, AC.

Thus it appears that every circle of the sphere is, according to the stereographic projection, represented by a circle; but a circle can be described when three points in the circumference are given, or when two points in the circumference and the radius are given. Hence this property renders the projection of the sphere by this method very easy.

Another very elegant and important geometrical property of this projection is, that any two straight lines touching the sphere at one and the same point are represented by two straight lines which make with each other on the plane of projection an angle equal to that contained by the touching lines themselves. Hence also the angle formed by any two circles of the sphere is equal to the angle formed by their projections.

When it is further considered that the stereographic projection gives a representation of a hemisphere, in which the parts about the extremity of the map are less distorted than in the representation obtained by the orthographic projection, it must be concluded that the former method is preferable to the latter.

To project the Sphere stereographically on the Plane of the Equator. Upon C as a centre describe a circle ABGE to represent the equator, on the plane of which it is required to project the sphere; or rather that hemisphere which lies remote from the point of sight. As the eye must be supposed to be situated at the pole, it is evident that the centre C will be the projection of the opposite pole, and that the meridians will be projected into straight lines passing through C, and dividing the circumference of the circle ABGE into as many equal parts as there are meridians supposed to be drawn on the globe. If there are twenty-four meridians, then draw AG any diameter, and divide the semicircle AEG into twelve equal parts. Through the points of division draw diameters, as BCE FCK, DCH, &c., and the radii thus found will be the projections of the meridians corresponding to every fifteenth degree of the equator, any one of which may be assumed for the first meridian.

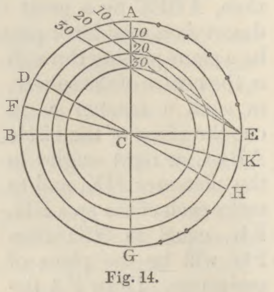

Fig. 14.

Again, to project the parallels of latitude; let AG and BE be perpendicular diameters. Divide the quadrant AB into nine equal parts in the points 10, 20, 30, &c. From E to the several points of division draw straight lines intersecting AC in the points 10, 20, 30, &c. The lines C10, C20, C30, &c. are the semitangents of the distances of the several parallels of latitude from the pole. Hence the points 10, 20, 30, &c. are the points of intersection of the projected parallels with the projected meridian AG. Upon C, then, as a centre, at the distances C10, C20, C30, &c. describe concentric circles, and these will be the projections of the parallels corresponding to every tenth degree of latitude. The tropics and polar circles are found in the same manner.

To project the Sphere stereographically on the Plane of a Meridian. From the centre C, with any radius CA, describe the circle ASBP to represent the meridian on the plane of which it is required to project the sphere stereographically. As the eye, in this case, is supposed to be situated at a point in the equator, that circle will be projected into a straight line passing through the centre C; let it be represented by the diameter AB. Draw the diameter PS perpendicular to AB; then will PS represent the meridian passing through the eye, and P and S will be the poles. To project the other meridians, divide the quadrant AP into nine equal parts (supposing a meridian to pass through every tenth degree of the equator) at the points 10, 20, 30, &c., and from S draw straight lines to these points of division intersecting AC in the points 10, 20, 30, &c. The lines C10, C20, C30, &c., are the semitangents of the arcs of the equator which measure the distances of the points in which the several meridians cut the equator from the point of the sphere opposite to the eye. Hence the points 10, 20, 30, &c., are the points in which the projected meridians will intersect the projected equator AB. But the projected meridians also pass through the points P and S. In each, therefore, there are three points given. If we describe, then, the arcs P10S, P20S, P30S, &c., these arcs will be the projections of the meridians on one side of that passing through the point opposite to the projecting point, and those on the other side are to be found in like manner.

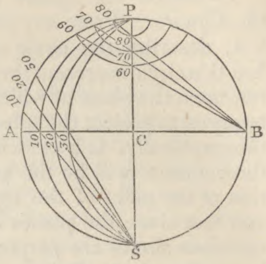

Fig. 15.

Again, by dividing each of the quadrants PA, PB into nine equal parts, we find two points in each of the parallels of latitude. A third point in each will be found by drawing straight lines from B to each of the points of division 80, 70, 60, &c. so as to intersect PC in the points 80, 70, 60, &c.; for the lines C80, C70, C60, &c. are the semitangents of the arcs intercepted upon that meridian of which PS is the projection between the several parallels and the point of the sphere opposite to the projecting point. Describe, then, the several arcs through the three points found in each: and in this manner the parallels on one side of the equator are found. Proceed in the same manner with regard to the parallels on the other side of the equator, and with regard to the tropics and polar circles, and the projection will be completed.

It is evident that the centres of all the projected meridians will lie in the line AB, or in that line produced; and from the construction it is easy to show that the distance of the centre of each projected meridian from the point C is equal to the tangent of the inclination of the meridian to the plane of projection; while the radius of the projected meridian is equal to the secant of the same angle.

Further, the centres of all the projected parallels of latitude lie in the line PS produced; and the centre of each projected parallel is distant from C by the secant of the arc which measures the distance of the parallel from the pole; while the radius of the projected parallel is equal to the tangent of the same arc.

To project the Sphere stereographically on the Plane of the Horizon for a given Latitude. We must here suppose the eye to be situated at the point of the sphere opposite to the place of which the latitude is given. From the centre C, with any radius CN, describe a circle NWSE to represent the horizon upon which it is required to project the sphere. To avoid intricacy among the lines necessary to be drawn for the construction, let the subsidiary circle N′W′S′E′ be described with the same radius. Through C, the centre of the former circle, and C′, the centre of the latter, draw two diameters WE, NS, and W′E′, N′S′, intersecting each other at right angles. Let the diameters NS, WE be the projections of the meridian of the given place, and of a semicircle at right angles to that meridian, and passing also through the given place. It is evident that the points N, W, S, E are the four cardinal points of the horizon. On the circumference of the subsidiary circle N′W′S′E′ take N′P′ equal to the given latitude; and draw the straight line W′P′ intersecting CN′ in P″: then will C′P″ be the semitangent of the distance of the pole from the point on the sphere opposite to the projecting point. Make therefore CP equal to C′P″, and the point P is the projection of the pole. Draw the diameters P′*p*, FA′ at right angles to each other; then will E′A′ be equal to the latitude; and by drawing W′A′ to intersect C′S′ in A″, we obtain C′A″ the semitangent of the distance of the point in which the equator intersects the meridian from the point of the sphere opposite to the projecting point. Make CA equal to C′A″; and through the three points W, A, E, describe an arc of a circle; the arc WAE will be the projection of the equator. Next, we shall show the manner of drawing the parallels of latitude, by taking as an example the two parallels which are twenty and forty degrees distant from the pole. In the subsidiary circle take P′20 and P′40, equal to 20° and 40° on each side of P′. Draw from W′ to the points thus found straight lines intersecting C′N′ and C′S′ in the points *a*′, *b*′, and *c*′, *d*′. The lines *a*′*b*′ and *c*′*d*′ are the diameters of the projected parallels corresponding to 50° and 70° of latitude. Make C*a*, C*b*, C*c*, C*d*, equal C′*a*′, C′*b*′, C′*c*′, C′*d*′ respectively, and upon *ab* and *cd* as diameters describe circles; these circles are the projections of the parallels required. In the same manner are the other parallels of latitude, the tropics, and the polar circles to be drawn.

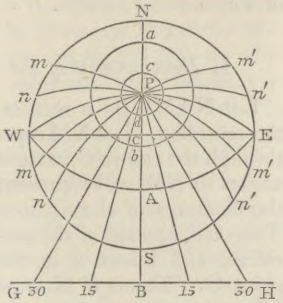

Fig. 16.

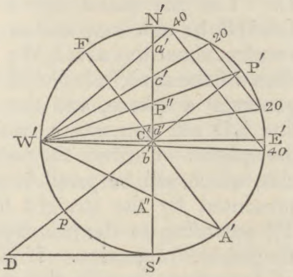

Fig. 17.

Again, to project the meridians;—the straight lines NP, PS, are the projections of the opposite meridians which pass through the north and south points of the horizon. The meridian circle, which is at right angles to that represented by NS, passes through the east and west points of the horizon, so that three points in its projection are given, namely, the points W, P, E; its projection may therefore be drawn. But it may be more conveniently found by considering that the meridian in question makes with the plane of projection an angle equal to the given latitude; the centre of its projection, which is in CS produced, must therefore be distant from the point C by the tangent of the given latitude, and its radius will be equal to the secant of the same. From the point S′ draw S′D, touching the circle in S′, and meeting P′*p* produced in D; then DS′ and DC′ are the tangent and secant of the given latitude. In CS produced take CB equal to DS′; and on B as a centre describe an arc through the point P, which will also pass through W and E. The arcs PW, PE will represent the opposite meridians, which are at right angles to the meridian of the place for which the projection is made. With regard to the other meridians, it is not difficult to see that their centres will lie in a straight line GH drawn through B at right angles to CB; and that the distance of the centre of each projection from the point B will be equal to the tangent of the inclination of the corresponding meridian circle to that meridian circle which passes through the east and west points; while the radius of the projection will be equal to the secant of the same inclination. Let us suppose, then, that the meridians are to make with each other angles each equal to 15°; at the point P make the angles B P 15, B P 30, &c. equal to 15°, 30°, &c. respectively, and let P 15, P 30, &c. meet the line GH in the points 15, 30, &c. Upon these points, as centres, describe through the point P the arcs *m*P*m*′, *n*P*n*′, &c.; then will P*m*, P*n*, &c. P*m*′, P*n*′, &c. be the projected meridians required. In this manner the projection may be completed.

3. *Globular Projection of the Sphere.*

In the globular projection of the sphere a point is assumed for the position of the eye, at a finite distance from the centre greater than the radius, and so situated that the degrees in the representation shall be nearly equal to each other, and the deviations from equality in the representations of equal portions of the spherical surface thus in some measure corrected. To determine the position of the point of view so as to answer these conditions, let ADBF be a section of the sphere made by a plane passing through C the centre, and through the point E which is assumed as the projecting point required. Through C draw EB, meeting the circumference ADBF in A and B, and draw the diameter DF at right angles to EB. Bisect the quadrant DB in I, and draw EI meeting DC in G; the point G will be the projection of the point I. But by hypothesis the projections of equal arcs are nearly equal; let then DG be assumed equal to GC. Join DB, and draw CI meeting DB in H. Join GH, and draw IK parallel to DC, or at right angles to AB. Then it is evident that DH is equal to HB; and therefore DH : HB : : DG : GC. Hence the line GH is parallel to CB; and we have IH : HC : : (IG : GE : :) KC : CE. But IH is equal to BK, and HC to KC : therefore BK : KC : : KC : CE, and we have $BK \cdot CE = KC^2 = IK^2 = BK \cdot KA$. Hence CE is equal to KA; and taking away the common part AC, there remains EA equal to KC or to IK; that is, EA, the distance of the point of view above the surface, is equal to the sine of 45°. If the radius CA be divided into 100 equal parts, EA is therefore nearly equal to 71 of these parts.

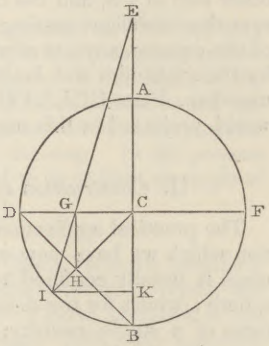

Fig. 18.

This projection was first suggested by M. Delahire, and the approximation which it gives to equality in the projection of equal arcs of a circle perpendicular to the plane of projection is considerable. The circles of the sphere are, according to this method of projection, represented by ellipses. An approximation to this method is, however, generally all that is aimed at. The circles of the sphere are represented by circles; and, without any regard to the distance of a projecting point, the degrees of longitude on the equator and of latitude on the meridian are made all equal to one another; the plane of the meridian being assumed as the projecting plane. The following is the construction by which such a representation of a hemisphere of the earth's surface is obtained.

From the centre C (fig. 19), with any radius CA, describe a circle PASB to represent the meridian on which it is required to project the hemisphere. Draw the diameters AB, PS, at right angles to each other; and let PS represent the meridian of which the plane is at right angles to the plane of projection : then AB will be the projection of the equator, and the points P and S the projections of the poles.

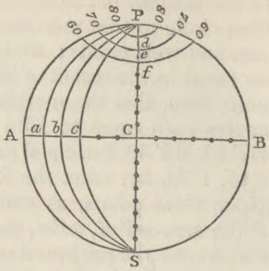

Fig. 19.

To project the parallels on the north side of the equator, divide each of the quadrants PA, PB, into nine equal parts: also divide the radius CP into the same number of equal parts. Let 80, 70, 60, &c. *d*, *e*, *f*, &c. be the points of division : the parallel corresponding to 80° of latitude will pass through the three points 80, *d*, 80 ; that corresponding to 70° of latitude through the three points 70, *e*, 70, and so on. Describe circles, accordingly, through these points, and the parallels on the north side of the equator will be drawn. In the same manner are the parallels on the south side of the equator to be projected, as are also the tropics and polar circles.

Again, to project the meridians, divide the radius AC into six equal parts in the points *a*, *b*, *c*, &c. and through the points P and S, and these points of division, describe circles P*a*S, P*b*S, &c. Proceed in the same manner on the other side of PS, and the circles thus described will represent the meridians passing through every fifteenth degree of the equator, any one of which may, in laying down places by their latitudes and longitudes, be assumed for the first meridian. Plate CCLXVIII. is a planisphere, or map of the world, projected in this manner.

II. *Construction of Maps by Development.*

The practical application of the three methods of projection which we have now explained, to the construction of maps is usually confined to the representation of a hemisphere ; whilst for the delineation of the geographical features of a single country, the method of development is commonly employed. The particular purpose for which a map is to be used may make it more or less important that it should exhibit, with all the precision that can be attained, some particular features of the country represented. The purposes of civil government require maps that give the true figure and dimensions of territory. For military affairs, maps that give correct distances are chiefly useful ; whilst for the purposes of the navigator, the bearings of places, one from another, must be correctly, and, at the same time, simply exhibited. The first two objects are nearly gained in ordinary maps. But, for the attainment of the last, a map of a peculiar construction, called *Mercator's Chart*, has been invented ; which, while it answers completely the purpose of the navigator, is not immediately applicable to any other.

It is an obvious property of a cone and of a cylinder, that the surface of each admits of being spread out on a plane. If a cone be laid with its slant side on a plane, the former will coincide with the latter along a line stretching from the point of contact in the base to the apex of the cone. Hence, if the cone is rolled round, whilst the apex continues at the same point, every point upon the surface of the cone will come in contact with a corresponding point in the plane surface ; so that a sector of a circle will be described, with which the surface of the cone, if expanded, would exactly coincide. A cylinder admits of being rolled along a plane surface in a similar manner. But this is not the case with respect to a sphere. For since a sphere touches a plane only in a point, if the former be rolled along the latter in one direction, the successive points of contact will mark out a straight line. A narrow zone of the sphere may, however, be supposed, without great error, to coincide with the surface of a cone or cylinder ; and this hypothesis gives rise to a twofold construction by development, that by the development of a conical surface, and that by the development of a cylindrical surface.

1. *Development of the Curve Surface of a Cone.*

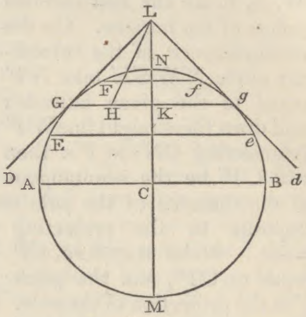

Fig. 20.

Let NAMB be a section of the sphere by the plane of the meridian. Let NM represent the axis ; then AB drawn through the centre C, at right angles to NM, will represent the diameter of the equator. Take EF, any arc of the meridian, and bisect it in the point G. Through G draw LD a tangent to the circle NAMB, and meeting the axis MN produced in the point L. Let the plane figure LGMB be now supposed to revolve about the axis LM ; then will the semicircle NAM generate a sphere, and the line LD will generate a conical surface, which will touch the sphere. Further, the points E, G, F will describe circles, which will be parallels of latitude represented by the straight lines E*e*, G*g*, F*f*, according to the principles of the orthographic projection. If EF be an arc of not many degrees, the zone comprised between the parallel circles E*e*, F*f* will nearly coincide with the corresponding portion of the conical surface intercepted between the planes of the same circles. Take any point H in the circumference of the circle described by G, the middle point of the arc EF, and join LH.

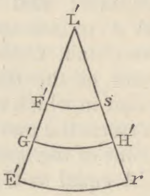

Fig. 21.

Let us now suppose the conical surface comprehended between the straight lines LG, LH, and the arc GH, to be spread out into a plane L′G′H′. Then it is evident that the arc GH on the middle parallel, of which the radius is the cosine of the middle latitude, is changed into an arc G′H′ of which the radius is L′G′ = LG the cotangent of the middle latitude. In the line L′G′, and in L′G′ produced, take G′F′, G′E′ equal to the arc EG or GF. Then, on the point L′ as a centre, at the distances L′E′, L′F′ describe the arcs E′*r*, F′*s*, and the plane surface E′F′*sr* may be considered as nearly equal to the spherical surface comprehended between the meridians passing through G and H, and the arcs of the parallels E*e*, F*f* intercepted by these meridians. Hence, if any tract of country situated on the corresponding portion of the earth's surface be delineated on the plane E′F′*sr*, the representation of it thus obtained will bear a near resemblance to its delineation on the globe, the resemblance increasing according as the zone comprehended between the extreme parallels is diminished in breadth.

Such is the principle of the conical development. Let us now consider how the line L′G′ and the angle G′L′H′ are to be determined, so as to suit the space E′F′*sr* to any given difference of longitude and given middle latitude ; also in what manner the parallels of latitude and the meridians are to be drawn on that surface.

We have already seen, that L′G′ is equal to the cotangent of the middle latitude to the radius of the sphere. If the radius of the sphere be considered equal to unity, the trigonometrical tables will give the length of L′G′ in parts of the radius. But it will be more convenient to have it expressed in minutes of a degree. Now, since the semicircumference is to radius as 3·1416 is to 1, if we put R for radius, we have $3{\cdot}1416 : 1 :: 180 \times 60 : R = 3437{\cdot}7$, which is the radius expressed in minutes of a degree. Hence L′G′ expressed in the same manner will be equal to

$$3437{\cdot}7 \times \text{cotan. middle latitude.}$$

Again, since the arc GH is equal in length to the arc G′H′ by hypothesis, the angle at K measured by the former, must be to G′L′H′ measured by the latter, as the radius L′G′ is to the radius GK; that is, if we put D for the difference of longitude, and ϕ for the angle G′L′H′, we will have D : ϕ : : (L′G′ : GK : : cot. mid. lat. : cos. mid. lat. : :) rad. : sine mid. lat. Hence we obtain

$$\phi = D \times \text{sine mid. lat.}$$

The angle L′ being thus determined, and the lines L′G′, G′E′, G′F′ being known, and expressed in minutes of a degree, we can describe the figure E′F′*sr*, so that it shall be accommodated to any given middle latitude and given difference of longitude. Then having divided E′F′ into as many equal parts as there are minutes in the difference of latitude, or as there are some given number of minutes in it, the points must be ascertained through which the parallels intended to be drawn pass, and from L′ their common centre, these parallels are to be drawn accordingly. The parallels E′*r*, F′*s* are in like manner to be divided each into as many equal parts as there are minutes, or some given number of minutes, in the difference of longitude: and points being ascertained in each of these parallels through which the meridians proposed to be drawn pass, the straight lines joining the corresponding points are the meridians required. It is by this method that common maps of particular countries are constructed.

As an example, let it be required to construct a map of Great Britain and Ireland, which must extend from 50° of latitude to about 61° north, and from 2° east to about 11° west longitude.

To find L′G′, L′E′, L′F′.

61° 61°
50° 50°
2)111 2)11 = diff. of lat. = 660′
55° 30′ = mid. lat. 5° 30′ = 330′ = G′E′ or G′F′.

Log. cot. mid. lat., 55° 30′, 9·8371343
3437·7......... log. 3·5362680
L′G′ = 2362′·7........ log. 3·3734023
G′E′ or G′F′ = 330′·0
L′E′ = 2692′·7
L′F′ = 2032′·7

To find the angle G′L′H′.

Log. sine mid. lat. 55° 30′............ 9·9159937
Diff. of long. = 13° = 780′......log. 2·8920946
Angle G′L′H′ = 643′ = 10° 43′....log. 2·8080883

To find the chords of the arcs E′*r*, F′*s*.

Chord of arc E′*r* = {2L′E′...............log. 3·7312180
{× sin. ½ L′........... 8·9695999
Chord of arc E′*r* = 502′·1..........log. 2·7008179
Chord of arc F′*s* = {2 L′F′ ....log. 3·6091033
{× sin. ½ L′............... 8·9695999
Chord of arc F′*s* = 379′·1............log. 2·5787032

Having now determined the four sides of the trapezoid formed by the meridians E′F′ and *rs*, and the chords of the arcs E′*r*, F′*s*, it is easy to describe that trapezoid, the length of the sides being measured on any convenient scale of equal parts, which is to be considered as a scale of minutes of a degree on the meridian. Let it be described accordingly, and let the sides E′F′, *rs*, be produced to meet in a point, which will be the point L′. Then, from that point as a centre describe the arcs E′*r*, F′*s*, and divide these arcs each into thirteen equal parts, since the difference of longitude is 13°. Also, divide E′F′ and *rs* each into eleven equal parts corresponding to the given difference of latitude 11°. Having fixed upon the number of meridians and parallels of latitude that are to be drawn, describe from the point where the lines E′F′, *rs*, intersect when produced, as a centre, the parallels through the proper points of division in E′F′ or *rs*; and draw straight lines joining the proper corresponding points of division in E′*r*, F′*s* for the meridians: we shall here suppose the meridians and parallels to be drawn for every second degree. Number the degrees of latitude and longitude as in the figure, and the map is prepared for having traced upon it the outline of the coasts of the British isles, and places laid down according to their latitudes and longitudes.

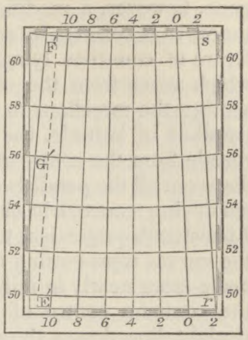

Fig. 22.

It is evident that if the point in which E′F′ and *rs* intersect each other becomes very distant, it may be exceedingly troublesome, or practically impossible, to describe from it as a centre the parallels of latitude. An obvious remedy for this inconvenience is, to join together two rulers, as AB, AC, at the point A, in such a manner as that they may contain an angle equal to the angle in the segment which has for its arc the parallel to be drawn. If the edges of the rulers be made, by means of two pins, to slide over the extremities D, E of the parallel, a pencil fixed at the angular point A will trace the parallel on the map. In the present instance the rulers must be placed so as to form an angle of

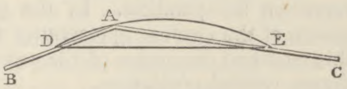

Fig. 23.

$$\left(\frac{360° - 10° 43'}{2} = \right) 174° 38' 30''.$$

The conical development has been variously modified, so as to remove as much as possible its defects. Thus, one modification was given by the Rev. Patrick Murdoch in the *London Philosophical Transactions*, 1758. He supposed the cone to pass through points of the meridian between the middle latitude and the extremities of the arc to be projected, its side being parallel to the tangent at the middle latitude, while the points where the cone intersects the meridian are so situated as that the conic surface is exactly equal to the spherical surface which it represents. Let M denote the arc of the meridian to be represented in the map; then, according to this method of development, L′G′, the radius of the middle parallel on the map, is equal to

$$\frac{\text{chord of arc M}}{\text{arc M}} \times \text{cot. mid. lat.}$$

the cotangent being supposed to be expressed in parts of the radius of the sphere. In other respects the construction is the same as in the ordinary conical projection.

But the simplest and most successful method of remedying the defects of the conical development is that known by the name of *Flamsteed's projection.* The English astronomer by whom this method was invented, and whose name it bears, made use of it in constructing his celestial atlas. He developed all the parallels of latitude on the sphere into straight lines, and also one of the meridians, namely, that which passes through the middle of the chart. To this meridian the lines representing the parallels are perpendicular, and the length of each is the same with that of the parallel on the sphere which it represents. Dividing the parallels in the projection into equal parts, in like manner as the parallels on the sphere are divided, he supposed curved lines to be drawn through the corresponding points of division, and these curve lines represent the meridians. Flamsteed employed this projection in representing the position of the stars; but it is also made use of in geography, particularly for the delineation of countries which extend on both sides of the equator.

Mathematical Geography.

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To suit it more effectually to this purpose, it has undergone, however, a modification of very considerable importance, as it corrects in some measure the distortion in the figure of countries lying near the extremities of the map, which arises from the obliquity of the curve lines representing the meridians to the straight lines representing the parallels of latitude, the obliquity increasing as the former recede from the centre of the map. On the globe the meridians cut all the parallels of latitude at right angles; and by employing concentric circles instead of straight lines, as in Flamsteed's projection, to represent the parallels of latitude, the curves representing the meridians on the map may be made more nearly to fulfil this condition. For this purpose the common centre of the circles, which is situated in a straight line drawn through the middle of the map as an axis, is so assumed that the radius of the middle parallel of latitude is equal to the cotangent of the middle latitude; an assumption which diminishes as much as possible the obliquity of the angles made at the intersections of the curves which represent the meridians, with the circles which represent the parallels. In the position of the common centre of the circles representing the parallels of latitude, this modified projection of Flamsteed coincides with the ordinary conical projection.

We shall exemplify this construction by showing how to describe, according to it, the parallels and meridians for a map of Europe.

Let the map be supposed to extend from 35° to 70° north latitude. Hence the middle latitude will be 52° 30′, and the radius of the middle parallel of the map (being equal to 3437′·7 × cot. 52° 30′) will be equal to 2637′·8.

Draw, then, any line LE for the axis of the map; and assuming any point C for the point of intersection of the axis with the parallel of middle latitude, set off the length of the radius of that parallel from C to L, taken from any convenient scale of equal parts, which is to be considered as a scale of minutes of a degree. Thus the point L, the common centre of the circles representing the parallels, is determined.

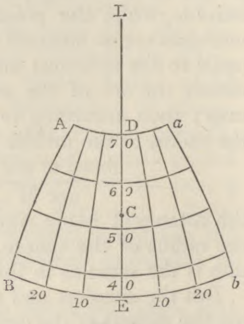

Fig. 24.

Let us now suppose that a parallel is to be drawn through every tenth degree of latitude: that is, through 40°, 50°, 60°, 70°. As the middle latitude exceeds 50° by 150 minutes, take 150′ from the scale of equal parts, and set it off from C to 50. Again, take 600, which are equal to 10°, from the scale of equal parts, and set off that distance from 50 to 40, from 50 to 60, and from 60 to 70. The point E, corresponding to 35°, is found by setting off 300′ from the point 40. If we were to proceed according to Flamsteed's method, as originally employed by him, it would be necessary to draw straight lines through the points E, 40, 50, &c., perpendicular to DE, and therefore parallel to each other, and to make these lines equal respectively to the portions of the parallels on the sphere which they represent; then, dividing each line on both sides of the axis into as many equal parts as are indicated by the number of meridians intended to be drawn on each side of the axis, through the extremities and corresponding points of division to trace curve lines to represent the meridians. In this case the point L would not be required. But in the modification of the method which we are now exemplifying, from the point L as a centre an arc of a circle is to be described through each of the points E, 40, 50, &c. and each of these arcs of longitude is to be made equal to the arc of the parallel on the sphere which it represents. Let us then fix upon some meridian of a given number of degrees of longitude to the eastward and westward of that represented by the line DE, which is to be so drawn as to fulfil this condition. Let AB and *ab* be the meridians assumed, the former 30° to the westward, and the latter 30° to the eastward, of DE.

The arc BE or *b*E is equal in length to an arc of 30° on the parallel of latitude 35°. Now, the latter arc may be determined in geographical miles or minutes of the meridian by means of the table (page 481), showing the length of a degree of longitude for every degree of latitude in geographical miles. Thus, 30° on the parallel of 35° latitude is found equal to 1474′·5. But the arc BE is of the same length. Therefore we have BE or *b*E = 1474′·5.

We might next find the angle which the arc BE subtends at the centre L, and thus determine the points B and *b*. But it is more convenient to find the chord of the arc, which may be easily done as follows:—

Put a for any arc of a circle whose radius is r. Then

$$\text{sin. } a = a - \frac{a^3}{6r^2} \text{ nearly, if the arc is not very great.}$$

In this expression put $\frac{1}{2}a$ instead of a, and it becomes

$$\text{sin. } \tfrac{1}{2}a = \tfrac{1}{2}a - \frac{a^3}{48r^2} \text{ nearly.}$$

Doubling both sides of this equation, and observing that 2 sin. $\frac{1}{2}a$ = chord of a, we obtain

$$\text{chord of } a = a - \frac{a^3}{24r^2} \text{ nearly.}$$

For arcs not exceeding 30°, this formula will give the length of the chord with sufficient exactness. Let us apply it to find the chord of the arc BE.

Here $a = 1474'{\cdot}5$, and $r = \text{LE} = 2637'{\cdot}8$.

$$\begin{array}{rr}
\text{Log. } r = 3{\cdot}421242 & \text{Log. } a = 3{\cdot}168645 \\
2 & 3 \\
\hline
\text{Log. } r^2 = 6{\cdot}842484 & \text{Log. } a^3 = 9{\cdot}505935 \\
\text{Log. } 24 = 1{\cdot}380211 & \text{Log. } 24\,r^2 = 8{\cdot}222695 \\
\hline
\end{array}$$

Log. $24r^2 = 8{\cdot}222695$. Diff. of arc and chord, 19·2, 1·283240

Hence the chord of the arc BE is 1455′·3 of the meridian. Taking this number from the scale of equal parts, and setting it off from E towards B and *b*, the points B and *b* are determined.

Proceeding in the same manner, we may find the arcs of 30° of longitude, with their chords, on the other parallels of latitude; and thence determine the remaining points through which each of the projected meridians AB, *ab* passes. The curves drawn through these points will be the representations of the two meridians which have 30° of longitude to east and west of the meridian represented by DE.

The points in which the projections of the intermediate meridians intersect the projected parallels, may be found by dividing each parallel into thirty equal parts from the axis, both towards the right and left; then, by tracing curves through the proper corresponding points of division, as many meridians may be represented as are judged to be necessary. If the map is to extend farther than 30° on each side of its middle meridian, the division of the parallels may be extended to the necessary distance beyond the meridians AB and *ab*.

It is a consequence of the properties of this projection, that distances on the map may be readily and accurately measured by a scale of equal parts. This scale may be constructed as follows:—

Draw a straight line AB (fig. 25) equal to any assumed number of degrees of latitude. If we assume 35 degrees, AB will be equal to DE. From B draw an indefinite line BC, making with AB any angle. Then, since AB is equal to 35°, or to 2417 English miles nearly, take 2417 from any convenient scale of equal parts and set that distance off from B towards C, making BD equal to 2417. From the same scale of equal parts take 100, or 200, &c. (in the present instance we shall take 500), according to the number of miles which each of the divisions of the scale is intended to represent; and with this distance in the compasses set off from B towards C the divisions B*m*, *mn*, *np*, *pq*; the remaining part *q*D, being only 417, will not again contain it. Join AD; and through the points of division *m*, *n*, *p*, *q*, draw straight lines parallel to AD, and intersecting AB. Each of the divisions of AB thus found will represent 500 miles, with the exception of that adjacent to A, which will correspond to 417 miles. The distance of two places of the map applied to this scale will give the distance in English miles.

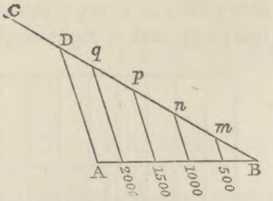

Fig. 25.

2. *Development of the Curve Surface of a Cylinder.*

The principle of this development is analogous to that of the conical, and may be illustrated in a similar manner. Let the arc AB be a fourth part of a meridian, and draw the lines AC, BC to the centre; these lines will be at right angles to each other, so that if we suppose BC to represent the semi-axis of the sphere, then AC will be the radius of the equator. Let EF be any arc of the meridian, and let it be bisected in G. Through G draw DH perpendicular to AC, or parallel to BC. If the plane figure BDGAC be supposed to revolve round BC as an axis, the arc AB will describe one-half of the surface of the sphere, the line DH will describe the surface of a right cylinder, the point A will describe the equator, and the points E, F, G will describe parallels of latitude. If EF be a small arc, the zone of the sphere which it describes will nearly coincide with the corresponding zone of the cylinder. Any tract of country delineated upon the former may, therefore, be nearly represented upon the latter; which being developed, the meridians and parallels of latitude become parallel straight lines, the former at right angles to the latter. Let EF*fe* be a portion of the zone described by EF comprehended between two meridians of which the difference of longitude is equal to the difference of latitude of the parallels described by the points E and F. Since the difference of latitude and difference of longitude are supposed equal, the arc G*g* is the same part of the middle parallel that EF is of the meridian. Hence rad : cos. mid. lat. : : EF : G*g*; so that G*g*, the breadth of the map representing the portion EF*fe* of the spherical surface, may be found in minutes of the meridian. Upon these principles depends the construction of the plane chart, which is said to have been invented by Henry, son of John king of Portugal.

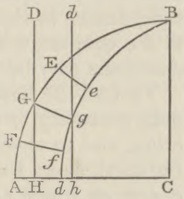

Fig. 26

As an example, let it be required to construct a plane chart extending from 30° to 50° north latitude, and from 5° to 25° west longitude. Here the difference of latitude and difference of longitude are each equal to 20°, and the middle latitude is 40°. Hence we have EF, the length of the chart, equal to 1200′, and the breadth of it equal to 919′·25. Construct a rectangle EF*fe*, of which the sides EF, F*f* are respectively equal to 1200 and 919·25 taken from any the same scale of equal parts, which is to be considered as a scale of minutes of the meridian. Divide EF and F*f* each into four equal parts, and through the points of division draw straight lines parallel to F*f* and EF, and these lines will represent the parallels of latitude and meridians for every fifth degree of latitude and longitude. If the chart is to extend to a greater number of degrees of longitude east or west, the parallels of latitude may be produced, and additional meridians drawn on the left of EF, or on the right of *ef*.

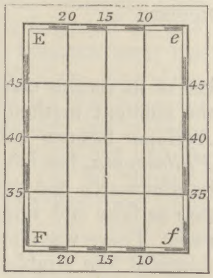

Fig. 27.

In the plane chart the degree of longitude evidently bears to the degree of latitude its proper proportion only at the middle parallel of latitude. Hence the rhumbs, as shown by this chart, are altogether erroneous, except when the places between which the rhumb is drawn are very near the equator.

To serve the purposes of navigation, for which the plane chart was utterly inadequate, the chart was published by Gerard Mercator in 1556 which usually bears his name; but the true principles of its construction were first demonstrated about 1590 by Edward Wright of Caius College, in Cambridge. This chart is constructed on the hypothesis that the globe is expanded so as to meet the interior surface of a cylinder constituted on the equator as its base, and having its axis coincident with that of the globe. The spherical surface is supposed to be stretched in such a manner that at every point the meridian and parallel are lengthened in the same proportion; so that at every point of the chart the ratio of the degree of longitude to the degree of latitude is preserved the same as it is at the corresponding point on the globe. Hence while the meridians become parallel straight lines, and consequently the rhumbs on the developed cylinder are also straight lines, the mutual bearings of places are still correctly shown. The problem of finding the lengthened meridians can be accurately resolved only by the assistance of the fluxional calculus (see FLUXIONS). But we may approximate to the solution by reasoning as follows:—

Let AB be a quadrant of the meridian; draw AC, BC, to the centre; and let BC represent the semi-axis; then AC will be the radius of the equator; and if any point D be taken in the quadrant AB, the arc AD will be the latitude of the point D. Draw AG, CG, the tangent and secant of the arc AD, and DE, DF, its sine and cosine. The increase which the arc AD acquires in being transferred from the sphere to the cylinder is made at every individual point of the arc, so that the whole augmentation is the sum of these indefinitely small increments. Let us suppose, then, that AD is divided into a number of small portions, for example, into minutes. Then if we put L for any latitude, we have rad. : cos. L : : 1′ of the meridian : 1′ on the parallel whose latitude is L. But from the similar triangles GAC, CED, it is evident that CD : CE : : CG : CA : that is, for any latitude L, rad. : cos. L : : sec. L : rad. Therefore we have, sec. L : rad. : : 1′ of the merid. : 1′ on the parallel whose latitude is L; and this applies alike to every minute of which the arc AD is made up. Let us now suppose a minute on any one parallel to become equal to a minute on the equator, or to a minute of the meridian, by the parallel being brought into coincidence with the surface of the cylinder, in consequence of the expansion of the spherical surface. The minute on the meridian undergoes a corresponding increase. Let *d* denote it in its lengthened state; then, taking for granted that the increase on each minute of the meridian depends entirely on that of the higher of the two parallels which pass through its extremities, we obtain

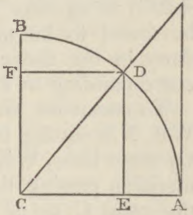

Fig. 28.

$$\text{sec. L} : \text{rad.} : : d : 1' \text{ of equator, or } 1' \text{ of meridian};$$

$$\text{hence } d = \frac{\text{sec. L} \times 1' \text{ of mer.}}{\text{rad.}}$$

Let 1′ of the meridian be now assumed as the radius; then *d* = sec. L to the radius 1′ of the meridian; or, since secants to different radii are proportional to one another, and we only require proportional quantities, we have simply

$$d = \text{sec. L.}$$

Thus the increased minute on the chart for each successive minute of which the arc AD on the sphere is made up, is proportional to the secant of the latitude of the higher of the two parallels which pass through the extremities of that minute. Let *m* denote the number of minutes in the arc AD, and take $\text{L} = 1', 2', 3', \text{\&c.........} m'$ successively; and we obtain for the lengthened meridian corresponding to AD,

$$\text{sec. } 1' + \text{sec. } 2' + \text{sec. } 3' +, \text{\&c.......} + \text{sec. } m'.$$

If we had divided AD into smaller portions than minutes, the approximation would have been so much the nearer to the truth. Upon this principle a table of the lengthened meridians corresponding to every degree and minute of latitude, called a table of *meridional parts*, is calculated; and by means of such a table Mercator's chart is easily constructed. The following table shows the length of the enlarged meridian for every fifth degree of latitude:—

Lat.	Merid. Parts.	Lat.	Merid. Parts.
0°	0·00	50°	3474·47
5	300·38	55	3967·97
10	603·07	60	4527·37
15	910·46	65	5178·81
20	1225·14	70	5965·92
25	1549·99	75	6970·34
30	1888·38	80	8375·20
35	2244·29	85	10764·62
40	2622·69	90	Infinite.
45	3029·94		

The approximate numbers obtained in the manner now pointed out are sufficiently correct for all nautical purposes. From the more rigorous investigation afforded by the fluxional calculus, it is found that the enlarged meridian is proportionally equal to the logarithmic tangent of an arc found by adding to 45° half the arc of latitude reckoned from the equator. Thus, the meridional parts corresponding to 40° of latitude are equal to the logarithmic tangent of $(45° + 20°) = \text{log. tan. } 65° = 33133$; and the meridional parts corresponding to 50° are equal to $\text{log. tan. } (45° + 25°) = \text{log. tan. } 70° = 43389$. These two numbers will be found to be nearly proportional to the numbers set down in the above table as denoting the meridional parts corresponding to 40° and 50° of latitude.

To construct Mercator's chart: Draw two straight lines WE, NS, cutting each other at right angles in the point C. Of these lines, WE is to represent the equator, and NS the meridian passing through the middle of the chart. From the point C set off equal parts on the equator both ways. These divisions are to represent degrees of longitude; and if the size of the chart will admit, each should be subdivided into minutes. Assuming the equator as a scale of minutes, set off from C towards the north and south on the middle meridian the number of minutes in the enlarged meridian, corresponding to each degree of latitude, as shown by a table of meridional parts. Draw straight lines through every fifth or every tenth degree of the equator and divided meridian, and at right angles to them. The lines at right angles to the equator will be the meridians; and those at right angles to the divided meridian, and therefore parallel to the equator, will be parallels of latitude. Any one of the meridians may be assumed as the first meridian.

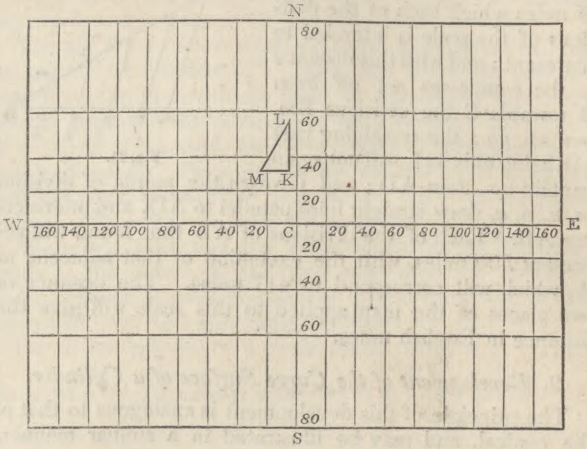

Fig. 29.

To find the bearing of any one place from another, it is only necessary to draw a straight line from the one to the other, and to observe the angle which that line makes with the meridians: that angle is the bearing required, or the *course* on which a ship must be steered in sailing from the one place to the other. Thus, if L be the Lizard Point on the chart, and M the east end of the island of Madeira, join LM, and draw LK parallel to NS, and the angle KLM will be the course to be steered from the Lizard to reach Madeira. The distance of the places may be found by considering that it is the hypotenuse of a right-angled triangle of which the *proper* difference of latitude (not the meridional difference) is one side, and the course the adjacent angle.

Plate CCLXIX. is a chart of the world according to Mercator's projection. The great elongation of the degrees of latitude as we advance northward and southward, renders this projection very defective, in as far as the figure of countries and the relative distances of places are concerned. It answers, however, perfectly the purposes for which it was originally constructed, and has supplied what before its invention was a desideratum in geography.

To complete a map after the circles of latitude and longitude have been projected by any one of the foregoing methods the various objects within the range of the map are to be delineated on it in such a manner as to present to the eye a correct view of the country to be represented. The methods employed to give distinctness and extent to the information conveyed, will be best learned from the actual examination of good maps, both general and particular.

(J. W—E.)

GEOLOGY. See MINERALOGICAL SCIENCE.[1]

GEOMANCY, a kind of divination performed by means of points and lines, originally made by casting pebbles on the ground, and afterwards by marking or pricking dots at random upon paper, and forming therefrom a judgment of futurity, or deciding any question proposed. The dots and lines represented the stars, elements, &c., and hence this pretended science appears to have been a species of astrology. Geomancy was in high repute in Chaucer's time, and continued to flourish down to a late period. Among the last of its serious cultivators appears the name of Oughtred, the eminent mathematician, who died in 1660. Cornelius Agrippa besides some notices in his work, *De Occulta Philosophia*, has left an express tract *De Geomantia;* but he afterwards had the honesty to condemn his own production as false and lying, in his work *De Vanitate Scientiarum.* There was another kind of Geomancy, introduced by Almadul the Arabian, in which conjectures were drawn from rents and fissures in the earth, and which Polydore Virgil conceives to have been invented by the Persian Magi.

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[1] In consequence of the lamented death of Professor Edward Forbes, who had agreed to contribute this article, it has been found necessary to postpone it.

GEOMETRY.

HISTORY OF THE SCIENCE.

The properties of bodies may be resolved into two classes; one comprehending those which belong to all bodies whatsoever, and another, such as belong only to particular bodies. Amongst the properties of the first class we may consider extension, magnitude, figure, divisibility, impenetrability, inertia, weight, mobility, &c. Some of those of the second are solidity, liquidity, transparency, and the like. Of these properties, *extension*, *magnitude*, *figure*, and *divisibility*, are the subject of Geometry. The discussion of other properties of body belongs to Physics, called also Natural Philosophy.

The objects of geometry having been continually presented to the human mind, and being of such a nature as could at all times be perfectly comprehended, it may be supposed that the science would in some form or other exist from the very beginning of society. Indeed there is a natural geometry which all possess, and which must have been employed in the divisions of property and the erection of dwellings in every age. The name of the science indeed indicates its origin, for it is derived from γεωμετρια, the science of land-measuring.

According to the testimony of Herodotus, the science was first cultivated in Egypt. He had been informed at Memphis and Thebes, that Sesostris the king had divided the lands amongst his subjects, giving to each an allotment, for which an annual tribute was to be paid. The overflowing of the Nile, however, disturbed the landmarks, and rendered it necessary to re-adjust them by measurement; and hence the origin of geometry, which in the course of time passed from Egypt into Greece. There are two things to be here noticed; the assertion of a verification depending on geometry, and the particular opinion of Herodotus as to the origin of the science. If, as some chronologers have supposed, Sesostris be the same as the King Sesac, or Shishac, who made war on Rehoboam, the son of Solomon, it would follow from Herodotus, that geometry had its origin not more than about a thousand years before the Christian era. It might, however, be earlier; for the operation of measuring the land indicated a science which had made some progress. Aristotle has attributed the invention of geometry to the Egyptian priests, who, living secluded from the world, had leisure for study. But however this might be, all ancient writers are agreed in giving the Egyptians the credit of having been the earliest cultivators of geometry.

The philosopher Thales, who lived 640 years before Christ, brought the sciences, and particularly mathematics, into Greece from Egypt, whither he had gone in quest of knowledge at an advanced period of life. Diogenes Laertius relates that he there measured the height of the obelisks by means of their shadows; and Plutarch says, that this display of skill in geometry astonished the king Amasis. This shows that the Egyptians had not then advanced far in geometrical knowledge. Proclus also has recorded that Thales, by geometrical principles, determined the distance of vessels remote from the shore. On his return to Greece he founded the Ionian school, so called from Ionia, his native country. His celebrity for learning excited the attention of his countrymen, and drew to him disciples.

There appears to have been some slight traces of geometry in Greece at a still earlier period. We allude to the geometrical construction of a triangle by Euphorbus of Phrygia, and the discovery of some properties of figures. These, however, were probably just the natural geometry common to all ages. The rule and compasses, most important instruments, have been referred to the ages of fable, the honour of the invention of the latter having been ascribed to the nephew of Dædalus, and that of the square and level to Theodorus of Samos, one of the architects of the temple of Ephesus. But there are no certain indications of geometry as a science before Thales. He laid its foundation in Greece, and infused into his countrymen a taste for the science. He is said to have applied a circle to the measurement of angles, and to have discovered various properties of triangles, by comparing them one with another. In particular, he discovered the important proposition that all angles in a semicircle are right angles, a discovery which greatly delighted him, and for which he expressed his gratitude to the Muses by a sacrifice. Proclus has recorded that he made many discoveries in the science, which, however, have gone to the common stock of geometrical knowledge that had accumulated before Euclid collected it into a system, and the authors of which are unknown. It is probable that the greater part of the disciples of Thales were geometers, but few of their names have descended to us. Ameristus and Anaximander are the only ones now known. Of the former we only know that he was a skilful geometer. The latter wrote a kind of elementary treatise or introduction to geometry, the earliest work of the kind that is known to have existed.

Thales was succeeded in his school by Anaximander, who is said to have invented the sphere, the gnomon, and geographical charts. These required a considerable knowledge of geometrical science. It has been said that he attempted the grand practical geometrical problem of measuring the magnitude of the earth. This probably has originated in his being the inventor of representations of its surface. The honour of being the first to measure the earth seems to belong to another. Anaximander was followed by Anaximenes, born at Miletus 540 years B. C. He is said to have invented sun-dials, and thus must have known both astronomy and geometry; indeed a desire to understand the former would prove a strong stimulus to the study of the latter. He had as his disciple and successor Anaxagoras, who being persecuted for his opinions, employed himself in prison in trying to square the circle. This is the first notice on record of an attempt to resolve what appears now to be an insoluble problem, on which no modern geometer will spend his time. It might, however, have a very different aspect to the ancient mathematicians.

Pythagoras, born about 580 years B. C., was one of the greatest men of antiquity. According to some he was a Tuscan, whilst others say he was a Tyrian; but his name is better known than his origin. At the age of eighteen he became the disciple of Thales, and imbibed deeply his opinion of the importance of temperance and economy of time as necessary to success in the study of philosophy. In the infancy of science knowledge was only to be acquired by travel, the men of different countries standing in the place of our modern books as the depositories of learning. Pythagoras visited Phœnicia, Chaldea, and India. In the annals of this last country the remembrance of the philosophical traveller is still preserved. He afterwards went into Egypt, where he is said to have remained twenty-two years, holding intercourse with the priests. The long duration of his abode is not probable, as the knowledge he seems to have acquired did not correspond to so protracted a residence. Whilst in Egypt, he is said to have consulted the columns of Sothis, on which that celebrated person had inscribed the principles of geometry. He returned to Samos, his adopted country, and there opened his school; but not finding auditors, he removed to Italy, and took up his abode in Cortona, a town in the territory of Tarentum, where he found many disciples, and acquired a great reputation. He is said to have discovered the important theorem in geometry, that in a right-angled triangle the squares on the sides containing the right angle are together equal to the square on the side opposite to it; and on this account he is said to have sacrificed an hundred oxen in gratitude to the Muses. The sacrifice is probably a fable. The shedding of blood was contrary to his moral principles, and so many oxen were not likely to be at the disposal of a philosopher. In his school, geometry made great progress, and was augmented by several new theories, such as that of the incommensurability of certain lines, in particular that of the side of a square to its diagonal. The theory of the regular solids had its origin also in the Pythagorean school, a doctrine which requires an extensive knowledge of geometry. This subject, now neglected amidst the riches of modern mathematics, because of its small utility, was in the beginning of great importance, on account of other discoveries which must have been incidentally made in its prosecution. Diogenes Laertius has attributed to Pythagoras the discovery that of all figures having the same boundary, the circle among plane figures, and the sphere among solids, are the most capacious. If this was so (a thing doubtful), he is the first on record who considered isoperimetrical problems.

The Pythagorean school sent forth many philosophers and mathematicians: amongst the latter, Philolaus and Archytas held a distinguished rank. Of Philolaus we know but little. He held to its full extent the Pythagorean doctrine of the motion of the earth round the sun as a centre, and was the first to unveil it. He composed a work on Mechanics, and thus has a claim to be associated with Eudoxus and Archytas as inventors of that part of mathematics. He had a tragical end, having been massacred by the people of the small republic of which he had been a legislator. We know more of Archytas. He was the author of a solution of the problem of two mean proportionals. He was also one of the first who made use of the geometrical analysis, which, according to Proclus, he had learned from Plato, and by its assistance he made many discoveries in geometry. We pass over his mechanical inventions, one of which, the artificial pigeon, which winged its way through the air, certainly savours of the marvellous. Archytas is said to have been blamed by Plato for applying geometry to mechanics; but if this was so, it might be for the manner of the application. His solution of the problem of finding two mean proportionals gives support to this conjecture; for although ingenious, it has the defect of requiring a motion which cannot be executed.

Democritus of Abdera cultivated geometry extensively. It has been conjectured that he was one of the first who treated of the contact of circles and spheres, and of irrational lines and solids.

Hippocrates, who lived about the year 380 B. C. was originally a merchant; but having no turn for commerce, he did not prosper. To renovate his affairs, he went to Athens, and there for the first time became acquainted with geometry, which seemed to suit his particular turn of mind. In the prosecution of this study he discovered that the curvilineal space, called from its form a *lune*, comprehended by half the circumference of one circle and the fourth of the circumference of another (their concavities being turned the same way), was equal to a rectilineal space, viz. the area of a right-angled triangle, whose hypothenuse was the diameter of the circle, and its sides each equal to the radius of the quadrantal arc. This could not be considered as a true quadrature of a curvilineal space; it was merely a geometrical juggle, by which a common space being taken from two equal curvilineal figures, one of the remainders was by a sort of chance a rectilineal figure. The first true quadrature of a curvilineal space is due to Archimedes. Hippocrates attempted the quadrature of the circle; but, if his mode of reasoning has been truly handed down to us, he committed a great oversight. This is the first recorded paralogism in geometry. He was more successful in treating of the duplication of the cube, which he showed to depend on the finding of two mean proportionals between two given lines. He was also the first who composed elements of geometry, but these have been lost. He appears to have retained the mercantile spirit, insomuch that he accepted money for teaching geometry. On this account he was expelled the Pythagorean school; a measure somewhat hard, considering his reduced circumstances.

Two geometers, Bryson and Antiphon, appear to have lived about the time of Hippocrates, and a little before Aristotle. They are only known by some animadversions of the latter on their attempts to square the circle. Before this time geometers knew that the area of a circle was equal to a triangle whose base is equal to its circumference, and altitude equal to its radius. This truth could not escape the observation of the early geometers. Bryson erroneously believed that, by a geometrical construction, he could find the circumference, in which case the quadrature would have been easy. Antiphon, it appears, proceeded by increasing continually the number of sides of an inscribed regular polygon, and considered the circle to be equal to the ultimate result; a process perfectly correct, and the same in effect as that by which Archimedes found the area of the parabola.

From this brief view of the progress of geometry during the first two centuries after its introduction into Greece, we pass to the school of Plato, in which geometry completely changed its character, and advanced with increased vigour and more rapid strides. Hitherto its subjects had been of the most elementary nature; now, however, the views of geometers became more enlarged, and a new era in the science commenced. Although the disciple and successor of Socrates, who had no taste either for mathematical or physical science, Plato held them in the highest estimation; and, imitating the earlier sages of Greece, he undertook voyages and journeys to improve his mathematical knowledge. He visited Egypt to converse with the priests, and Italy to consult with the celebrated Pythagoreans Philolaus, Timæus of Locris, and Archytas. With the last of these he contracted a particular friendship. He went also to Cyrene to hear the discourses of the mathematician Theodorus; and on his return to Greece, when he had founded his school, he made the mathematics, particularly geometry, the basis of his instructions; and his disciples, encouraged by his example and his exhortations, applied with ardour to the study of that science. He never allowed a day to pass without making his disciples acquainted with some new truth. He placed over his school this inscription, *Let no one ignorant of geometry enter here.* He held that the Divinity continually geometrizes; meaning thereby, no doubt, that the laws by which the universe are governed are in accordance with the doctrines of mathematics. It does not appear that Plato composed any work expressly on the mathematics; but his invention of the geometrical analysis may be considered as one of the greatest improvements the science has received. The theory of Conic Sections originated in the Platonic school; and a third discovery was that of Geometrical Loci, a theory not only beautiful and interesting on account of the abstract truths which it unfolds, but also by reason of its great importance in the resolution of geometrical problems. The celebrated problem concerning the duplication of the cube was agitated about his time; but its origin was earlier; for Hippocrates, as has been already stated, had reduced it to the finding of two continued mean proportionals. Plato himself gave a solution of the problem; and it was also resolved by Archytas, Eudoxus, Eratosthenes, and Menæchmus. The solutions of eleven of the ancient geometers have been preserved in the Commentary of Eutocius on Archimedes' Treatise concerning the Sphere and Cylinder. It is probable that the trisection of an angle, a problem of the same degree of difficulty as the duplication of the cube, excited the efforts of the Platonic school. We have indeed no positive testimony in favour of this conjecture; but the progress of the human mind does not allow us to doubt that the problem was of great antiquity. After the solution of the very simple problem, the bisection of an angle, it was natural to think of dividing it into three equal angles; and those who first thought of the latter problem would no doubt be astonished to find, that two problems so like in appearance should yet differ so much in the difficulty of their solution. The trisection of an angle, and the duplication of a cube, are in fact problems of such a nature that they cannot be resolved by straight lines and circles alone, the only lines admitted by the ancients into their elements of geometry. The reason of this impossibility would not be apparent to the ancient geometers, although it is made evident by the modern doctrines of algebra.

The names of the individuals to whom we owe the particular discoveries which have been specified have not come down to us; they must therefore be regarded as belonging to the Platonic school generally. Proclus has recorded the names of a number of the geometers of that school. Some of advanced years attended it as friends of its celebrated head, or from respect to his doctrines; others, chiefly young persons, as disciples. Of the first class were Laodamus, Archytas, and Theætetus: Laodamus was one of the earliest to whom Plato communicated his method of analysis before he made it public, and he is said to have profited much by the possession of this instrument of discovery. Archytas was a Pythagorean, having extensive knowledge in geometry and mechanics. He frequently visited Plato at Athens; but in one of his voyages he perished by shipwreck. Theætetus was a rich citizen of Athens, who had studied along with Plato under Socrates. He appears to have cultivated the theory of the regular solids, called now the Platonic bodies.

The progress of geometry now required that its elements should be new modelled. This was done by Leon, a scholar of Neoclis, or Neoclides, a philosopher who had studied under Plato. To Leon has been ascribed that part of the solution of a problem called its *determination,* which treats of the cases in which the problem is possible, and of those in which it cannot be resolved. Eudoxus of Cnidus was one of the friends and contemporaries of Plato; he generalized many theorems, and thereby greatly advanced geometry. It is believed that he cultivated the conic sections; and even the invention of these has been ascribed to him. He resolved the problem of the duplication of the cube; and it is to be regretted that Eutocius, who speaks with contempt of his solution, has not recorded it with others in his Commentary on Archimedes. Diogenes Laertius has attributed to him the invention of curve lines in general; from which we may infer, that other curves besides the conic sections were known in the school of Plato. Archimedes, in his Treatise on the Sphere and Cylinder, says that Eudoxus found the measure of the pyramid and cone, and that he was especially occupied with the contemplation of solids. Some have given him the credit of being the writer of the fifth book of Euclid, which treats of proportion. Amongst the numerous mathematicians of the Platonic school, there was one, Cratistus, who is particularly mentioned by Proclus. He was a remarkable person; for his knowledge of his science was in a manner innate. There was no problem of that time, however difficult, which he could not resolve by his natural geometry. He was the Pascal of antiquity. There were two brothers, Menæchmus and Dinostratus, who also greatly distinguished themselves. The former, a particular disciple of Plato, extended the theory of the conic sections. Eratosthenes seems to attribute to him the merit of having invented them; at any rate, he was the first who solved the problem of doubling a cube by means of these curves. Dinostratus followed in the path of his brother, and advanced geometry by his discoveries. He is particularly known as the reputed inventor of a curve called the *quadratrix*, by which he seems to have intended to divide an angle or an arc of a circle in any given ratio. The curve takes its name from a property by which, could it be constructed geometrically, the quadrature of the circle would be obtained. According to Pappus, Dinostratus discovered this property of the curve; and probably this is the reason why it has been called the quadratrix of Dinostratus, just as we say the spiral of Archimedes. Indeed there is some ground for believing that the curve was invented by Hippias, a philosopher and skilful geometer, contemporary with Socrates.

It was chiefly in geometry that the followers of Plato excelled. In this they imitated their leader, who directed his attention to abstract speculations, rather than to the study of nature. The conic sections, one of their most refined and profound geometrical theories, remained merely an intellectual speculation from its first invention till the days of Kepler and Newton, when it acquired a high importance on account of the discovery that the orbits of the planets are conic sections.

The school of Plato, after the death of its founder, was divided into two others, which, although opposed to each other on various points, yet agreed in holding the mathematics in esteem, and in regarding them as an indispensable preparation for the study of philosophy. It is recorded, that a person ignorant of geometry and arithmetic having presented himself for admission into the school of Xenocrates, the successor of Plato after Speusippus, he was repelled by its chief, with an intimation that he was not properly prepared for the study of philosophy: *Ansas philosophorum non habes*, said the philosopher.

The mathematics, thus encouraged and protected, continued to be cultivated and improved. The celebrated geometer Euclid was of this school; and it may be conjectured, from the age in which he lived, that he had acquired his knowledge under the tuition of the first successors of Plato. So also, we may presume, was Aristæus, another celebrated geometer of antiquity, though little known in our time, because his works have perished. We learn, however, from Pappus, that he was one of the ancients who contributed the most to the progress of the sublime geometry. He was the author of two excellent works; one a treatise on *The Conic Sections*, in five books, which contained a great part of what Apollonius has given in the first four books of his work; the other, also in five books, treated of *Solid Loci*. Pappus, in prescribing a course of study to his son, places this last work next in order after the Conics of Apollonius. Hence we may infer that the propositions which it contained were of a higher order of difficulty, and required a previous knowledge of the conic sections. Euclid entertained great esteem for Aristæus. We may hence conclude that he was either his disciple or his intimate friend.

The pure mathematics were less cultivated in the school of Aristotle than they had been in that of Plato; they were not, however, neglected; for, unlike the modern peripatetics, who discouraged the study of geometry. Aristotle was deeply versed in the science, as may be inferred from his writings, which abound in examples drawn from geometry.

Although the mathematics received but little addition in the Aristotelian school, still they had some cultivators. Of these, Theophrastus was the principal. He wrote some treatises relating to them, particularly a complete history of these sciences down to his time, a work which has unfortunately been lost. It consisted of four books on the history of geometry, six on that of astronomy, and one on that of arithmetic. We have great reason to regret the want of the sure light which this work, had it come down to our times, would have thrown on the origin and progress of these sciences, instead of which, we have only a few glimmerings, that serve to make the darkness sensible, but not to dissipate the obscurity. Another disciple of Aristotle, Eudemus, composed a history of the mathematics. This consisted of six books on the history of geometry, and as many on that of astronomy. We owe to these all we now know concerning the origin of those sciences; for it is from this source that Proclus, Theon, and Diogenes Laertius have drawn the few notices which they have transmitted to us.

We come next to a new epoch in the history of the ancient mathematics. This was the institution of the school of Alexandria. However memorable this event may have been in the history of general literature, it is more especially remarkable in that of the mathematics; for in this celebrated school all the mathematical sciences were cultivated with a degree of care not inferior to that which had been bestowed on pure geometry in the school of Plato, and with corresponding success.

The period which immediately followed the death of Alexander proved one of trouble and confusion. The vast empire founded by that conqueror was dismembered by his principal captains; and Egypt was the portion which fell to one of them, Ptolemy Lagus. As soon as he had established tranquillity in his dominions, Lagus turned his attention to the sciences; and by his encouragement of their cultivators, he drew to him many of the learned of Greece; and his capital soon rivalled Athens as the resort of men of knowledge and talent. These constituted the Alexandrian school. The perfection of this celebrated establishment is mainly due to his son and successor Ptolemy Philadelphus, who bestowed on the learned men he had induced to settle in his capital, protection and liberal encouragement. Amongst those who resorted to this institution, none has been more celebrated than the Greek geometer Euclid. His country is unknown; and of the events of his life no notice has reached us. It appears that he had resided in Greece, and studied geometry under the disciples of Plato. Thence he went to Alexandria, induced probably by the liberality of the first Ptolemy. Pappus has described him as gentle and modest, and entertaining a particular regard for those who could contribute to the progress of the mathematics. His character formed a contrast to that of Apollonius, another geometer, who was vain, and delighted in depreciating his contemporaries. We may suppose that Euclid was not much of a courtier, from his reply to Ptolemy, who inquired of him whether there was not an easier way to a knowledge of geometry than the study of his Elements. "There is no royal road to geometry," was his answer. We have elsewhere (see EUCLID) given a full account of this distinguished geometer and his writings.

The great excellence of the Elements of Euclid must increase our regret for the loss of a treatise which he composed on *Porisms*. Of this work, all that has come down to modern times is an abstract, inserted by Pappus Alexandrinus in his Mathematical Collections. This, however, has suffered so much from time, that all we can immediately learn from it is, that the ancients put a high value on porisms, and regarded them as an important part of their analysis. The efforts of modern geometers had been exerted in endeavouring to discover the nature of porisms, but without much success. At length Dr Robert Simson, with a zeal and perseverance not to be surpassed, succeeded in divining their nature, and even in restoring a great number of Euclid's propositions. These form a part of the posthumous works of this distinguished geometer.

Leaving the Alexandrian school, our attention is drawn to Sicily, which gave birth to Archimedes, a geometer whose genius has been the admiration of all who have come after him. His life was written by Heraclides; but this precious piece of biography, so well calculated to interest our curiosity, has unfortunately perished. Archimedes was born 287 years before our era. He was the relation and friend of Hiero, king of Syracuse. His skill as a mechanician is universally known; but it is only as a geometer that we shall speak of him here. Endowed with a mind of the highest order, he exerted it in the extension of mathematical science. The measure of curvilineal magnitude was a subject new in his time, concerning which but little was known. Archimedes attached himself to this branch by predilection, and opened new views, which have engaged the attention and exercised the genius of such men in modern times as Kepler, Cavalieri, and Dr Wallis. The last of these has called him a man of prodigious sagacity, who first laid the foundations of almost all that had given celebrity to the seventeenth century of our era.

The writings of Archimedes were numerous. We have two books by him on the sphere and cylinder, which terminate in the fine geometrical discoveries, that the solidity and surface of the sphere are respectively two thirds of the solidity and surface of the circumscribing cylinder, with which he was so much delighted, that he desired that these figures should be inscribed on his tomb. His book on the measure of the circle is a kind of supplement to his treatise on the sphere, which supposed a knowledge of that measure. The determination of the exact ratio of the diameter to the circumference was, as at present, a problem not to be resolved; but he found limits to that ratio, and an approximation to it sufficiently accurate for the ordinary wants of the arts, which was all that he attempted. He might, however, have carried his approximation farther, as was afterwards done by Apollonius, and by Philo, another geometer less known.

Archimedes having succeeded in measuring the sphere and cylinder, bodies long the study of geometers, he opened a new field of inquiry in his Treatise on Conoids and Spheroids. All his determinations are now familiar to geometers; his processes of reasoning are highly ingenious, but withal somewhat intricate. Indeed we question whether many modern mathematicians have had patience to go through his investigations, considering that the same conclusions can now be reached by much shorter methods.

The properties of the spiral, invented by his friend Conon, and the quadrature of the parabola, are among the additions made to the ancient geometry by Archimedes. This last was a grand step in the progress of geometry; because it was the first curvilineal space legitimately squared, and the only one, until the application of the modern methods of analysis. In latter times the notion of infinity has been introduced into geometry, and has contributed greatly to its extension. The ancients, however, carefully avoided this term, which might have injured the stability of the science. Their theory of exhaustions supplied its place, and was a safe, although a laborious and indirect way of establishing truth. The writings of Archimedes give the finest examples of its application. We pass over the mechanical and optical inventions of this great man, and only observe that they indicate a state of considerable perfection in the geometrical science of that period.

The writings of Archimedes are the most important of the few classic remains of ancient geometry which we now possess. The subjects of which they treat, being less elementary, are now less studied than those in the Elements of Euclid. Every geometer, however, should have read them at least once in his life. The earliest edition of his writings was published at Basle in 1644. It was in Greek, with a Latin translation by Venatorius, the two versions being printed as separate volumes, and accompanied by the Commentary of Eutocius. There have been many editions of his works. Of these we shall only notice two; that of Torelli, in Greek and Latin, published at Oxford in 1792, and a French translation of his writings by Peyrard, the learned editor and translator of Euclid's works.

Returning to the school of Alexandria, we have to mention Eratosthenes, a geometer as well as an astronomer. Indeed he was one of those uncommon men, whose genius embraces all subjects; for he was also an orator, a poet, an antiquary, and a philosopher. His extensive knowledge induced the third Ptolemy to make him his librarian. He chiefly cultivated geometry and astronomy, and has been classed with the three great geometers of antiquity, Aristæus, Euclid, and Apollonius, who had improved geometrical analysis. Pappus mentions a work by Eratosthenes on this subject, in two books. He has told us its title, but has not described its exact object, which can therefore only be conjectured. He gave a solution of the problem of the duplication of the cube, which Eutocius has preserved in his Commentaries on Archimedes; and he applied his geometrical and astronomical science to the solution of the grand problem, the measurement of the magnitude of the earth, which, however, had been attempted before his time.

Apollonius of Perga appeared as a geometer in the Alexandrian school, about the time when Archimedes had finished his career. It might be a question which of these two great men was endowed with the higher genius; for such was the estimation in which Apollonius was held at the period in which he lived, that he obtained the appellation of the *great geometer*. He was the most profound and fertile writer that has ever treated of geometry. His works which have survived the ravages of time, or have been restored by modern geometers, with the addition of the Data and Porisms of Euclid, this last also a restoration, constitute nearly all which we now know of that beautiful subject, the ancient geometrical analysis. Whoever would understand it, and acquire skill and facility in its application, would do well to study with care the various works of Apollonius which have been restored, if not exactly according to the letter, at least in the true spirit of the originals. A full account of the writings of this distinguished geometer has been given as an article of biography (see APOLLONIUS); it is therefore unnecessary to enumerate them here.

The ancient mathematicians addressed their writings to others, their particular friends. It is in this way that the names of some of their contemporaries have descended to us, although their writings have been lost. Apollonius dedicated the first three books of his Conics to Eudemus, a geometer, and in such terms as show that he addressed himself to one well acquainted with the subject. He says that he had been encouraged to study the subject by Naucrates; and he requests Eudemus to communicate what he had written to Philonides, also a geometer. Eudemus having died, he addressed the fourth book to Attalus, and speaks of Thrasydeus, with whom Conon of Samos, a little anterior to his time, had held a correspondence on the conics; also of Nicoteles the Cyrenean, who it seems had a controversy with Conon. The regret which Archimedes expresses for the loss of Conon gives us reason to believe that he was a profound geometer. We know also that he was an astronomer. Archimedes dedicated several of his works to Dositheus, another geometer, whose name has thus become known to us.

It was about this period that the geometer Nicomedes lived. He was the inventor of the *Conchoid*, a curve which served to resolve two remarkable problems, the duplication of the cube, and the trisection of an angle.

The period which comprehended the ages of Euclid, Archimedes, and Apollonius, was that in which the science of geometry shone forth with the greatest splendour. It had been in a state of gradual improvement from the time of Thales. Now, however, it seems to have arrived at a degree of perfection beyond which its cultivators did not carry it. We may suppose that the science of astronomy took its place, and presented a new and more inviting field of discovery. Hipparchus, the father of astronomy, was also a geometer; for we find him applying its principles, combined with arithmetic, to his science.

There were geometers who were also mechanicians. These, as well as the astronomers, probably cultivated geometry alone as connected with their own science. Gemimus of Rhodes lived between the time of Hipparchus and the beginning of our era. He was the author of a work on geometry, and another on astronomy. The former, which is lost, was probably a historical commentary, a sort of development of geometrical discoveries. Proclus seems to have drawn from it all that he has said on the history and metaphysics of geometry. Its loss is matter of regret. Ctesibius, and Hero his disciple, were celebrated as mechanicians. The former lived in the middle of the second century before Christ. Philo of Byzantium was also a celebrated mechanician. Possidonius was at once geometer, astronomer, mechanician, and geographer. He deserved well of geometry, for having repelled the attack of Zeno the Epicurean, who had attempted to invalidate its principles and certainty. Dionysiodorus was a skilful geometer, as appears by his solution of a difficult problem of Archimedes. Theodosius was the author of a work on the geometry of the sphere, which has descended to our times. It appears to have been studied as a classic in the English universities. Dr Barrow gave an edition of it, along with the writings of Archimedes, and the four books of the Conics of Apollonius, in 1615. The best edition is that of Hunt, printed at Oxford 1707.

The study of the mathematical sciences, which languished in the first century of the Christian era, revived a little in the beginning of the second. Menelaus, an astronomer, wrote on trigonometry and spherical geometry. This work has reached our times by a translation from the Arabic. Dr Halley, holding in high esteem every vestige of the ancient geometry, had prepared a new edition of this geometer, corrected from a Hebrew manuscript. It did not appear, however, until 1758, by the care of Costard, the author of a history of astronomy. Menelaus, as we learn from Pappus, cultivated the theory of curve lines; a subject which may be regarded as belonging to the higher geometry among the ancients.

Ptolemy, if not an inventive geometer, must at least have been perfectly acquainted with its theories, for he had the merit of applying them to astronomy. His Almagest has handed down from antiquity a beautiful geometrical theorem, the foundation of the Greek trigonometry. It is this; the rectangle contained in the diagonals of a quadrilateral inscribed in a circle, is equal to both the rectangles contained by the opposite sides.

Several mathematicians of no great note lived in the third and fourth centuries of the Christian era. Such were Serenus, who wrote two books on cones and cylinders; Hypsicles of Alexandria, the supposed author of two books on regular solids, sometimes ascribed to Euclid; and Perseus Citticus, who wrote on certain lines called *Spiriques*, formed from a solid generated by an arc of a circle revolving about a fixed axis. Philo of Thyaneus, and Demetrius of Alexandria, both wrote on curve lines.

We are now come to a period in which the sciences had begun to decline; when, instead of original treatises, writers were content to compose commentaries and annotations on the works of their more illustrious predecessors. It was in this way that Pappus and Theon of Alexandria, who lived towards the end of the fourth century, rendered service to the mathematical sciences. The first, however, must not be classed with the ordinary scholiasts; for in his Mathematical Collections he has shown that he was an expert geometer. His object in composing this work was to collect into one body many scattered discoveries, and to illustrate and supply deficiencies in the writings of the celebrated mathematicians who had preceded him. He has done this in regard to Apollonius, Archimedes, Euclid, and Theodosius, by a number of lemmas and important propositions which they had assumed as known. His writings have made us acquainted with the various attempts made by the ancients to double the cube, and to divide an angle into three or more equal parts. We are indebted to him for almost all we know of these and other important matters in the ancient geometry; and it is through his writings that the names of many geometers have come down to our days, which, but for him, would have been lost in the obscurity of time. The preface to his seventh book is of inestimable value, inasmuch as it has preserved from oblivion many of the analytic works of the ancients. His brief analysis of these works, for that is all we have, has given continuity to the history of geometry; and his indications have served as vestiges of the steps by which the ancients proceeded in their discoveries. Guided by these brief notices, the ingenuity of the moderns has succeeded in restoring the writings of Apollonius and Euclid, which had disappeared for ages. It is not improbable, that in this renovated form, the works of these geometers surpass in excellence the originals. The restorers have had the advantage of an improved state of the science, and the works of later geometers, to assist them in their researches.

It is probable that at this time there is not an entire copy of the eight books of Pappus in existence; certainly there is none in Britain. In a catalogue of the manuscripts of England and Ireland, published at Oxford in 1698, there is mention made of two copies in the Savilian library. These have been more than two centuries in Oxford. One, marked No. 3, is in folio, and is well written on paper; it contains the Greek text of the third, fourth, fifth, sixth, seventh, and eighth books, and in addition some works of Theodosius and Autolycus. There is no memorial to indicate when it was written, or by whom. The other copy, with a mark No. 9, is not so well written; it has been copied by various hands, on separate sheets of paper. This copy, besides the books preserved in the former, contains also a part of the second book. Dr Wallis has spoken of three manuscripts of Pappus at Oxford, one in the Bodleian and two in the Savilian library. No traces of a third copy can now be found in the Bodleian library. The late Dr Trail, in his life of Dr Robert Simson, has described a manuscript now in the Advocates' Library, Edinburgh. It contains five books of Pappus, viz. the third, fourth, fifth, sixth, and eighth; but unfortunately the seventh, the most valuable portion of the work, is wanting. This was purchased at Paris by Dr James Moore in 1748.

The British Museum possesses a manuscript copy of Pappus, which had been the property of the Saliante family at Verona. None of the manuscripts of which we have any details are of a very early date. There are some points of resemblance in all that have been examined, which seem to indicate a common origin. It is well known that early manuscripts are few in number; sometimes only one is known. This may have been the case in regard to the text of Pappus, and will account for the agreement of all the manuscripts in particular places. We owe the edition which we possess of this ancient work to the labour of Commandine, who translated and enriched it with notes, but died when he was about to give it to the world. It afterwards appeared in 1588, under the patronage and by the pecuniary aid of Francisco Maria, duke of Urban. That part of the second book which has been preserved was published in the third volume of the works of Dr Wallis: it treats of the ancient arithmetic.

We had formerly occasion to mention Hypatia, the daughter of Theon, as a commentator on Diophantus, in our account of the progress of Algebra. She has a claim to our notice also in the history of geometry, by her having composed a commentary on the writings of Apollonius.

The philosopher Proclus, the chief of the Platonic school at Athens, made it in some measure the seat of the mathematical sciences about the middle of the fifth century. In imitation of the chief of his sect, he held the sciences in great estimation. He was not, however, distinguished for original discoveries; but his commentary on the first book of Euclid, setting aside the fault of its prolixity, is valuable, because of the information it contains on the history and metaphysics of geometry at a remote period.

We pass over several geometers of this period, of whom hardly any thing but their names is known. We mention, however, Diocles as the inventor of a curve called the cissoid, contrived for the solution of the celebrated problem, to find two mean proportionals.

Geometrical science had by this time been long on the decline. The Alexandrian school, however, still existed; and a repetition of such a period as that in which Apollonius and Euclid flourished might have been hoped for, had it not been for the troubles which agitated the East. The taking of Alexandria by the Saracens in the year 640 gave a deathblow to the sciences, not only in that celebrated city, but throughout the Greek empire. The library was delivered over to destruction by the command of the ignorant fanatic Omar; and this, the finest monument of human genius, the accumulated store of knowledge that had been collecting for ages, was employed during six months in warming the four thousand baths of Alexandria. Such was the end of the Alexandrian school, which had for nearly ten centuries contributed to the advancement of the human mind in knowledge.

About the eighth century we find Hero, called *the younger*, an engineer and mathematician. He wrote a treatise on *Geodæsia* (so practical geometry was called), which had no great merit; it is, however, remarkable for containing, without demonstration, a rule for finding the area of a triangle when its three sides are known. There is no notice of this important theorem in the writings of the ancients which have come down to us. It was, however, probably found by some geometer earlier than Hero. It appears to have been afterwards lost, and rediscovered by Tartalea.

We have an unfavourable opinion of the modern Arabians, but there was a period when they had a very different character. When the sciences were neglected by the Greeks, and existed only in manuscripts buried in the dust of libraries, the Arabians brought them forth from obscurity, and gave them an honourable asylum. They were the depositaries of knowledge during the ages of barbarism and ignorance which overspread Europe; and we owe to our intercourse with them the first glimpses of light which penetrated the obscurity of the eleventh, twelfth, and thirteenth centuries. The Arabians diligently cultivated the science of astronomy ; and as a corresponding knowledge of other branches of science was necessary to success, they became geometers, opticians, and even algebraists. The greater part of the Greek geometers, particularly those necessary to the study of astronomy, as Euclid, Theodosius, Hypsicles, Menelaus, were translated into the Arabic language in the time of Almamon, or soon after him. They even began to cultivate the sublime geometry of the ancients, for the four first books of the Conics of Apollonius were translated by order of that prince. They added to their literature the writings of Archimedes, and at least three of the last books of the Conics of Apollonius ; and all these works are to be found in libraries rich in oriental manuscripts. It is from the last-mentioned work, corrected and augmented by the notes of Nassireddin, a Persian geometer, that Dr Halley has enriched our geometry with the fifth, sixth, and seventh books of the ancient Greek author ; the remaining books, viz. the eighth, appear however to have been entirely lost. The Arabian writers quote the writings of several Greek geometers of which we know nothing, such as a treatise on parallel lines, another on triangles, and a third on the division of the circle. We must allow to the Arabians the merit of having given to our trigonometry its present form. They also simplified the practice of its operations, by employing the sines of the arcs instead of the chords of the double arcs employed by the Greeks. This was even one of their earliest inventions, for we find it in the writings of their astronomer Albatenius.

The Arabian historians have recorded the names of several of their cultivators of geometry ; but these may be passed over, ignorant as we are of their contributions to the science. The optician Alhazen however deserves notice, because of the knowledge of geometry shown in his writings, and also on account of a geometrical problem applicable to optics which bears his name. The solution he gives was probably derived from the Greek geometers. It must be confessed the Arabians do not appear to have been an inventive people ; almost always commentators or compilers, they seldom rose higher than the labours which such functions impose.

The Persians have also had their geometers. The most celebrated was Nassir-Eddin Al-Tussi. The science is indebted to him for some good works, particularly a learned commentary on Euclid, which was written in Arabic, and printed in 1590 in Italy. Another geometrical work is a revision of the Conics of Apollonius, with a commentary. Dr Halley found this useful in remodelling the fifth, sixth, and seventh books of that precious treatise. The Persian geometers have long known the principal Greek writers ; and they even profess to have some of their writings which we have not known. It appears that their geometers had a peculiar taste in treating the doctrines of abstract science, for they have given every proposition of the elements a name expressive of one of its uses, or of some fanciful analogy it may have to things foreign to geometry. The forty-seventh of the first book of Euclid, for example, they call the *figure of the bride*, and the forty-eighth the *bride's sister ;* and, with some reason, they call the mathematics the *difficult science*. Mathematical knowledge among the Turks has been nearly in the same state as among the Persians. The libraries of Constantinople contain Arabic and some Turkish translations of the Greek writers. Geometry is taught in their schools, but it does not appear that they go beyond the Elements of Euclid. There are hardly any traces of geometry amongst the Hebrews. We know that when Solomon's temple was built, Hiram king of Tyre furnished architects and navigators. From this we may infer that the Jews had no geometry at that period. It was not before their second dispersion that they took an interest in the sciences. However, when mixed with other nations, some of their learned men cultivated geometry, but never proceeded beyond the elements. About the time of Almamon, in imitation of the Arabians, they translated the writings of some of the Greek mathematicians into their language, in particular those of Euclid and Archimedes. They however made no addition themselves to geometrical science.

The researches of Europeans concerning the mathematical and astronomical science of India have discovered among the Hindus some works on geometry of great antiquity. We have already given some account of these interesting writings in our sketch of the history of Algebra ; and we have there described the *Lilavati*, a work on arithmetic and geometry by Bhascara Acharya, a Hindu mathematician, who lived about the year 1150 of the Christian era. In another work, reputed more ancient, viz. the Surya Siddhanta, we find a rational system of trigonometry combined with fable and absurdity. There has been great difference of opinion as to the time when this last treatise, the most ancient on the Indian astronomy, was written. The French astronomer Bailly believed it to have been composed more than 3000 years before the Christian era ; but more sober inquirers have judged it to be about 750 years old. The trigonometry it contains is probably much older. The Hindu books on geometry are remarkable for not containing demonstrations. The writers knew the celebrated proposition concerning the squares on the sides of a right-angled triangle, the discovery of which is ascribed to Pythagoras ; and they also knew the rule for finding the area of a triangle from its sides, which was not known to the early Greeks. It appears from the Institutes of Akbar, that the Indians supposed the diameter of a circle to be to its circumference as 1250 to 3927 ; which is the proportion of 1 to 3·1416, and is more accurate than the determination of Archimedes, or indeed than any known before the sixteenth century.

The Chinese have cultivated astronomy from a remote antiquity, yet it does not appear that they have made any progress in geometry. They knew the proposition of Pythagoras, it would seem, earlier than it was known to the Greeks, yet it remained sterile in their hands. They had no spherical trigonometry before the thirteenth century, and then it was not of native growth ; it was probably derived from the Arabians or Persians.

The Romans, unlike the Greeks, gave little attention to the sciences. The mathematics in particular were disregarded at Rome ; and geometry, scarcely known there, did not extend beyond the art of measuring land and of fixing boundaries. The mathematics were, however, not unknown to Cicero. The respect with which he speaks of them, and the veneration he manifested for the memory of Archimedes in searching for his tomb, on which he knew were inscribed a sphere and cylinder, indicate that he had given some attention to the subject of geometry.

The Roman geographer Strabo must be numbered amongst the geometers of his day : and Cicero mentions another, Didymus, who was blind ; but he was a Greek by birth. Vitruvius has given much information, in his architecture, on matters connected with geometry.

We pass over those ages in which the sciences had nearly disappeared in Europe, and hail with satisfaction their revival in the eighth century. Mathematical science was at first dimly recognised, like the dawn of a new day after a gloomy night, in the writings of Boethius, Bede, his disciple Alcuin, and Gerbert, who travelled into Arabia, the only country where a knowledge of the mathematical sciences could be acquired. In this he was imitated by the English monk Adelard, or Athelard, in the twelfth century, who went into Spain and Egypt ; also by other

Englishmen, such as Daniel Morlay, Robert of Reading, William Shell or William de Conchis, Clement Langton, &c. Adelard on his return translated Euclid, and he appears to have been the first who made this writer known in the West. His work was never printed. Plato of Tivoli translated the Spherics of Theodosius into Latin about 1120; but this translation was not printed before 1518. It is worthy of remark, that almost all the restorers of the sciences were ecclesiastics, who in the seclusion of the cloisters studied the works of the ancients which had been preserved in the monasteries. This at least is one benefit the world has received from the leisure of the monks of that period, which all of them did not spend in idleness.

The sciences found many cultivators, and much encouragement from sovereigns, in the thirteenth century; Jordanus Nemorarius, who lived about 1230, was well versed in geometry and arithmetic. John of Halifax, known also by the name of Sacro-Bosco, his contemporary, was a mathematician. Campanus of Navarre, the celebrated translator and commentator of Euclid's Elements, was of this age. Almost all the early editions of this work were made from his version and his manuscript commentary. We have a treatise by him on the Quadrature of the Circle. But he deviates from geometrical accuracy, by mistaking the approximate ratio found by Archimedes for the true and exact ratio. The paralogism which he gives for a demonstration may, however, be excused in the geometers of his time. They were few, and their writings must not be too nicely scanned. The name of Roger Bacon is so identified with the progress of science, that we must reckon him among the geometers of his day. In support of this claim we record his treatise on Perspective, a geometrical theory.

Leonardus of Pisa, who in the fifteenth century brought algebra into Italy, was also known as a cultivator of geometry. He composed a treatise on the subject, which Commandine thought worthy of publication, and had prepared it for the press; but his death prevented its appearance.

In the beginning of this century, Cardinal Cusa acquired reputation in geometry, by a pretended quadrature of the circle, and other writings. These, however, were only a tissue of paralogisms. It appears from the introduction to a tract of this writer, that Pope Nicolas V. who occupied the pontifical throne from 1447 to 1455, was a geometer, and had translated the works of Archimedes from Greek into Latin. The true restorers of mathematical science in the fifteenth century were Purbach and Regiomontanus. Purbach banished the use of sexagenary calculation from trigonometry, which he enriched with several new propositions. He supposed the radius divided into 600,000 parts, instead of the divisions used by the ancients; and in place of the chords of the double arcs, expressed in sexagenary parts of the radius, he calculated the sines in 600,000ths of the radius. He was the inventor of the geometrical square, an instrument used in practical geometry; and he appears to have been the first who applied the plumb-line to mark the divisions of an instrument. Regiomontanus, whose true name was John Muller (called also *John of Mont-Royal*), was born in 1436. At the age of fourteen he was captivated with the mathematical sciences, and put himself under the guidance of Purbach. The preceptor and his pupil made a journey into Italy to study Greek, in order that they might draw their knowledge from the pure sources of antiquity. Purbach died there, but his disciple followed out his purpose. He afterwards translated the Spherics of Menelaus and Theodosius into Latin; he corrected from the Greek text the ancient version of Archimedes made by Gerard of Cremona; he translated the Conics of Apollonius, and the Cylindrics of Serenus, besides other works on mixed mathematics; he commented on the books of Archimedes, which Eutocius had not touched. He defended Euclid against the imputations of Campanus, and he confuted the pretended quadrature of Cardinal Cusa. We pass over for the present his improvements in trigonometry.

Lucas Paciolus, or Lucas de Burgo, the author of the earliest printed book on algebra, contributed by the same work to the establishment of geometry. It was first printed in 1494, and was therefore one of the early printed books on the science, but not the earliest, for the first edition of Euclid was in 1482.

The decline of the Greek empire, and the taking of Constantinople, which happened in 1453, scattered the learned men of that country, many of whom took shelter in Italy, and brought with them their language, and the precious remains of ancient learning. The art of printing soon spread abroad these treasures, and in the sixteenth century geometry was very generally cultivated. Amongst the writers on the science in this century we may, in particular, reckon Zamberti, John Baptiste Memmius, Commandine, Guido Ubaldo, Maurolycus, and Tartalea. These and others laboured usefully on the ancients, by translations and commentaries. The Jesuit Clavius deserves particular mention. Besides his labour on Euclid, we owe to him a good work for the time on practical geometry in eight books.

We pass a multitude of names, and come to the French geometer Vieta, who was deeply versed in the ancient as well as in the modern geometry, and the restorer of the tangencies, one of the lost works of Apollonius. Adrian Metius, a Dutch geometer, deserves to be mentioned for his convenient and accurate approximate ratio (113 to 355) of the diameter to the circumference of a circle, given in a work on practical geometry. At this period the geometer Nonius, a professor at Coimbra, laboured with zeal in spreading a knowledge of the science in Portugal.

The seventeenth century opened propitiously for the progress of geometry. Lucas Valerius, an Italian, took up a subject which Archimedes had neglected, namely, the centre of gravity of solids; and Marinus Ghetaldus, another Italian, made an attempt to restore the lost book of Apollonius, entitled *De Inclinationibus;* but he left the labour incomplete. He also composed a work *De Resolutione et Compositione Mathematica*, which proves him to have imbibed the true spirit of the ancient geometry. A Scottish geometer, Alexander Anderson, lived at this time. He had a decided taste for the ancient analysis, of which he gave an essay in his *Supplementum Apollonii Redivivi*, in which he supplied what Ghetaldus had left imperfect. The Netherlands could boast of some geometers who did credit to their time. Ludolph Van Ceulen has been celebrated for his approximation to the ratio of the diameter of a circle to its circumference (ALGEBRA, art. 272), a prodigious effort of labour, but requiring little genius. Willebrord Snellius was a more distinguished geometer. He undertook the restoration of the lost book *De Sectione Determinata* of Apollonius, and accomplished his task creditably. He improved greatly the way in which Ceulen had approximated to the ratio of the diameter to the circumference, and verified the labour of that model of patience in calculation. Albert Girard has acquired great reputation in geometry by his supposed divination of the Porisms of Euclid; for in his edition of Stevinus he positively avers that he had restored the three books, which, however, never appeared; and indeed it may be doubted whether he understood the true nature of porisms. John Neper might be reckoned amongst geometers, but he has still higher claims to the notice of posterity for his invention of logarithms.

The science was sedulously cultivated in England at this period by Robert Record, John Dee, Leonard and Thomas Digges, and Henry Billingsley. Record was the author of the *Pathway of Knowledge*, the earliest book in the English language on geometry. It was first printed in

1551, and is dedicated to Edward VI. Edward Wright, the inventor of what is called *Mercator's Chart*, was an English geometer whose knowledge of the science greatly exceeded what was common in his time.

Germany had many geometers at this period, but none of a high order. John Werner of Nuremberg cultivated the ancient geometry, and excelled in a knowledge of its analysis. Every writer on geometry at this period gave a system of trigonometry nearly the same as we now have it in its most elementary form. To George Joachim Rheticus mathematical science is particularly indebted for a trigonometrical table, more extensive than any that had been given before him. It was printed in 1594, with this title, *Opus Palatinum de Triangulis;* but the author was then dead. The work was published by Valentine Otho.

Pitiscus, another German geometer, extended and reprinted this work in 1613, with the title of *Thesaurus Mathematicus, sive canon sinuum ad radium* 1,000,000,000, &c. This is indeed a treasure, and one of the most remarkable monuments of human patience extant.

Want of space compels us to pass in silence many names not less celebrated than some we have given, but less remarkable, because of their abundance in respect of the age to which they gave splendour. Indeed we may reckon that every astronomer and algebraist was then a geometer.

Kepler opened an unexplored way into the field of geometry, by boldly introducing the notion of infinity into that science. We may suppose that Archimedes must have entertained in effect the same idea in his speculations on the sphere and cylinder, but was prevented from following it to its full extent by the strict laws according to which the early mathematicians had constructed their demonstrations. The views of Kepler were eagerly seized by Roberval in France, and by Cavalieri in Italy. They were the fertile germs which, under the culture of such men, led, in the course of the seventeenth century, to a rich harvest of discoveries.

We have now arrived at a period at which the discoveries of the ancients formed but a small part of the whole body of geometrical science, augmented as it had been by the moderns, and which was continually increasing. The new views which were opened soon produced the methods of indivisibles of Cavalieri and Roberval, the theory of tangents of Fermat, the arithmetic of infinites of Wallis, the geometry of curve lines of Descartes, and, finally, the method of fluxions of Newton, and the differential calculus of Leibnitz. The origin and progress of these have been fully explained in our introductions to ALGEBRA and FLUXIONS, and require not to be here repeated. The ancient geometry, however, still had great value. Huygens and Newton delivered their sublime discoveries in its language, and represented the relations of time, space, velocity, force, the objects of their physical inquiries, by geometrical diagrams. The rigorous mode of ancient demonstrations served likewise as a model on which to form the processes of reasoning by which the new truths in geometry and physics were to be established.

Not to pass altogether in silence the names of geometers whose discoveries have made the seventeenth century ever memorable, we observe, that to Guildin, a Jesuit, we owe the discovery of a property of the centre of gravity applicable to the measurement of solids formed by revolution; and to Descartes, Fermat, Roberval, and Barrow, a method of determining the tangents of curves. Galileo first suggested the *cycloid,* the nature of which was afterwards fully disclosed by the investigations of Roberval, Fermat, Pascal, Huygens, Wren, and Wallis. James Gregory first suggested the logarithmic curve; and John Bernoulli and Leibnitz showed the true nature of the catenary, which Galileo could not discover; afterwards, David Gregory demonstrated its properties by the new geometry.

The ancient geometry came in for a share of that general attention which was bestowed on the modern theories. Newton, as has been already stated, held it in high esteem; and David Gregory and Dr Halley employed their genius and learning in restoring to their pristine excellence the precious remains of Euclid and Apollonius.

Previously to the time of Newton, pure geometry and algebra were the only subjects which mathematicians had for the exercise of their genius; but his sublime discoveries presented a new and an immense field for investigation. The fact that the orbits of the planets are ellipses, naturally connected the doctrines of astronomy with the conic sections; and the two were wrought up into the beautiful physico-mathematical theory of central forces delivered in the *Principia.* When this came to be fully understood, it served as a model of reasoning in all speculations on physics, and the geometrical method of Newton was adopted and imitated by his followers. Thus, we have the *Elements of Physical and Geometrical Astronomy* of David Gregory, and the *Phoronomia* of Herman, and many other like treatises, composed in the geometrical style. It was, however, soon discovered, and first by foreign mathematicians, that the geometrical method, which, when carried a certain length, is perspicuous and easy, is yet unsuitable to the more difficult speculations of mechanical philosophy, by reason of its cumbersomeness. It was therefore abandoned by Leibnitz, the Bernoullis, Euler, and their followers, and the greatly more manageable modern methods of the fluxional or differential calculus adopted in its stead. The mathematicians in Britain, who had imbibed deeply and acquired a relish for the spirit of the geometrical method, however, still adhered wholly or in part to that method. Maclaurin, the expositor of Newton's calculus of fluxions, defended its principles, and delivered many of his own fine speculations in the pure and mixed mathematics, in the prolix style of the ancient geometry. But he also gave a theory of the fluxional calculus in the more concise language of the modern analysis, which served as a practical example of the advantage which the latter has over the former as an instrument of invention. Dr Robert Simson, the editor of Euclid, greatly preferred the geometrical to the modern analysis; and his disciple, Dr Mathew Stewart, the author of *General Theorems, Tracts relating to Physical Astronomy,* and *Propositiones Geometricæ more Veterum Demonstratæ,* fully agreed with him in this sentiment. At a later period another Scottish professor, the late Mr Playfair, with a profound knowledge of both the ancient and modern analysis, and with no prejudice in favour of the former, yet gave an elegant example of its beauty, in his paper on the origin and investigation of porisms.

These distinguished Scottish mathematicians, by their writings, contributed greatly to keep up the taste for geometry in Britain during the last century. It is proper to acknowledge also, that much is due to Dr A. Robertson, the late professor of astronomy at Oxford, to Dr Horsley, bishop of Rochester, and others, for the estimation in which the geometrical analysis is now held in Britain.

The nature and objects of the ancient geometry have been fully understood for a century past, and the only question now is, how it ought to be studied. There have been a great variety of treatises within that time sent into the world. We do not, however, suppose that the science has gained by this diversity of guides. The settled public opinion seems to be in favour of some standard book; and Euclid's *Elements* have been, by almost universal consent, chosen as that standard in this country. There is another work of great excellence in the French language, *Eléments de Géométrie,* by the late Legendre, a mathematician of the highest celebrity. Were we to chuse a book different from Euclid for purposes of instruction, it would be Legendre's Geometry, of which there is an English translation. It may be useful to read more than one book on a subject which we wish to understand thoroughly, and those who hold this opinion can find no better book than that of the French geometer. We have kept him constantly in view in composing this treatise.

In tracing the progress of a science, it is always interesting to know by what steps it has advanced in the career of improvement. These may be well ascertained by consulting the authors who have written on the science, from its infancy downwards. With this view we have given a catalogue of writers on algebra and fluxions, and we now do the same in regard to geometry. The early writers are not so much mentioned for their excellence, as from a wish to give a faithful portraiture of the state and progress of the science at different periods. The works on geometry in the last century are too numerous to be all specified. Many have fallen into obscurity. Almost all are mere transcripts from Euclid; indeed, generally speaking, their excellence is in proportion to the fidelity with which they have copied the ancient.

Ancient Writers on Geometry.

Euclid, Elements of Geometry	flourished B. C. 272
First edition in Latin, that of Ratdolt	1482
First edition of Greek text, by Hervage,	1533
Edit. in Greek, Latin, and French, by Peyrard	1814
(For other editions, see EUCLID.)	
——— Porisms, restored by Dr Simson, Opera quædam Reliqua	1776
Apollonius, Conics, and various works	fl. B. C. 244
For an account of his writings, see APOLLONIUS.	
Archimedes on the Sphere and Cylinder, &c.	born B. C. 287
First edition of Greek text by Venatorius,	1544
Oxford edition, Gr. and Lat., by Torelli,	1792
Edition in French, by Peyrard	1808
Eratosthenes, Geometria cum Annot. 1672	fl. B. C. 194
Theon, Commentator on Euclid	fl. B. C. 117
Theodosius, Sphericorum libri tres, printed at Oxford, 1707	fl. A. C. 75
Menelaus, Spherics, edited by Maurolycus	fl. A. C. 100
Serenus, De Sectione Cylindri et Coni	fl. A. C. 200
His treatise is in Oxford edition of Apollonius.	
Pappus, Mathematicæ Collectiones, 1588, 1660	fl. A. C. 380
Proclus, Commentator on Euclid	fl. A. C. 450
Taylor gave a translation in English, 1788.	
Veterum Mathematicorum Athenæi, Bitonis, Apollodori, Heronis, Philonis, et aliorum, Opera, Gr. et Lat	1693

Writers in Modern Times.

Lucas de Burgo, Summa de Arithmetica, &c	1494
Brauardinus, Geometria Speculativa	1495
Boville, L'Art et Science de Géométrie	1514
N. de Cusa, De Geometricis Transmutationibus	1514
Albert Durer, Institutionum Geometricarum lib. iv	1532
Orontius Fineus, Liber de Geometrica Practica	1544
Record, The Pathway to Knowledge	1551
Buteo, Opuscula quædam Geometrica	1554
Ramus, Arithmeticæ lib. ii. Geometricæ lib. xxvi	1580
Finckius, Geometriæ Rotundæ lib. iii	1583
Stevinus, Problematum Geometricorum lib. v	1583
Barotius, Geom. Problema Tredecem Modis Dem	1586
Vieta, Opera Mathematica	1589
Digges (Tho.), Pantometria, a geometrical treatise	1591
Baptista Porta, Elementorum Curvilineorum lib. ii	1601
Ramus, Geometria	1604
Clavius, Geometria Practica	1606
Ghetaldus, Apollonius Redivivus	1607
Anderson, Supplementum Apollonii Redivivi	1612
Kepler, Nova Stereometria, &c	1618
Van Ceulen, De Circulo et Adscriptis	1619
Snellius, Cyclometricus	1621
Metius, Arith. libri ii. et Geom. libri vi	1626
Guildin, De Centro Gravitatis, &c	1635
Cavalieri, Geometria Indivisibilibus promota	1635
——— Exercitationes Geometricæ sex	1647
Descartes, Geometria	1637
Toricelli, De Sphæra et Solidis Sphæralibus, &c	1644
Gregory St Vincent, Opus Geom. quadrat. Circuli.	1647
Rudd, Practical Geometry	1650
Wallis, Arithmetica Infinitorum	1656
——— De Cycloide et Cissoide	1659
Pascal (A. Dettonville), Lettres (on the Cycloid)	1658
Ricci, Exer. Geom. de Maximis et Minimis	1666
J. Gregory, Vera Circ. et Hyp. Quadratura	1667
——— Geometriæ Pars Universalis	1668
Slusius, Mesolabum, &c	1668
Huygens, De Linearum Curvarum evolutione et dimensione (in Horol. Oscil.)	1673
——— Opera (collected by S'Gravesande)	1751
Barrow, Lectiones Geometricæ	1674
Viviani, Enodatio Problematum Gallicorum	1677
De Omerique, Analysis Geometrica	1698
Sharpe, Geometry Improved	1718
Clairaut, Elémens de Géométrie	1746
Math. Stewart, General Theorems	1746
——— Propositiones Geometricæ	1763
Montucla, Histoire des Recherches sur la quadrature du Cercle (in Histoire de Mathématiques)	1754
T. Simpson, Elements of Geometry	1752
Emerson, Elements of Geometry	1763
Hutton, A Treatise on Mensuration	1770
Lawson on the Geometrical Analysis of the Ancients	1774
R. Simson, Opera quædam Reliqua	1776
West, Elements of Mathematics	1784
Playfair, Origin and Investigation of Porisms (*Edin. Phil. Trans.* vol. iii.)	1794
——— Elements of Geometry	1795
Wallace, Geometrical Porisms (in *Edin. Phil. Tr.* vol. iv.)	1796
La Croix, Elémens de Géométrie	1795
Mascheroni, Géométrie du Compas	1798
——— Problèmes pour les Arpenteurs	1803
Carnot's Géométrie de Position	1803
Kramp, Elémens de Géométrie	1805
Leslie, Elements of Geometry, Geometrical Analysis, &c	1809
L'Huillier, Elémens d'Analyse Géométrique, &c	1809
Diesterweg, Geometriche Aufgaben nach der Methode der Grechen	1825
Vincent, Cours de Géométrie Elémentaire	1827
Duncan, Elements of Plane and Solid Geometry	1833
Legendre, Eléments de Géométrie (15th edition)	1852

General Notions of Geometrical Magnitude.

Our notions of geometrical magnitudes are obtained by the contemplation of a *body*, or *solid*. We readily understand that this is extended in three directions; that is, it has length, breadth, and thickness. The outside or boundary of a solid, that which separates the particular space it occupies from space in general, is called a *surface* or *superficies*. A surface, then, is not conceived as having any thickness; it has only length and breadth.

A surface has a boundary; something which encloses it, or separates any portion of it from the remainder. This boundary, which has no thickness, nor breadth, but length only, is a *line*.

Again, there is something which terminates a line, indicating where it begins and where it ends, or which may

Lines and Figures upon a Plane.

separate it into distinct portions. This is a point, which has neither thickness, length, nor breadth. These three kinds of magnitude, viz. solids, surfaces, and lines, are the objects of geometrical discussion.

There is no limit to the number of lines, and surfaces, and solids, which may be considered in geometry. The elements of the science, however, treat only of a few of these: Straight lines, circles, rectilineal plane figures, and their affections, constitute one part of geometry; another treats of the intersections of planes, of solids bounded by planes, and of the three round bodies, viz. the cylinder, the cone, and the sphere. This diversity of objects leads to the division of the subject into two parts, one which treats of figures on a plane, and another the geometry of solids.

PART I.—OF LINES AND FIGURES UPON A PLANE.

SECT. I.—PRINCIPLES OF GEOMETRY.

Definitions.

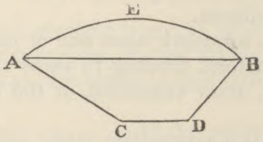
I. Geometry is a science which treats of the properties and relations of quantities having extension, and which are called magnitudes. Extension is distinguished into length, breadth, and thickness.

II. A *Point* is that which has position, but not magnitude.

III. A *Line* is that which has only length. Hence the extremities of a line are points, and the intersections of one line with another are also points.

IV. A *Straight* or *Right Line* is the shortest way from one point to another.

Fig. 1.



V. Every line which is neither straight nor composed of straight lines is a *Curve Line.* Thus AB is a straight line, ACDB is a line made up of straight lines, and AEB is a curve line.

VI. A *Superficies* or *Surface* is that which has only length and breadth. Hence the extremities of a superficies are lines, and the intersections of one superficies with another are also lines.

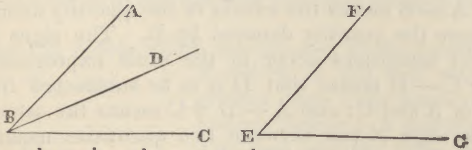
VII. A *Plane Superficies* is that in which any two points being taken, the straight line between them lies wholly in that superficies.

VIII. Every superficies which is neither plane nor composed of plane superficies, is a *Curve Superficies.*

IX. A *Solid* is that which has length, breadth, and thickness. Hence the boundaries of a solid are superficies; and the boundary which is common to two solids which are contiguous, is a superficies.

X. A *Plane Rectilineal Angle* is the inclination of two straight lines to one another, which meet together, but are not in the same straight line. The point in which the lines meet one another is called the *Vertex* of the angle.

Fig. 2.



When there is only one angle at a point, it may be expressed by the letter placed at that point; thus the angle contained by the lines EF and EG may be called the angle E. If, however, there be several angles, as at B, then each is expressed by three letters, one of which is the letter that stands at the vertex of the angle, and the others are the letters that stand somewhere upon the lines containing the angle, the letter at the vertex being placed between the other two. Thus the angle contained by the lines BA and BD is called the angle ABD or DBA.

Angles, in common with other quantities, admit of addition, subtraction, multiplication, and division. Thus the sum of the angles ABD and ABC is the angle DBC; the difference of the angles DBC and ABD is the angle ABC.

Fig. 3.

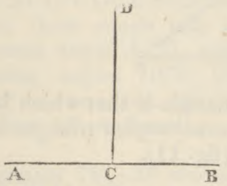
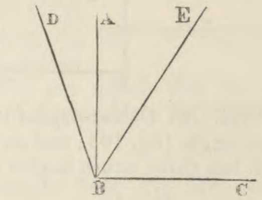


Fig. 4.

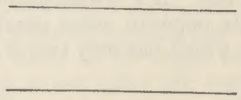


XI. When a straight line standing on another straight line makes the adjacent angles equal to one another, each of them is called a *Right Angle*, and the straight line which stands on the other is called a *Perpendicular* to it. Thus, if DC meet AB, and make the angles ACD, DCB equal to one another, each of them is a right angle, and DC is a perpendicular to AB.

XII. An *Obtuse Angle* is that which is greater than a right angle, and an *Acute Angle* is that which is less than a right angle. Thus ABC being supposed a right angle, DBC is an obtuse angle, and EBC an acute angle.

XIII. *Parallel Straight Lines* are such as are in the same plane, and which being produced ever so far both ways, do not meet.

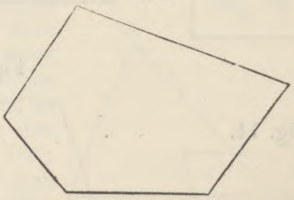
Fig. 5.



XIV. A *Plane Figure* is a plane terminated everywhere by lines.

If the lines be straight, the space which they enclose is called a *Rectilineal* figure, or a *Polygon*, and the lines themselves constitute the *Perimeter* of the polygon.

Fig. 6.



XV. When a polygon has three sides (which is the smallest number it can have), it is called a *Triangle;* when it has four, it is called a *Quadrilateral;* when it has five, a *Pentagon;* when six, a *Hexagon,* &c.

XVI. An *Equilateral* triangle is that which has three equal sides (fig. 7); an *Isosceles* triangle is that which has only two equal sides (fig. 8); and a *Scalene* triangle is that which has all its sides unequal (fig. 10).

Fig. 7.

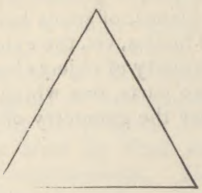
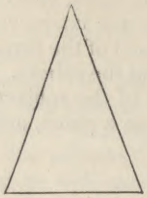
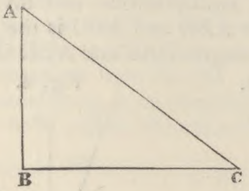


Fig. 8.



XVII. A *Right-angled* triangle is that which has a right angle; the side opposite to the right angle is called the *Hypothenuse.* Thus in the triangle ABC, having the angle at B a right angle, the side AC is the hypothenuse.

Fig. 9.



XVIII. An *Obtuse-angled* triangle is that which has an obtuse angle (fig. 10); and an *acute-angled* triangle is that which has three acute angles (fig. 11).

Fig. 10.

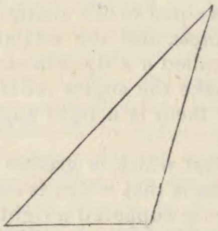
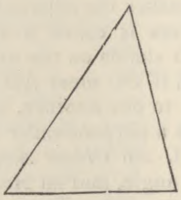


Fig. 11.



XIX. Of quadrilateral figures, a *square* is that which has all its sides equal, and all its angles right angles (fig. 12). A *Rectangle* is that which has all its angles right angles, but not all its sides equal (fig. 13). A *Rhombus* is that which has all its sides equal, but its angles are not right angles (fig. 14). A *Parallelogram,* or *Rhomboid,* is that which has its opposite sides parallel (fig. 15). A *Trapezoid* is that which has only two of its opposite sides parallel (fig. 16).

Fig. 12.

Fig. 13.

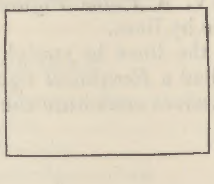


Fig. 14.

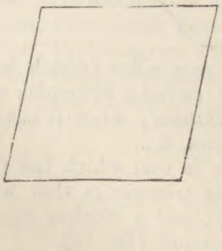


Fig. 15.

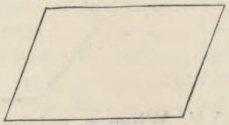
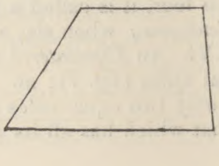


Fig. 16.



XX. A *Diagonal* is a straight line which joins the vertices of two angles, which are not adjacent to each other, such as AC in fig. 42.

XXI. An *Equilateral Polygon* is that which has all its sides equal; and an *Equiangular Polygon* is that which has all its angles equal. If a polygon be both equilateral and equiangular, it is called a *Regular Polygon.*

XXII. Two polygons are *equilateral* between themselves when the sides of the one are equal to the sides of the other, each to each, and in the same order; that is, when in going about each of the figures in the same direction, the first side of the one is equal to the first side of the other; the second side of the one is equal to the second side of the other; the third to the third, and so on. The same is to be understood of two polygons which are *equiangular* between themselves.

Explanation of Terms.

An *Axiom* is a proposition the truth of which is evident at first sight.

A *Theorem* is a truth which becomes evident by a process of reasoning called *Demonstration.*

A *Problem* is a question proposed, which requires a solution.

A *Lemma* is a subsidiary truth employed in the demonstration of a theorem, or the solution of a problem.

The common name, *Proposition,* is given indifferently to theorems, problems, and lemmas.

A *Corollary* is a consequence which follows from one or several propositions.

A *Scholium* is a remark upon one or more propositions that have gone before, tending to show their connection, their restriction, their extension, or the manner of their application.

A *Hypothesis* is a supposition made either in the enunciation of a proposition, or in the course of a demonstration.

Explanation of Signs.

That the demonstrations may be more concise, we shall make use of the following signs borrowed from algebra; and in employing them we shall take for granted that the reader is acquainted with at least the notation and first principles of that branch of mathematics.

To express that two quantities are equal, the sign $=$ is put between them; thus $A = B$ signifies that the quantity denoted by A is equal to the quantity denoted by B.

To express that A is less than B they are written thus, $A < B$.

To express that A is greater than B they are written thus, $A > B$.

The sign $+$ (read *plus*) written between the letters which denote two quantities, indicates that the quantities are to be added together; thus $A + B$ means the sum of the quantities A and B.

The sign $-$ (read *minus*) written between two letters means the excess of the one quantity above the other; thus $A - B$ means the excess of the quantity denoted by A above the quantity denoted by B. The signs $+$ and $-$ will sometimes occur in the same expression; thus $A + C - D$ means that D is to be subtracted from the sum of A and C; also $A - D + C$ means the same thing.

The sign $\times$ put between two quantities means their product if they be considered as numbers; but if they be considered as lines, it signifies a rectangle having these lines for its length and breadth; thus $A \times B$ means the product of two numbers A and B; or else a rectangle having A and B for the sides about one of its right angles. We shall likewise indicate the product of two quantities, in some cases, by writing the letters close together; thus mA will be used to express the product of m and A, and so on with other expressions, agreeably to the common notation in algebra.

The expression A^2 means the square of the quantity A, and A^3 means the cube of A; also PQ^2 and PQ^3 mean, the one the square, and the other the cube, of a line whose extremities are the points P and Q.

On the other hand, the sign $\surd$ indicates a root to be extracted; thus $\sqrt{A \times B}$ means the square root of the product of A and B.

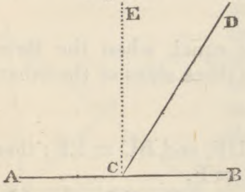
Axioms.

1. Two quantities, each of which is equal to a third, are equal to one another.
2. The whole is greater than its part.
3. The whole is equal to the sum of all its parts.
4. Only one straight line can be drawn between two points.
5. Two magnitudes, whether they be lines, surfaces, or solids, are equal, when, being applied the one to the other, they coincide with one another entirely, that is, when they exactly fill the same space.
6. All right angles are equal to one another.

Note.—The references are to be understood thus: (7) refers to the seventh proposition of the section in which it occurs; (4, 2) means the fourth proposition of the second section; (2 Cor. 28, 4) means the second corollary to the twenty-eighth proposition of the fourth section.

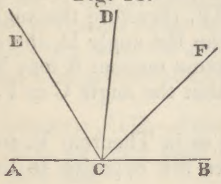
Theorem I.—A straight line CD, which meets with another AB, makes with it two adjacent angles, which, taken together, are equal to two right angles.

Fig. 17.



At the point C let CE be perpendicular to AB. The angle ACD is the sum of the angles ACE, ECD; therefore ACD + BCD is the sum of the three angles ACE, ECD, BCD. The first of these is a right angle, and the two others are together equal to a right angle; therefore the sum of the two angles ACD, BCD, is equal to two right angles.

Fig. 18.

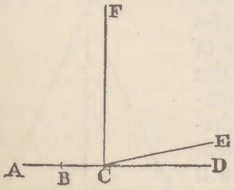


Cor. 1. If one of the angles is a right angle, the other is also a right angle.

Cor. 2. All the angles ACE, ECD, DCF, FCB, at the same point C, on the same side of the line AB, are, taken together, equal to two right angles. For their sum is equal to the two angles ACD, DCB.

Theorem II.—Two straight lines which coincide with each other in two points, also coincide in all their extent, and form but one and the same straight line.

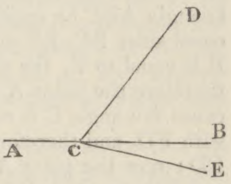
Fig. 19.



Let the points which are common to the two lines be A and B; in the first place it is evident that they must coincide entirely between A and B; otherwise two straight lines could be drawn from A to B, which is impossible (Axiom 4). Now let us suppose, if possible, that the lines when produced separate from each other at a point C, the one becoming ACD, and the other ACE. At the point C let CF be drawn, so as to make the angle ACF a right angle; then ACE being a straight line, the angle FCE is a right angle (1 Cor. 1); and because ACD is a straight line, the angle FCD is also a right angle, therefore the angle FCE is equal to FCD, a part to the whole, which is impossible; therefore the straight lines which have the common points A, B cannot separate when produced, therefore they must form one and the same straight line.

Theorem III.—If two adjacent angles ACD, DCB make together two right angles; the two exterior lines AC, CB, which form these angles, are in the same straight line.

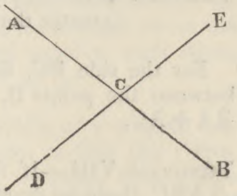
Fig. 20.



For if CB is not the line AC produced, let CE be that line produced, then, ACE being a straight line, the angles ACD, DCE are together equal to two right angles (1); but, by hypothesis, the angles ACD, DCB are together equal to two right angles; therefore ACD + DCB = ACD + DCE. From these equals take away the common angle ACD, and the remaining angles DCB, DCE are equal, that is, a part equal to the whole, which is impossible; therefore CB is the line AC produced.

Theorem IV.—If two straight lines AB, DE cut each other; the vertical or opposite angles are equal.

Fig. 21.



For since DE is a straight line, the sum of the angles ACD, ACE is equal to two right angles (1); and since AB is a straight line, the sum of the angles ACE, BCE is equal to two right angles; therefore the sum ACD + ACE is equal to the sum ACE + BCE. From each of these take away the same angle ACE, and there remains the angle ACD equal to its opposite angle BCE.

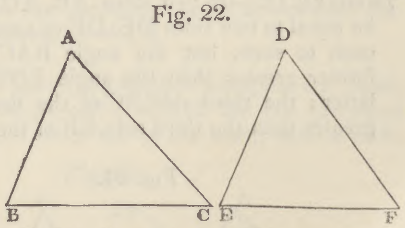
In like manner it may be demonstrated, that the angle ACE is equal to its opposite angle BCD.

Cor. 1. From this it appears, that if two straight lines cut one another, the angles they make at the point of their intersection are together equal to four right angles.

Cor. 2. And hence all the angles made by any number of lines meeting in one point are together equal to four right angles.

Theorem V.—Two triangles are equal when they have an angle, and the two sides containing it of the one, equal to an angle, and the two sides containing it of the other, each to each.

Fig. 22.



Let the triangles ABC, DEF have the angle A equal to the angle D, the side AB equal to DE, and the side AC equal to DF; the triangles shall be equal. For if the triangle ABC be applied to the triangle DEF, so that the point A may be on D, and the line AB upon DE, then the point B shall coincide with E, because AB = DE; and the line AC shall coincide with DF, because the angle BAC is equal to EDF; and the point C shall coincide with F, because AC = DF; and since B coincides with E, and C with F, the line BC shall coincide with EF, and

Lines and Figures upon a Plane.

the two triangles shall coincide exactly, the one with the other; therefore they are equal (Ax. 5).

Cor. Hence it follows that the bases, or third sides BC, EF of the triangles are equal; and the remaining angles B, C of the one are equal to the remaining angles E, F of the other, each to each, namely, those to which the equal sides are opposite.

Theorem VI.—Two triangles are equal, when they have a side, and the two adjacent angles of the one equal to a side, and the two adjacent angles of the other, each to each. (See fig. 22.)

Let the side BC be equal to the side EF, the angle B to the angle E, and the angle C to the angle F; the triangle ABC shall be equal to the triangle DEF. For if the triangle ABC be applied to the triangle DEF, so that the equal sides BC, EF may coincide, then, because the angle B is equal to E, the side BA shall coincide with ED, and therefore the point A shall be somewhere in ED; and because the angle C is equal to F, the side CA shall coincide with FD, and therefore the point A shall be somewhere in FD; now the point A being somewhere in the lines ED and FD, it can only be at D their intersection; therefore the two triangles ABC, DEF must entirely coincide, and be equal to one another.

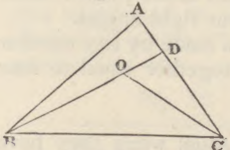
Cor. Hence it appears that the remaining angles A, D of the triangles are equal; and the remaining sides AB, AC of the one are equal to the remaining sides DE, DF of the other, each to each, viz. those to which the equal angles are opposite.

Theorem VII.—Any two sides of a triangle are together greater than the third. (Fig. 22.)

For the side BC, for example, being the shortest way between the points B, C (Def. 4), it must be less than $BA + AC$.

Theorem VIII.—If from a point O, within a triangle ABC, there be drawn straight lines OB, OC to the extremities of BC, one of its sides; the sum of these lines shall be less than that of AB, AC, the two other sides.

Fig. 23.

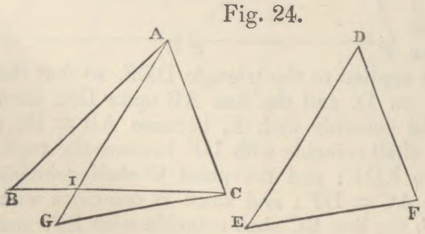


Let BO be produced to meet CA in D; because the straight line OC is less than $OD + DC$, to each of these add BO, and $BO + OC \angle BO + OD + DC$; that is, $BO + OC \angle BD + DC$.

Again, since $BD \angle BA + AD$, to each of these add DC, and we have $BD + DC \angle BA + AC$; but it has been shown that $BO + OC \angle BD + DC$, much more then is $BO + OC \angle BA + AC$.

Theorem IX.—If two sides AB, AC of a triangle ABC be equal to two sides DE, DF of another triangle DEF, each to each, but the angle BAC contained by the former greater than the angle EDF contained by the latter; the third side BC of the first triangle shall be greater than the third side EF of the second.

Fig. 24.

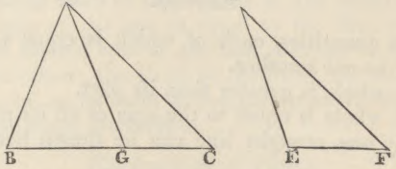


Suppose AG drawn so that the angle CAG $= D$, take $AG = DE$ and join CG; then the triangle GAC is equal to the triangle EDF (5), and therefore $GC = EF$. Now there may be three cases, according as the point G falls without the triangle BAC, fig. 24, or on the side BC, fig. 25, or within the same triangle, fig. 26.

Lines and Figures upon a Plane.

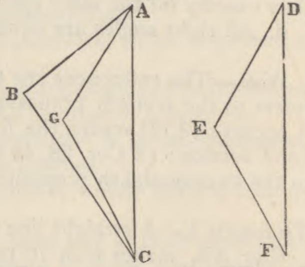
Case I. Because $GC \angle GI + IC$, and $AB \angle AI + IB$ (7), therefore $GC + AB \angle GI + AI + IC + IB$, that is, $GC + AB \angle AG + BC$; from each of these unequal quantities take away the equal quantities AB, AG, and there remains $GC \angle BC$, therefore $EF \angle BC$.

Fig. 25.



Case II. If the point G fall upon the side BC, then it is evident that GC, or its equal EF, is less than BC.

Fig. 26.



Case III. Lastly, if the point G fall within the triangle BAC, then $AG + GC \angle AB + BC$ (8), therefore, taking away the equal quantities AG, AB, there remains $GC \angle BC$ or $EF \angle BC$.

Cor. Hence, conversely, if EF be less than BC, the angle EDF is less than BAC; for the angle EDF cannot be equal to BAC, because then (5), EF would be equal to BC; neither can the angle EDF be greater than BAC, for then (by the Theor.) EF would be greater than BC.

Theorem X.—Two triangles are equal, when the three sides of the one are equal to the three sides of the other, each to each. (Fig. 22.)

Let the side $AB = DE$, $AC = DF$, and $BC = EF$; then shall the angle $A = D$, $B = E$, $C = F$.

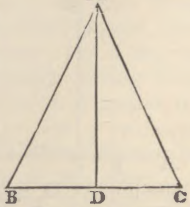
For if the angle A were greater than D; since the sides AB, AC are equal to DE, DF, each to each, it would follow (9), that BC would be greater than EF; and if the angle A were less than the angle D, then BC would be less than EF; but BC is equal to EF, therefore the angle A can neither be greater nor less than the angle D, therefore it must be equal to it. In the same manner it may be proved that the angle $B = E$, and that the angle $C = F$.

Scholium. It may be remarked, as in Theorem V. and Theorem VI. that the equal angles are opposite to the equal sides.

Theorem XI.—In an isosceles triangle, the angles opposite to the equal sides are equal to one another.

Let the side $AB = AC$, then shall the angle $C = B$

Fig. 27.



Suppose a straight line drawn from A the *vertex* of the triangle, to D the middle of its base; the two triangles ABD, ACD have the three sides of the one equal to the three sides of the other, each to each, namely, AD common to both, $AB = AC$ by hypothesis, and $BD = DC$ by construction, therefore (preced. Theor.) the angle B is equal to the angle C.

Cor. Hence, every equilateral triangle is also equiangular.

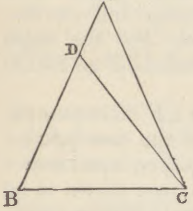
Scholium. From the equality of the triangles ABD, ACD, it follows that the angle BAD = DAC, and that the angle BDA = ADC; therefore these two last are right angles. Hence it appears that a straight line drawn from the vertex of an isosceles triangle to the middle of its base is perpendicular to that base, and divides the vertical angle into two equal parts.

In a triangle that is not isosceles, any one of its three sides may be taken indifferently for a *base;* and then its *vertex* is that of the opposite angle. In an isosceles triangle, the base is that side which is not equal to one of the others.

Theorem XII.—If two angles of a triangle be equal; the opposite sides are equal, and the triangle is isosceles.

Let the angle ABC = ACB; the side AC shall be equal to the side AB. For if the sides are not equal, let AB be the greater of the two; take BD = AC, and join CD; the angle DBC is by hypothesis equal to ACB, and the two sides DB, BC are equal to the two sides AC, BC, each to each; therefore the triangle DBC is equal to the triangle ACB (5); but a part cannot be equal to the whole; therefore the sides AB, AC cannot be unequal, that is, they are equal, and the triangle is isosceles.

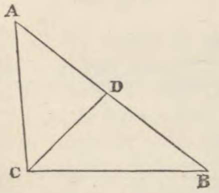
Fig. 28.



Theorem XIII.—Of the two sides of a triangle, that is the greater which is opposite to the greater angle; and conversely, of the two angles of a triangle, that is the greater which is opposite to the greater side.

First, let the angle C $>$ B; then shall the side AB opposite to C be greater than the side AC opposite to B. Suppose CD drawn, so that the angle BCD = B; in the triangle BDC, BD is equal to DC (12); but AD + DC $>$ AC, and AD + DC = AD + DB = AB, therefore AB $>$ AC.

Fig. 29.

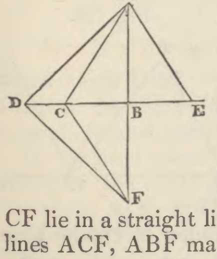


Next, let the side AB $>$ AC; then shall the angle C opposite to AB, be greater than the angle B, opposite to AC. For if C were less than B, then, by what has been demonstrated, AB $<$ AC, which is contrary to the hypothesis of the proposition, therefore C is not less than B; and if C were equal to B, then it would follow that AC = AB (12), which is also contrary to the hypothesis; therefore C is greater than B.

Theorem XIV.—From a point A without a straight line DE, no more than one perpendicular can be drawn to that line.

For suppose it possible to draw two, AB and AC; produce one of them AB, so that BF = AB, and join CF. The triangle CBF is equal to the triangle ABC, for the angle CBF is a right angle, as well as CBA, and the side BF = BA; therefore the triangles are equal (5), and hence the angle BCF = BCA; but the angle BCA is by hypothesis a right angle; therefore the angle BCF is also a right angle; hence AC and CF lie in a straight line (3), and consequently two straight lines ACF, ABF may be drawn between two points A, F, which is impossible (Axiom 4); therefore it is equally impossible that two perpendiculars can be drawn from the same point to the same straight line.

Fig. 30.



Theorem XV.—If from a point A, without a straight line DE, a perpendicular AB be drawn upon that line, and also different oblique lines AE, AC, AD, &c. to different points of the same line.

First, The perpendicular AB shall be shorter than any one of the oblique lines.

Secondly, The two oblique lines AC, AE, which meet the line DE on opposite sides of the perpendicular, and at equal distances BC, BE from it, are equal to one another.

Lastly, Of any two oblique lines AC, AD, or AE, AD, that which is more remote from the perpendicular is the greater.

Produce the perpendicular AB, so that BF = BA, and join FC, FD.

1. The triangle BCF is equal to the triangle BCA; for the right angle CBF = CBA, the side CB is common, and the side BF = BA, therefore the third side CF = AC (5); but AF $<$ AC + CF (7), that is, 2AB $<$ 2AC; therefore AB $<$ AC; that is, the perpendicular is shorter than any one of the oblique lines.

2. If BE = BC, then, as AB is common to the two triangles ABE, ABC, and the right angle ABE = ABC, the triangles ABE, ABC shall be equal (5), and AE = AC.

3. In the triangle DFA, the sum of the lines AD, DF is greater than the sum of AC, CF (8), that is, 2AD $>$ 2AC; therefore AD $>$ AC, that is, the oblique line, which is more remote from the perpendicular, is greater than that which is nearer.

Cor. 1. The perpendicular measures the distance of any point from a straight line.

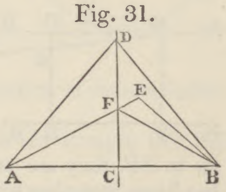
Cor. 2. From the same point three equal straight lines cannot be drawn to terminate in the same straight line; for if they could be drawn, then two of them would be on the same side of the perpendicular, and equal to each other, which is impossible.

Theorem XVI.—If from C, the middle of a straight line AB, a perpendicular CD be drawn to that line; first, every point in the perpendicular is equally distant from the extremities of the line AB; secondly, every point without the perpendicular is at unequal distances from the same extremities A, B.

1. Let D be any point in CD; then, because the two oblique lines DA, DB are equally distant from the perpendicular, they are equal to one another (15); therefore every point in CD is equally distant from the extremities of AB.

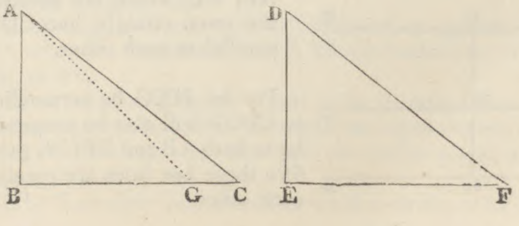
2. Let E be a point out of the perpendicular; join EA, EB; one of these lines must cut the perpendicular in F; join BF, then AF = BF, and AE = BF + FE; but BF + FE $>$ BE (7), therefore AE $>$ BE, that is, E any point out of the perpendicular is at unequal distances from the extremities of AB.

Fig. 31.



Theorem XVII.—Two right-angled triangles are equal, when the hypothenuse and a side of the one are equal to the hypothenuse and a side of the other, each to each.

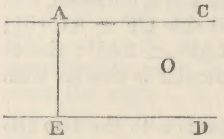
Fig. 32.



Let the hypothenuse $AC = DF$, and the side $AB = DE$; the triangle ABC shall be equal to DEF. The proposition will evidently be true (10), if the remaining sides BC, EF are equal. Now, if it be possible to suppose that they are unequal, let BC be the greater, take $BG = EF$, and join AG; then the triangles ABG, DEF, having the side $AB = DE$, $BG = EF$, and the angle $B = E$, will be equal to one another (5), and will have the remaining side $AG = DF$; but by hypothesis $DF = AC$; therefore $AG = AC$; but AG cannot be equal to AC (15), therefore it is impossible that BC can be unequal to EF, and therefore the triangles ABC, DEF, are equal to one another.

Theorem XVIII.—Two straight lines AC, ED, which are perpendicular to a third straight line AE, are parallel to each other.

Fig. 33.



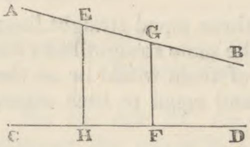
For if they could meet at a point O, then two perpendiculars OA, OE, might be drawn from the same point O, to the straight line AE, which is impossible (14).

In the next theorem, it is necessary to assume another axiom, in addition to those already laid down in the beginning of this section.

Axiom 7.

If two points E, G in a straight line AB are situated at unequal distances EH, GF from another straight line CD in the same plane; these two lines, when indefinitely produced, on the side of the least distance GH, will meet each other.

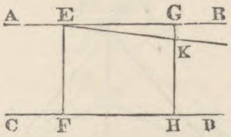
Fig. 34.



Theorem XIX.—If two straight lines AB, CD be parallel; perpendiculars EF, GH to one of the lines, which are terminated by the other line, are equal, and are perpendicular to both the parallels.

For if EF and GH, which are perpendicular to CD, were unequal, the lines AB, CD would meet each other (by the above axiom), which is contrary to the supposition that they are parallel. And if EF, GH be not perpendicular to AB, let EK be perpendicular to EF, meeting GH in K; then, because EK and FH are perpendicular to EF, they are parallel (18); and therefore, by what has been just shown, the perpendiculars EF, KH must be equal; but by hypothesis $EF = GH$, therefore $KH = GH$, which is impossible; therefore EF is perpendicular to AB; and in the same way it may be shown that GH is perpendicular to AB.

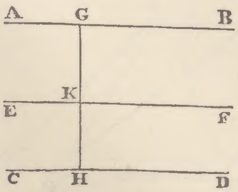
Fig. 35.



Cor. Hence it appears, that through the same point E, no more than one parallel can be drawn to the same straight line CD.

Theorem XX.—Straight lines AB, EF, which are parallel to the same straight line CD, are parallel to each other.

Fig. 36.

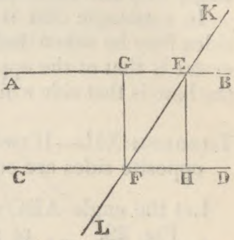


For let HKG be perpendicular to CD, it will also be perpendicular to both AB and EF (19); therefore these last lines are parallel to each other.

Theorem XXI.—If a straight line EF meet two parallel straight lines AB, CD; it makes the alternate angles AEF, EFD equal.

Let EH and GF be perpendicular to CD, then these lines will be parallel (18), and also at right angles to AB (19), and therefore FH and GE are equal to one another (19); therefore the triangles FGE, FHE, having the side $FG = HE$, and $GE = FH$, and FE common to both, will be equal; and hence the angle FEG will be equal to EFH, that is, FEA, will be equal to EFD.

Fig. 37.



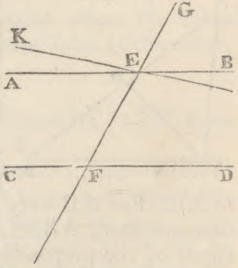
Cor. 1. Hence if a straight line KL intersect two parallel straight lines AB, CD; it makes the exterior angle KEB equal to the interior and opposite angle EFD on the same side of the line. For the angle $AEF = KEB$, and it has been shown that $AEF = EFD$; therefore $KEB = EFD$.

Cor. 2. Hence also, if a straight line EF meet two parallel straight lines AB, CD; it makes the two interior angles BEF, EFD on the same side together, equal to two right angles. For the angle AEF has been shown to be equal to EFD; therefore, adding the angle FEB to both, $AEF + FEB = EFD + FEB$; but $AEF + FEB$ is equal to two right angles, therefore the sum $EFD + FEB$ is also equal to two right angles.

Theorem XXII.—If a straight line EF, meeting two other straight lines AB, CD, makes the alternate angles AEF, EFD equal; those lines shall be parallel.

For if AE is not parallel to CD, suppose, if possible, that some other line KE can be drawn through E, parallel to CD; then the angle KEF must be equal to EFD (21), that is (by hypothesis), to AEF, which is impossible; therefore, neither KE, nor any other line drawn through E, except AB, can be parallel to CD.

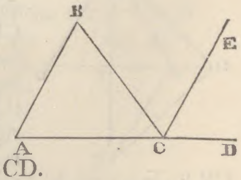
Fig. 38.



Cor. If a straight line EF intersecting two other straight lines AB, CD, makes the exterior angle GEB equal to the interior and opposite angle EFD on the same side; or the two interior angles BEF, EFD on the same side equal to two right angles; in either case the lines are parallel. For if the angle $GEB = EFD$, then also $AEF = EFD$ (4). And if $BEF + EFD =$ two right angles, then, because $BEF + AEF =$ two right angles (1), $BEF + EFD = BEF + AEF$, and taking BEF from both, $EFD = AEF$, therefore (by the theorem) in each case the lines are parallel.

Theorem XXIII.—If a side AC of a triangle ABC be produced towards D; the exterior angle BCD is equal to both the interior and opposite angles BAC, ABC.

Fig. 39.

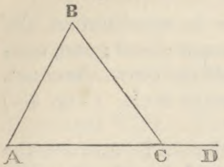


Let CE be parallel to AB, then the angle $B = BCE$ (21), and the angle $A = ECD$ (1 Cor. 21), therefore $B + A = BCE + ECD = BCD$.

Cor. The exterior angle of a triangle is greater than either of the interior opposite angles.

Theorem XXIV.—The three interior angles of a triangle ABC taken together are equal to two right angles.

Fig. 40.



For if AC be produced to D, then $A + B = BCD$, (23); to each of these equal quantities add ACB, then shall $A + B + ACB = BCD + BCA$; but $BCD + BCA =$ two right angles (1), therefore $A + B + ACB =$ two right angles.

Cor. 1. If two angles of one triangle be equal to two angles of another triangle, each to each; the third angle of the one shall be equal to the third angle of the other, and the triangles shall be equiangular.

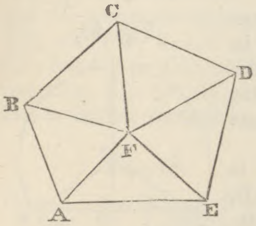
Cor. 2. If two angles of a triangle, or their sum, be given, the third angle may be found, by subtracting their sum from two right angles.

Cor. 3. In a right-angled triangle, the sum of the two acute angles is equal to a right angle.

Cor. 4. In an equilateral triangle, each of the angles is equal to the third part of two right angles, or to two thirds of one right angle.

Theorem XXV.—The sum of all the interior angles of a polygon is equal to twice as many right angles, wanting four, as the figure has sides.

Fig. 41.

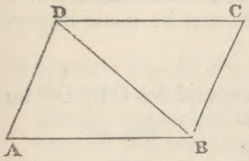


Let ABCDE be a polygon; from a point F within it draw straight lines to all its angles, then the polygon shall be divided into as many triangles as it has sides; but the sum of the angles of each triangle is equal to two right angles (24); therefore, the sum of all the angles of the triangles is equal to twice as many right angles as there are triangles, that is, as the figure has sides; but the sum of all the angles of the triangles is equal to the sum of all the angles of the polygon, together with the sum of the angles at the point F, which last sum is equal to four right angles (2 Cor. 4); therefore the sum of all the angles of the polygon, together with four right angles, is equal to twice as many right angles as the figure has sides, and consequently the sum of the angles of the polygon is equal to twice as many right angles, wanting four, as the figure has sides.

Cor. The four interior angles of a quadrilateral are, taken together, equal to four right angles.

Theorem XXVI.—The opposite sides of a parallelogram are equal, and the opposite angles are also equal.

Fig. 42.



Draw the diagonal BD; the two triangles ADB, DBC have the side BD common to both, and AB, DC being parallel, the angle $ABD = BDC$ (21), also, AD, BC being parallel, the angle $ADB = DBC$; therefore the two triangles are equal (6), and the side AB, opposite to the angle ADB, is equal to DC, opposite to the equal angle DBC. In like manner the third side AD is equal to the third side BC, therefore the opposite sides of a parallelogram are equal.

In the next place, because of the equality of the same triangles, the angle A is equal to the angle C, and also the angle ADC composed of the two angles ADB, BDC is equal to the angle ABC composed of the angles CBD, DBA; therefore the opposite angles of a parallelogram are also equal.

Theorem XXVII.—If the opposite sides of a quadrilateral ABCD be equal, so that $AB = DC$, and $AD = BC$; then, the equal sides are parallel, and the figure is a parallelogram. (Fig. 42.)

Draw the diagonal BD. The two triangles ABD, CDB have the three sides of the one equal to the three sides of the other, each to each, therefore the triangles are equal (10); and the angle ADB, opposite to AB, is equal to DBC opposite to DC; therefore the side AD is parallel to BC (22). For a similar reason AB is parallel to DC; therefore the quadrilateral ABCD is a parallelogram.

Theorem XXVIII.—If two opposite sides AB, DC of a quadrilateral be equal and parallel; the two other sides are in like manner equal and parallel; and the figure is a parallelogram. (Fig. 42.)

Draw the diagonal BD. Because AB is parallel to CD, the alternate angles ABD, BDC are equal (21); now the side $AB = DC$, and DB is common to the triangles ABD, BDC, therefore these triangles are equal (5), and hence the side $AD = BC$, and the angle $ADB = DBC$, consequently AD is parallel to BC (22), therefore the figure ABCD is a parallelogram.

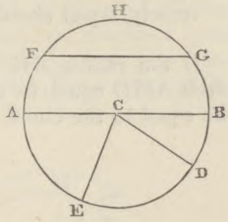
SECT. II.—OF THE CIRCLE.

Definitions.

I. A *Circle* is a plane figure contained by one line, which is called the *circumference*, and is such that all straight lines drawn from a certain point within the figure to the circumference are equal to one another.

And this point is called the *centre* of the circle.

Fig. 43.



II. Every straight line CA, CE, CD, &c. drawn from the centre to the circumference, is called a *Radius* or *Semidiameter;* and every straight line, such as AB, which passes through the centre, and is terminated both ways by the circumference, is called a *Diameter.*

Hence it follows that all the radii of a circle are equal, and all the diameters are also equal, each being the double of the radius.

III. An *Arch* of a circle is any portion of its circumference, as FHG.

The *chord* or *subtense* of an arch is the straight line FG which joins its extremities.

IV. A *Segment* of a circle is the figure contained by an arch and its chord. If the figure be the half of the circle it is called a *Semicircle.*

Note. Every chord corresponds to two arches, and consequently to two segments; but in speaking of these, it is always the smallest that is meant, unless the contrary be expressed.

V. A *Sector* of a circle is the figure contained by an arch DE and the two radii CD, CE, drawn to the extremities of the arch. If the radii be at right angles to each other, it is called a *Quadrant.*

VI. A straight line is said to be *placed,* or *applied,* in a circle, when its extremities are in the circumference of the circle, as FG.

VII. A rectilineal figure is said to be *inscribed* in a circle, when the vertices of all its angles are upon the circumference of the circle; in this case, the circle is said to be *circumscribed* about the figure.

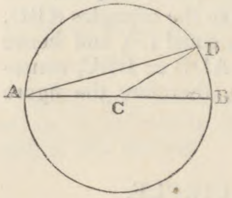
VIII. A straight line is said to *touch* a circle, or to be a *tangent* to a circle, when it meets the circumference in one point only; such, for example, is BD, fig. 49. The point A, which is common to the straight line and circle, is called *the Point of Contact.*

IX. A polygon is said to be *described* or *circumscribed* about a circle, when all its sides are tangents to the circle; and in this case, the circle is said to be *inscribed* in the polygon.

THEOREM I.—Any diameter AB divides the circle, and its circumference, into two equal parts. (Fig. 43.)

For if the figure AEB be applied to AFB, so that the base AB may be common to both, the curve line AEB must fall exactly upon the curve line AFB; otherwise there would be points in the one, or the other, unequally distant from the centre, which is contrary to the definition of a circle.

Fig. 44.



THEOREM II.—Every chord is less than the diameter.

Let the radii CA, CD be drawn from the centre to the extremities of the chord AD; then the straight line AD is less than AC + CD, that is, AD $\angle$ AB.

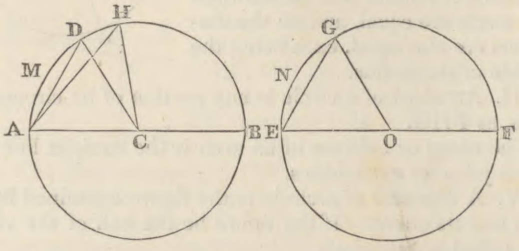
THEOREM III.—A straight line cannot meet the circumference of a circle in more than two points.

For if it could meet it in three, these three points would be equally distant from the centre, and therefore three equal straight lines might be drawn from the same point to the same straight line, which is impossible (2 Cor. 15, 1).

THEOREM IV.—In the same circle, or in equal circles, equal arches are subtended by equal chords; and, conversely, equal chords subtend equal arches.

If the radius AC be equal to the radius EO, and the arch AMD equal to the arch ENG; the chord AD shall be equal to the chord EG.

Fig. 45.



For the diameter AB being equal to the diameter EF, the semicircle AMDB may be applied exactly upon the semicircle ENGF, and then the curve line AMDB shall coincide entirely with the curve line ENGF; but the arch AMD being supposed equal to ENG, the point D must fall upon G, therefore the chord AD is equal to the chord EG.

Conversely, if the chord AD = EG, the arch AMD is equal to the arch ENG.

For if the radii CD, OG be drawn, the two triangles ACD, EOG have three sides of the one equal to the three sides of the other, each to each, viz. AC=EO, CD=OG, and AD=EG; therefore, these triangles are equal (10, 1), and hence the angle ACD = EOG. Now, if the semicircle ADB be placed upon EGF, because the angle ACD = EOG, it is evident that the radius CD will fall upon the radius OG, and the point D upon G; therefore the arch AMD is equal to the arch ENG.

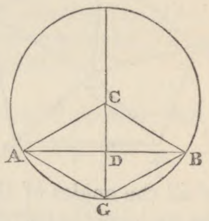
THEOREM V.—In the same circle, or in equal circles, the greater arch is subtended by the greater chord; and, conversely (if the arch be less than half the circumference), the greater chord subtends the greater arch. (Fig. 45.)

For let the arch AH be greater than AD, and let the chords AD, AH, and the radii CD, CH, be drawn. The two sides AC, CH, of the triangle ACH, are equal to the two sides AC, CD of the triangle ACD; and the angle ACH is greater than ACD; therefore the third side AH is greater than the third side AD (9, 1), therefore the chord which subtends the greater arch is the greater. Conversely, if the chord AH be greater than AD, it may be inferred (Cor. 9, 1) from the same triangles, that the angle ACH is greater than ACD, and that thus the arch AH is greater than AD.

Note. Each of the arches is here supposed less than half the circumference; if they were greater, the contrary property would have place, the arch increasing as the chord diminishes.

THEOREM VI.—The radius CG, perpendicular to a chord AB, bisects the chord (or divides it into two equal parts); it also bisects the arch AGB subtended by the chord.

Fig. 46.



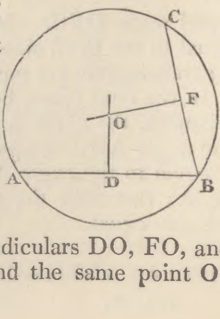
Draw the radii CA, CB; these radii are two equal oblique lines in respect of the perpendicular CD, therefore they are equally distant from the perpendicular (15, 1), that is, AD = DB.

In the next place, because CG is perpendicular to the middle of AB, every point in CG is at equal distances from A and B (16, 1), therefore, if GA, GB be drawn, these lines are equal, and as they are the chords of the arches AG, BG, the arches are also equal (4).

SCHOLIUM. Since C the centre, D the middle of the chord AB, and G the middle of the arch subtended by that chord, are three points situated in the same straight line perpendicular to that chord; and that two points in a straight line are sufficient to determine its position; it follows that a straight line which passes through any two of these points must necessarily pass through the third, and must be perpendicular to the chord. It also follows, that a perpendicular to the middle of a chord passes through the centre, and the middle of the arch subtended by that chord.

THEOREM VII.—If three points A, B, C be taken in the circumference of a circle; no other circumference which does not coincide with the former can be made to pass through the same three points.

Fig. 47.



Let the chords AB, BC be drawn, and let OD, OF be drawn from the centre, perpendicular to, and consequently bisecting these chords. The centre of every circle passing through A and B, must necessarily be somewhere in the perpendicular DO (last theor.), and in like manner the centre of every circle passing through B and C must be somewhere in the perpendicular OF; therefore the centre of a circle passing through A, B, and C, must be in the intersection of the perpendiculars DO, FO, and consequently can only be at one and the same point O;

Lines and Figures upon a Plane.

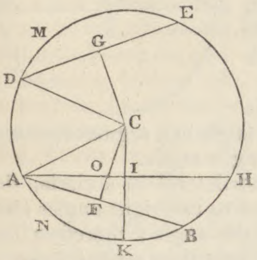
therefore, only one circle can be made to pass through the same three points A, B, C.

Cor. One circumference of a circle cannot intersect another in more than two points; for if they could have three common points, they would have the same centre, and consequently would coincide with each other.

Theorem VIII.—Two equal chords are equally distant from the centre; and of unequal chords, the less is farther from the centre.

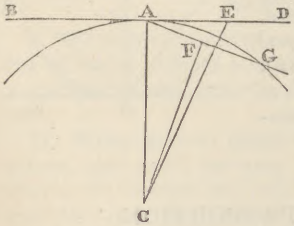
Let the chord AB = DE; suppose the chords bisected by the perpendiculars CF, CG from the centre, and draw the radii CA, CD. The right angled triangles CAF, CDG have equal hypothenuses CA, CD; the side AF ($= \frac{1}{2}$ AB) of the one is also equal to the side DG ($= \frac{1}{2}$ DE) of the other, therefore, their remaining sides CF, CG (which are the distances of the chords from the centre) are equal (17, 1).

Fig. 48.



Next, let the chord AH be greater than DE; the arch AKH shall be greater than DME; upon the arch AKH take ANB equal to DME, draw the chord AB, and suppose COF drawn from the centre perpendicular to AB, and CI perpendicular to AH. It is evident that CF $>$ CO, and (15, 1) CO $>$ CI; much more then is CF $>$ CI; but CF = CG, because the chords AB, DE are equal; therefore CG $>$ CI; that is, of the unequal chords, the less is farther from the centre.

Fig. 49.



Theorem IX.—The perpendicular BD, drawn at the extremity of a radius CA, is a tangent to the circle.

For any oblique line CE is greater than the perpendicular CA (15, 1), therefore the point E is without the circle; therefore the line BD has but one point A common with the circumference, and consequently it is a tangent to the circle. (Def. 8.)

Scholium. Through the same point A, only one tangent, AD, can be drawn to the circle. For if it be possible to draw another, let AG be that other tangent; draw CF perpendicular to AG; then CF shall be less than CA (15, 1), therefore F must be within the circle; and consequently AF when produced must necessarily meet the circle in another point besides A; therefore it cannot be a tangent.

Theorem X.—If BC, the distance of the centres of two circles, be less than the sum of their radii, and also the greater radius less than the sum of the distance of their centres and the lesser radius, the two circles intersect each other.

Fig. 50.

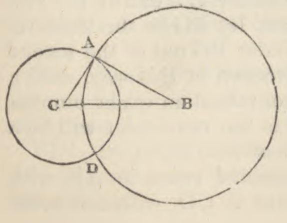
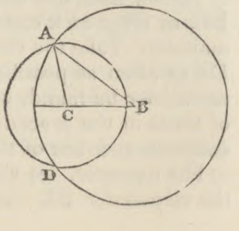


Fig. 51.



For, that the circles may intersect each other in a point A, it is necessary that the triangle ABC be possible; therefore, not only must CB be less than CA + AB, but also the greater radius AB must be less than AC + CB (7, 1); and it is evident, that as often as the triangle ABC can be constructed, the circumferences described on the centres B, C, shall intersect each other in two points A, D.

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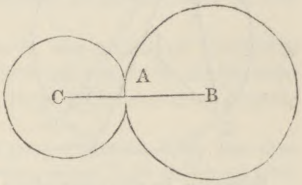
Theorem XI.—If the distance CB of the centres of two circles be equal to the sum of the radii CA, BA; the circles shall touch each other externally.

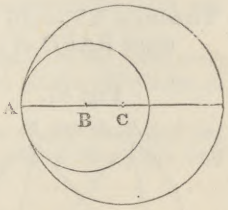
Fig. 52.



It is evident that they have a common point A; but they cannot have more; for if they had two, then the distance of the centres must necessarily be less than the sum of the radii.

Theorem XII.—If the distance CB of the centres of two circles be equal to the difference of the radii; the two circles shall touch each other internally.

Fig. 53.

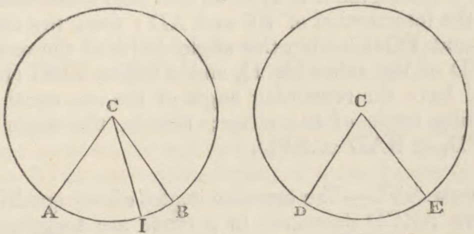


In the first place, it is evident that the point A is common to them both; they cannot, however, have another; for that this may happen, it is necessary that the greater radius AB be smaller than the sum of the radius AC and the distance CB of the centre (10), which is not the case.

Cor. Therefore, if two circles touch each other, either internally or externally, their centres and the point of contact are in the same straight line.

Theorem XIII.—In the same circle, or in equal circles, equal angles ACB, DCE, at the centres, intercept upon the circumference equal arches AB, DE. And, conversely, if the arches AB, DE be equal, the angles ACB, DCE are equal.

Fig. 54.



First, if the angle ACB be equal to DCE, the one angle may be applied upon the other; and as the lines containing them are equal, it is manifest that the point A will fall upon D, and the point B upon E; thus the arch AB will coincide with and be equal to the arch DE.

Next, if the arch AB be equal to DE; the angle ACB is equal to DCE: for if the angles are not equal, let ACB be the greater, and let ACI be taken equal to DCE; then, by what has been already demonstrated, the arch AI = DE; but by hypothesis AB = DE; therefore, AI = AB, which is impossible; therefore the angle ACB = DCE.

Theorem XIV.—The angle BCD at the centre of a circle is double the angle BAD at the circumference, when both stand on the same arch BD.

First, let the centre of the circle be within the angle

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BAD; draw the diameter AE. The exterior angle BCE of the triangle BCA is equal to both the inward and opposite angles BAC, CBA (23, 1); but the triangle BCA being isosceles, the angle BAC = CBA; therefore the angle BCE is double of the angle BAC. For the same reason, the angle DCE is double of the angle DAE; therefore the whole angle BCD is double of the whole angle BAD.

Fig. 55.

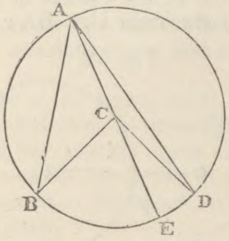
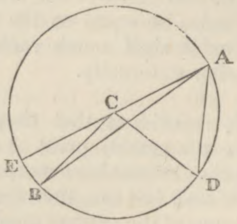


Fig. 56.



Suppose, in the next place, that the centre is without the angle BAD; then, drawing the diameter AE, it may be demonstrated, as in the first case, that the angle ECD is double of the angle EAD, and that the angle ECB, a part of the first, is double the angle EAB, a part of the other; therefore the remaining angle BCD is double the remaining angle BAD.

Theorem XV.—All angles BAD, BFD in the same segment BAFD of a circle are equal to one another.

Fig. 57.

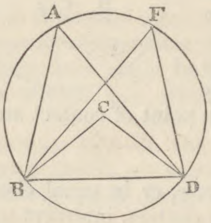
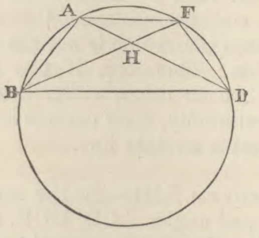


Fig. 58.

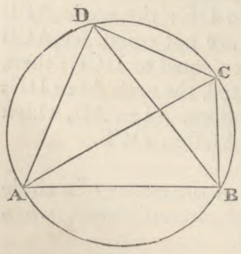


If the segment be greater than a semicircle, from the centre C draw CB and CD; then the angles BAD and BFD being (by last theorem) each equal to half BCD, they must be equal to one another.

But if the segment BAFD be less than a semicircle, let H be the intersection of BF and AD; then, the triangles ABH and FDH having the angle AHB of the one equal to FHD of the other (4, 1), and ABH = FDH (by case 1) will have the remaining angle of the one equal to the remaining angle of the other; that is, the angle BAH = HFD, or BAD = BFD.

Theorem XVI.—The opposite angles of any quadrilateral figure ABCD described in a circle are together equal to two right angles.

Fig. 59.



Draw the diagonals AC, BD; because the angle ABD = ACD, and CBD = CAD (last theor.), the sum ABD + CBD = ACD + CAD; or ABC = ACD + CAD; to each of these equals add ADC, and ABC + ADC = ACD + CAD + ADC; but the last three angles being the angles of the triangle ADC, are taken together equal to two right angles (24, 1), therefore ABC + ADC = two right angles. In the same manner the angles BAD, BCD may be shown to be together equal to two right angles.

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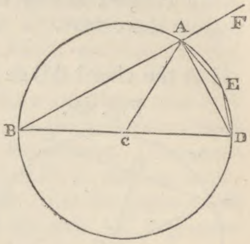
Theorem XVII.—In a circle, the angle BAD in a semicircle is a right angle, but the angle ABD in a segment greater than a semicircle is less than a right angle; and the angle AED in a segment less than a semicircle is greater than a right angle.

Fig. 60.



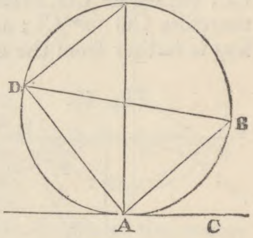
Let C be the centre, join CA, and produce BA to F. Because CB = CA, the angle CAB = CBA (11, 1); and because CD = CA, the angle CAD = CDA, therefore, the whole angle BAD = CBA + CDA; but these two last angles are together equal to DAF (23, 1), therefore the angle BAD = DAF; and hence each of them is a right angle.

And because ABD + ADB is a right angle, therefore ABD, an angle in a segment greater than a semicircle, is less than a right angle.

And because ABDE is a quadrilateral in a circle, the opposite angles B and E are equal to two right angles (last theor.), but B is less than a right angle; therefore the angle E, which is in a segment less than a semicircle, is greater than a right angle.

Theorem XVIII.—The angle BAC contained by AC, a tangent, and AB, a chord drawn from the point of contact, is equal to any angle ADB in the alternate segment of the circle.

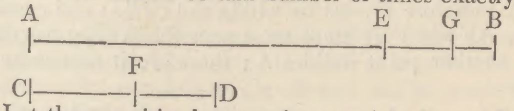
Fig. 61.



Draw the diameter AE, and join DE. The angles EAC, EDA, being right angles (last theor.), are equal to one another; and of these, EAB, a part of the one, is equal to EDB, a part of the other (15), therefore the remainder, BAC, of the former is equal to the remainder, BDA, of the latter.

SECT. III.—OF PROPORTION.

In comparing two quantities of the same kind, in respect of magnitude, we are led to consider how often the one quantity contains either the whole or some part of the other quantity. To resolve this question, we must find a *common measure* of the quantities; that is, a quantity that is contained in each a certain number of times exactly.



Let the quantities be two given straight lines AB, CD; their common measure (if they have one) may be found by proceeding as follows:

Take the less line CD out of the greater AB, as often as possible, and let BE be the remainder. Next take the remainder BE out of the line CD, as often as it can be had, and let DF be the second remainder.

Again, take the second remainder DF out of the first BE, as often as it can be had, and let BG be the third remainder. Take the third remainder BG out of the second DF as often as possible, and proceed in this way, until a remainder be found, which is contained an exact number of times in the preceding. This last remainder will be a common measure of the two lines.

For example, let CD be contained twice in AB, with the remainder BE; and BE once in CD, with a remainder DF; and DF once in BE, with a remainder BG, and let BG be contained twice exactly in DF; then

$$\begin{aligned} DF &= 2\ BG \\ EB &= DF + BG = 3\ BG \\ CD &= EB + DF = 5\ BG \\ AB &= 2\ CD + EB = 13\ BG. \end{aligned}$$

Thus it appears, that BG is contained thirteen times in AB, and five times in CD; therefore BG is a common measure of the two lines. Hence also we see, that the relation which AB bears to CD, in regard to magnitude, consists in the former containing thirteen such parts as the latter contains five.

In this example it has been supposed that a remainder is at last found, which is contained an exact number of times in the remainder immediately preceding. But this will not always happen. If the given lines be the diagonal of a square, and its side, and in innumerable other cases, it may be demonstrated, that no one of the succeeding remainders can be contained an exact number of times in that before it: therefore such quantities cannot have a common measure. Hence quantities are distinguished into two kinds, viz. such as admit of a common measure, and such as do not admit of a common measure. The former are said to be *commensurable*, and the latter *incommensurable.*

The doctrine of proportion, as delivered in the 5th book of Euclid's Elements, applies alike to commensurable and incommensurable quantities; the theory may, however, be rendered considerably easier, by confining it to commensurable quantities. It is this limited view of the subject that is here given. Experience proves that Euclid's fifth book is difficult to be understood by the generality of readers; and this fact may serve as an excuse for deviating, unwillingly, from the illustrious ancient.

DEFINITIONS.

I. When one quantity contains another a certain number of times, without a remainder, the former is said to be a *multiple* of the latter, and the latter a *part* of the former.

II. When several quantities are multiples of as many others, and each contains its part the same number of times, the former are called *equimultiples* of the latter, and the latter *like parts* of the former.

III. Between any two finite magnitudes of the same kind there subsists a certain relation, in respect of quantity, which is called their *ratio.* The two magnitudes compared are called the *terms* of the ratio. The first the *antecedent*, and the last the *consequent.*

IV. If there be four quantities, and if the first contain a part of the second (without a remainder) just as often as the third contains a like part of the fourth, the ratio of the first to the second is said to be equal to the ratio of the third to the fourth; or the first is said to have to the second the same ratio which the third has to the fourth.

V. The terms of any number of equal ratios are called *proportionals.*

> *Note.* When four quantities A, B, C, D, are proportionals, it is usual to say, that A is to B, as C to D, and to write them thus, $A : B :: C : D$; or thus, $A : B = C : D$.

VI. Quantities are said to be continual proportionals when the ratio of the first to the second, of the second to the third, of the third to the fourth, and so on, are all equal.

VII. When three quantities are continual proportionals, the second is said to be a mean proportional between the other two.

VIII. In proportionals, the antecedent terms are called homologous to one another; as also the consequents to one another.

IX. When there is any number of quantities of the same kind, the first is said to have to the last the ratio compounded of the ratio which the first has to the second, and of the ratio which the second has to the third, and of the ratio which the third has to the fourth, and so on, to the last magnitude.

X. If three magnitudes are continual proportionals, the ratio of the first to the third is said to be duplicate of the ratio of the first to the second.

XI. If four magnitudes are continual proportionals, the ratio of the first to the fourth is said to be triplicate of the ratio of the first to the second, or of the ratio of the second to the third, &c.

The following technical words are employed to signify certain ways of changing either the order or magnitude of proportionals, so as that they still continue proportionals.

XII. If four quantities are proportionals, they are said to be proportionals *by inversion*, when it is inferred that the second is to the first, as the fourth to the third.

XIII. They are proportionals by *alternation*, when the first is to the third, as the second to the fourth.

XIV. By *composition*, when the sum of the first and second is to the second, as the sum of the third and fourth to the fourth.

XV. By *division*, when the difference of the first and second is to the second, as the difference of the third and fourth to the fourth.

XVI. By *conversion*, when the first is to the difference of the first and second, as the third to the difference of the third and fourth.

XVII. By *mixing*, when the sum of the first and second is to their difference, as the sum of the third and fourth to their difference.

AXIOMS.

1. Equal quantities have the same ratio to the same quantity, and the same quantity has the same ratio to equal quantities.

2. Quantities having the same ratio to the same quantity, or to equal quantities, are equal among themselves; and those to which the same quantity has the same ratio are equal to one another.

3. Ratios equal to one and the same ratio are also equal one to the other.

THEOREM I.—Quantities have to one another the same ratio which their equimultiples have.

Let A and B be two quantities, and supposing m to denote any number, let mA and mB (that is, m times A and m times B) be any equimultiples of these quantities; the ratio of A to B is equal to the ratio of mA to mB; or $A : B = mA : mB$.

For, let A contain three such parts, each equal to X, as B contains four, so that

$$A = X + X + X;\ B = X + X + X + X.$$

Then $mA = mX + mX + mX$,

$$mB = mX + mX + mX + mX,$$

because a whole taken any number of times, is equal to the sum of its parts taken as often. Now, because A contains the one fourth of B three times, and mA evidently contains one fourth of mB also three times; A contains a part of B exactly as often as mA contains a like part of mB. Therefore (Def. 4), the ratio of A to B is equal to the ratio of mA to mB.

In the same manner, if A and B be supposed any other multiples of X, it may be proved that $A : B = mA : mB$.

COR. Like parts of magnitudes have to each other the same ratio as the whole; for A and B are like parts of mA and mB.

THEOREM II.—If four quantities be proportionals, they are proportionals also when taken inversely.

Let A, B, C, D be four quantities, such, that $A : B = C : D$; then $B : A = D : C$.

For, suppose that C contains two such equal parts as D contains three, then, because the ratio of A to B is equal to the ratio of C to D, A will contain two such parts as B contains three. (Def. 4.) Therefore B will contain three such parts as A contains two; and D will contain three such parts as C contains two. Thus B will contain a part of A as often as D contains a like part of C; therefore the ratio of B to A is equal to the ratio of D to C. (Def. 4.)

THEOREM III.—If four quantities of the same kind be proportionals, they will also be proportionals when taken alternately.

Let $A : B = C : D$, then, if the quantities be all of the same kind, $A : C = B : D$.

For, let C contain three such parts as D contains four; then (Def. 4) A will contain three such parts as B contains four. Let each of the equal parts contained in A and B be X, and let each of the equal parts contained in C and D be Y; then

$$A = 3X \qquad B = 4X$$
$$C = 3Y \qquad D = 4Y.$$

And because A and C contain X and Y the same number of times, A and C are equimultiples of X and Y. (Def. 2.) Also, because B and D contain X and Y the same number of times, B and D are equimultiples of X and Y.

$$\left.\begin{array}{ll}\text{Therefore} & A : C = X : Y \\ \text{And} & B : D = X : Y\end{array}\right\} \text{Prop. I.}$$

$$\text{Hence} \quad A : C = B : D \quad \text{(Axiom 3.)}$$

COR. If the first of four proportionals be greater than the third, the second shall be greater than the fourth; and if the first be equal to the third, the second shall be equal to the fourth; and if the first be less than the third, the second shall be less than the fourth.

THEOREM IV.—If four quantities be proportionals, they shall also be proportionals by composition.

Let $A : B = C : D$; then, by composition, $A + B : B = C + D : D$.

Let C contain five such parts as D contains three, then (Def. 4) A will contain five such parts as B contains three. Let each of the equal parts contained in A and B be X, and let each of the equal parts contained in C and D be Y. Then, because

$$A = 5X,\ B = 3X,\ C = 5Y,\ D = 3Y,$$

by adding, $A + B = 8X$, and $C + D = 8Y$.

Now, $B = 3X$, and $D = 3Y$;

Therefore $A + B$ contains one third of B eight times, and $C + D$ contains one third of D also eight times, and, in general, $A + B$ will contain a part of B as often as $C + D$ contains a like part of D; therefore (Def. 4) $A + B : B = C + D : D$.

THEOREM V.—If four quantities be proportionals, they will also be proportionals by division.

Let $A : B = C : D$, and let A be greater than B, and C greater than D; then $A - B : B = C - D : D$.

For, making the same supposition as in last proposition, so that $A = 5X$, $B = 3X$, $C = 5Y$, $D = 3Y$,

by subtracting, $A - B = 2X$, and $C - D = 2Y$.

Now, $B = 3X$, $D = 3Y$.

Thus it appears, that in this case $A - B$ contains one third of B twice, and that $C - D$ contains one third of D also twice; and, in general, that $A - B$ will always contain some part of B as often as $C - D$ contains a like part of D; therefore (Def. 4) $A - B : B = C - D : D$.

THEOREM VI.—If four quantities be proportionals, they shall also be proportionals by conversion.

Let $A : B = C : D$; then $A : A - B = C : C - D$.

For, making the same supposition as in the two last propositions, because

$$A = 5X,\ B = 3X,\ C = 5Y,\ D = 3Y,$$
$$\text{therefore } A - B = 2X,\ C - D = 2Y.$$

Hence it appears, that in this case A contains the half of $A - B$ five times, and that C contains the half of $C - D$ also five times; and, in general, that A will contain a part of $A - B$ as often as C contains a like part of $C - D$; therefore (Def. 4) $A : A - B = C : C - D$.

THEOREM VII.—If the first of four magnitudes has the same ratio to the second which the third has to the fourth, and if any equimultiples whatever be taken of the first and third, and any whatever of the second and fourth; the multiple of the first shall have the same ratio to the multiple of the second that the multiple of the third has to the multiple of the fourth.

Let $A : B = C : D$, and supposing m and n to denote any two numbers, let the antecedents A and C be taken each m times, and let the consequents B and D be taken each n times; $mA : nB = mC : nD$.

Suppose that C contains two such parts as D contains three, then (Def. 4) A will contain two such parts as B contains three. Let each of the equal parts contained in A and B be X, and let each of the equal parts contained in C and D be Y, so that $A = 2X$, $B = 3X$, $C = 2Y$, $D = 3Y$.

$$\text{Then } mA = 2mX \qquad nB = 3nX$$
$$mC = 2mY \qquad nD = 3nY.$$

From these expressions, it appears that X and Y are like parts of nB and nD; for each is contained in its multiple three n times; also, that mA and mC are equimultiples of X and Y; for each contains its part two m times. Therefore mA contains a part of nB, exactly as often as mC contains a like part of nD; and hence (Def. 4) $mA : nB = mC : nD$.

COR. If $A : B = C : D$, then $mA : B = mC : D$,
and $A : nB = C : nD$.

THEOREM VIII.—If there be any number of quantities, and as many others, which, taken two and two in order, have the same ratio; the first will have to the last of the first quantities the same ratio which the first of the others has to the last.

First, Let there be three quantities, A, B, C, and other three, H, K, L, such that $A : B = H : K$, and $B : C = K : L$; then $A : C = H : L$.

A, B, C,
H, K, L.

For, suppose that H contains two such parts as K contains three and L seven, then (Def. 4) A will contain two such parts as B contains three, and C seven.

Let the equal parts contained in A, B, C be X, and let the equal parts contained in H, K, L be Y, so that

$$A = 2X,\ B = 3X,\ C = 7X,$$
$$H = 2Y,\ K = 3Y,\ L = 7Y.$$

In this case, A contains one seventh of C twice, and H contains one seventh of L also twice; and, in general, A will contain a part of C as often as H contains the same part of L; therefore $A : C = H : L$ (Def. 4).

Next, let there be four quantities A, B, C, D, and other four H, K, L, M, such that $A : B = H : K$, and $B : C = K : L$, and $C : D = L : M$; then $A : D = H : M$.

A, B, C, D,
H, K, L, M.

For, since A, B, C are three quantities, and H, K, L other three quantities, which, taken two and two, have the same ratio; by the foregoing case, $A : C = H : L$. And because $A : C = H : L$, and $C : D = L : M$; therefore, by that same case, $A : D = H : M$. In the same way, the demonstration may be extended to any number of quantities.

Note. This proposition is usually cited by the words *ex æquali* or *ex æquo*.

Theorem IX.—If there be any number of quantities, and as many others, which, taken two and two, in a cross order, have the same ratio; the first will have to the last of the first quantities, the same ratio which the first of the others has to the last.

First, let there be three quantities A, B, C, and other three H, K, L, such that $A : B = K : L$, and $B : C = H : K$; then $A : C = H : L$.

A, B, C,
H, K, L.

For, suppose K to contain two such equal parts as L contains three, then A will contain two such parts as B contains three. (Def. 4.) Let each of the equal parts contained in A and B be X, and let each of the equal parts contained in K and L be Y, so that

$$A = 2X,\ B = 3X,\ K = 2Y,\ L = 3Y.$$

Also, let Z be the same part of C that Y is of L, and let V be the same part of H that X is of A; so that, in this case,

$$C = 3Z,\ H = 2V.$$

Then, because $B : C = H : K$; that is, $3X : 3Z = 2V : 2Y$, and (by Prop. I.) $3X : 3Z = X : Z$, and $2V : 2Y = V : Y$; therefore $X : Z = V : Y$ (Ax. 3). Hence (by Prop. VII.) $2X : 3Z = 2V : 3Y$; but $2X = A$, $3Z = C$, $2V = H$, $3Y = L$; therefore $A : C = H : L$.

Next, let there be four quantities, A, B, C, D, and other four H, K, L, M, such that $A : B = L : M$, and $B : C = K : L$; and $C : D = H : K$; then $A : D = H : M$. For since A, B, C are three quantities, and K, L, M other three, which, taken two and two in a cross order, have the same ratio; by the first case, $A : C = K : M$; but $C : D = H : K$; therefore, again, by the first case, $A : D = H : M$. In the same manner, the demonstration may be extended to any number of quantities.

A, B, C, D,
H, K, L, M.

Note. This proposition is usually cited by the words *ex æquali in proportione perturbata*, or *ex æquo* inversely.

Theorem X.—If the first has to the second the same ratio which the third has to the fourth, and the fifth to the second the same ratio which the sixth has to the fourth; the first and fifth together shall have to the second the same ratio which the third and sixth have to the fourth.

Let $A : B = C : D$,
and $E : B = F : D$;
then $A + E : B = C + F : D$.

Because $E : B = F : D$, by inversion, $B : E = D : F$ (2); but, by hypothesis, $A : B = C : D$; therefore *ex æquali* (Prop. VIII.), $A : E = C : F$; and, by composition, $A + E : E = C + F : F$. Again, by hypothesis, $E : B = F : D$, therefore *ex æq.* $A + E : B = C + D : F$.

Theorem XI.—If four quantities be proportionals, the sum of the first two is to their difference as the sum of the other two to their difference.

Let $A : B = C : D$; then, if A be greater than B, $A + B : A - B = C + D : C - D$.

For, since $A : B = C : D$,
by division (5) $A - B : B = C - D : D$,
and inversion (2) $B : A - B = D : C - D$,
and by composition (4) $A + B : B = C + D : D$,
therefore, *ex æq.* $A + B : A - B = C + D : C - D$.

In like manner, if B be greater than A, it may be proved that $A + B : B - A = C + D : D - C$.

Theorem XII.—If any number of quantities be proportionals; as one of the antecedents is to its consequent, so is the sum of all the antecedents to the sum of all the consequents.

Let $A : B = C : D = E : F$; then $A : B = A + C + E : B + D + F$. For, suppose that A contains two such parts, each $= X$, as B contains three, and that C contains two such parts, each $= Y$, as D contains three, and that E contains two such parts, each $= Z$, as F contains three, and so on; then

$$A = 2X \qquad B = 3X$$
$$C = 2Y \qquad D = 3Y$$
$$E = 2Z \qquad F = 3Z.$$

Hence, by addition,
$A + C + E = 2X + 2Y + 2Z = 2(X + Y + Z)$; $B + D + F = 3X + 3Y + 3Z = 3(X + Y + Z)$.

Thus it appears that A contains one third of B twice, and that $A + C + E$ contains one third of $B + D + F$ also twice; and, in general, that A will contain a part of B just as often as $A + C + E$ contains a like part of $B + D + F$; therefore $A : B = A + C + E : B + D + F$.

In treating of proportion, we have supposed that the antecedent contains some part of the consequent a certain number of times exactly, which part is therefore a common measure of the antecedent and consequent. But there are quantities which cannot have a common measure, and which are therefore said to be *incommensurable*; such, for example, are the sides of two squares one of which has its surface double that of the other.

Although the ratio of two incommensurable quantities cannot be expressed in numbers, yet we can always assign a ratio in numbers which shall be as near to that ratio as we please. For let A and B be any two quantities whatever, and suppose that x is such a part of A that $A = px$; then if q denote the number of times that x can be taken from B, and d the remainder, we have $B = qx + d$, and $qx = B - d$; and because $p : q = px : qx$, therefore $p : q = A : B - d$. Now, as d is less than x, by taking x sufficiently small, d may be less than any proposed quantity; so that $B - d$ may differ from B by less than any given quantity; therefore two numbers p and q may always be assigned, such, that the ratio of p to q shall be the same as the ratio of A to a quantity that differs less from B than by any given quantity, however small that quantity may be.

Hence we may conclude, that whatever has been delivered in this section relating to commensurable quantities, may be considered as applying equally to such as are incommensurable.

SECT. IV.—THE PROPORTIONS OF FIGURES.

Definitions.

I. *Equivalent Figures* are such as have equal surfaces.

Two figures may be equivalent, although very dissimilar; thus a circle may be equivalent to a square, a triangle to a rectangle, and so of other figures.

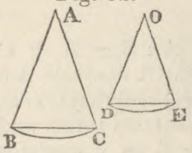
We shall give the denomination of *equal* figures to those which, being applied the one upon the other, coincide entirely: thus, two circles having the same radius are equal; and two triangles having three sides of the one equal to three sides of the other, each to each, are also equal.

Lines and Figures upon a Plane.

II. Two figures are *similar*, when the angles of the one are equal to the angles of the other, each to each; and the *homologous* sides proportionals. The homologous sides are those which have the same position in the two figures; or which are adjacent to the equal angles. The angles themselves are called *homologous angles*.

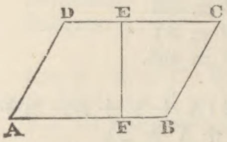
Two equal figures are always similar, but similar figures may be very unequal.

Fig. 62.



III. In two different circles, *similar sectors, similar arches, similar segments*, are such as correspond to equal angles at the centre. Thus the angle A being equal to the angle O, the arch BC is similar to the arch DE, and the sector ABC to the sector ODE, &c.

Fig. 63.



IV. The *Altitude of a parallelogram* is the perpendicular which measures the distance between the opposite sides or bases AB, CD.

V. The *Altitude of a triangle* is the perpendicular AD drawn from the vertical angle A upon the base BC.

Fig. 64.

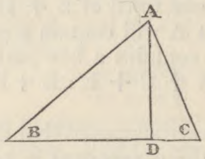
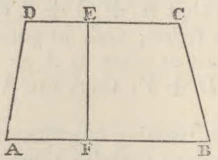


Fig. 65.



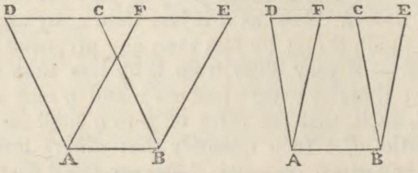
VI. The *Altitude of a trapezoid* is the perpendicular EF drawn between its two parallel bases AB, CD.

VII. The *Area* and the surface of a figure are terms of nearly the same signification. The term *area*, however, is more particularly used to denote the superficial quantity of the figure in respect of its being measured, or compared with other surfaces.

THEOREM I.—Parallelograms which have equal bases and equal altitudes are equivalent.

Let AB be the common base of the parallelograms ABCD, EBAF, which being supposed to have the same altitude, the sides DC, FE opposite to the bases will lie in DE a line parallel to AB. Now, from the nature of a parallelogram, AD = BC, and AF = BE; for the same reason DC = AB, and FE = AB; therefore DC = FE, and taking away DC and FE from the same line DE, the remainders CE and DF are equal; hence the triangles DAF, CBE have three sides of the one equal to three sides of the other, each to each; and consequently are equal (10, 1). Now, if from the quadrilateral ABED the triangle ADF be taken away, there will remain the parallelogram ABEF; and if from the same quadrilateral ABED, the triangle CBE, equal to the former, be taken away, there will remain the parallelogram ABCD; therefore the two parallelograms ABCD, ABEF, which have the same base and the same altitude, are equivalent.

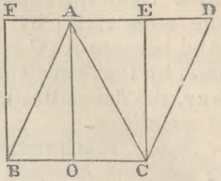
Fig. 66.



COR. Every parallelogram is equivalent to a rectangle of the same base and altitude.

THEOREM II.—Every triangle ABC is the half of a parallelogram ABCD, having the same base and altitude.

Fig. 67.



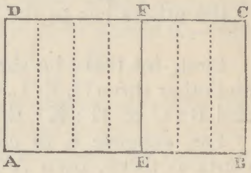
For the triangles ABC, ACD are equal (28, 1).

COR. 1. Therefore a triangle ABC is the half of a rectangle BCEF of the same base and altitude.

COR. 2. All triangles having equal bases and equal altitudes are equivalent.

THEOREM III.—Two rectangles of the same altitude are to each other as their bases.

Fig. 68.

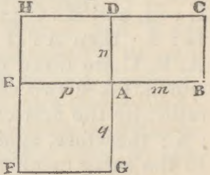


Let ABCD, AEFD be two rectangles, which have a common altitude AD; the rectangle ABCD shall have to the rectangle AEFD the same ratio that the base AB has to the base AE.

Let the base AB have to the base AE the ratio of the number p (which we shall suppose 7) to the number q (which may be 4), that is, let AB contain p (7), such equal parts as AE contains q (4); then, if perpendiculars be drawn to AB and AE at the points of division, the rectangles ABCD and AEFD will be divided, the former into p and the latter into q rectangles, which will be all equal (1); for they have equal bases and the same altitude. Thus the rectangle ABCD will also contain p such equal parts as the rectangle AEFD contains q; therefore the rectangle ABCD is to AEFD as the number p to the number q (Ax. 3, 3), that is, as the base AB to AE.

THEOREM IV.—Any two rectangles are to each other as the products of any numbers proportional to their sides.

Fig. 69.



Let the numbers m, n, p, q have among themselves the same ratios that the sides of the rectangles ABCD, AEFG have to each other; that is, let AB contain m such equal parts, whereof AD contains n; and AE contains p, and AG contains q, then shall ABCD : AEFG $= mn : pq$.

Let the rectangles be so placed that the sides AB, AE may be in a straight line, then AD and AG will also lie in a straight line (3, 1). Now (3)

$$\text{ABCD} : \text{AEHD} = \text{AB} : \text{AE} = m : p,$$

$$\text{but } m : p = nm : np \ (1, 3),$$

$$\text{therefore ABCD} : \text{AEHD} = nm : np.$$

$$\text{Again, AEHD} : \text{AEFG} = \text{AD} : \text{AG} = n : q;$$

$$\text{but } n : q = pn : pq;$$

$$\text{therefore AEHD} : \text{AEFG} = pn : pq;$$

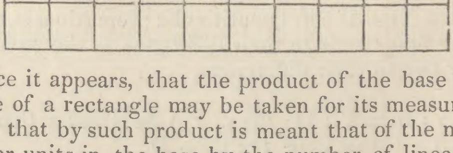
and it was shown that

$$\text{ABCD} : \text{AEHD} = nm : np \text{ or } pn,$$

$$\text{therefore } (8, 3) \text{ ABCD} : \text{AEFG} = mn : pq.$$

SCHOLIUM.

Fig. 70.



Hence it appears, that the product of the base by the altitude of a rectangle may be taken for its measure, observing that by such product is meant that of the number of linear units in the base by the number of linear units in the altitude. This measure is however not absolute, but relative; for it must be supposed, that in comparing

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one rectangle with another, the sides of both are measured by the same linear unit. For example, if the base of a rectangle A be three units, and its altitude 10, the rectangle is represented by 3 × 10, or 30; this number considered by itself has no meaning; but if we have a second rectangle B, the base of which is twelve units and the altitude seven, this second rectangle shall be represented by the number 12 × 7, or 84; and hence it may be concluded that the two rectangles are to each other as 30 to 84; therefore, if in estimating any superficies the rectangle A be taken for the measuring unit, the rectangle B shall have for its absolute measure $\frac{84}{30}$, that is, it shall be $\frac{84}{30}$ superficial units.

It is more common, as well as more simple, to take for a superficial unit a square, the side of which is an unit in length, and then the measure which we have regarded only as relative becomes absolute: for example, the number 30, which is the measure of the rectangle A, represents thirty superficial units, or thirty squares, each having its side equal to an unit. To illustrate this, see fig. 70.

Theorem V.—The area of any parallelogram is equal to the product of its base by its altitude. (Fig. 67.)

For the parallelogram ABCD is equivalent to the rectangle FBCE, which has the same base BC, and the same altitude AO (Cor. 1); but the measure of the rectangle is BC × AO (Schol. 4), therefore the area of the parallelogram is BC × AO.

Cor. Parallelograms having the same base, or equal bases, are to each other as their altitudes; and parallelograms having the same altitude are to each other as their bases; for in the former case put B for the common base, and A and A′ for the altitudes, then the areas of the figures are B × A and B × A′; and it is manifest that B × A : B × A′ = A : A′; and in the latter case, putting A for the common altitude, and B and B′ for the bases, it is evident that B × A : B′ × A = B : B′.

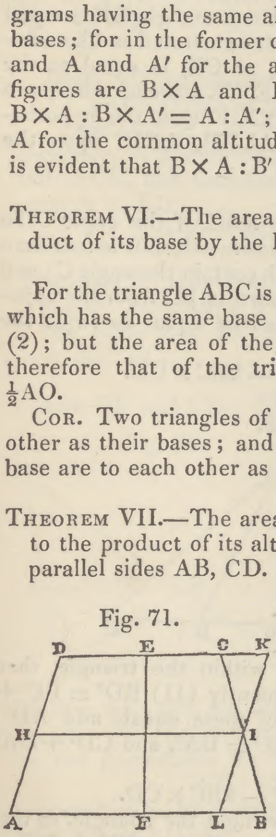
Theorem VI.—The area of a triangle is equal to the product of its base by the half of its altitude. (Fig. 67.)

For the triangle ABC is half of the parallelogram ABCD, which has the same base BC, and the same altitude AO (2); but the area of the parallelogram is BC × AO (5), therefore that of the triangle is $\frac{1}{2}$BC × AO, or BC × $\frac{1}{2}$AO.

Cor. Two triangles of the same altitude are to each other as their bases; and two triangles having the same base are to each other as their altitudes.

Theorem VII.—The area of a trapezoid ABCD is equal to the product of its altitude EF by half the sum of its parallel sides AB, CD.

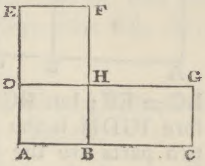
Fig. 71.



Through the point I, the middle of BC, draw KL parallel to the opposite side AD, and produce DC to meet KL. In the triangles IBL, ICK, IB is equal to IC by construction, and the angle CIK = BIL, and the angle ICK = IBL (21, 1); therefore these triangles are equal; and hence the trapezoid ABCD is equivalent to the parallelogram ALKD, and has for its measure AL × EF. But AL = DK, and because the triangle IBL is equal to the triangle KCI, the side BL = CK; therefore AB + CD = AL + DK = 2AL; hence AL is half the sum of the parallel sides AB, CD; and as the area of the trapezoid is equal to FE × AL, it is also equal to FE × $\left(\frac{AB+CD}{2}\right)$.

Theorem VIII.—If four straight lines AB, AC, AD, AE be proportionals; the rectangle ABFE, contained by the two extremes, is equivalent to the rectangle ACGD contained by the means. And conversely, if the rectangle contained by AB, AE, the extremes, be equivalent to the rectangle contained by AC, AD, the means, the four lines are proportionals.

Fig. 72.



Let the rectangles be so placed as to have the common angle A, and let BF, DG intersect each other in H. Because the rectangles ABHD, ACGD have the same altitude AD,

ABHD : ACGD = AB : AC (3);

and because the rectangles ABHD, ABFE have the same altitude AB, for the same reason,

ABHD : ABFE = AD : AE;

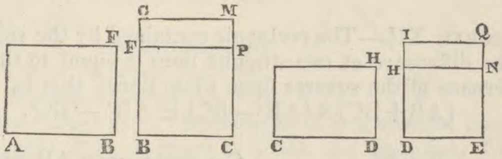
but by hypothesis AB : AC = AD : AE, therefore (Ax. 3, 3) ABHD : ACGD = ABHD : ABFE; therefore (Ax. 2, 3) the rectangle ACGD = ABFE.

Next suppose that the rectangle ACGD = ABFE; then ABHD : ACGD = ABHD : ABFE (Ax. 1, 3); but ABHD : ACGD = AB : AC (3), and ABHD : ABFE = AD : AE; therefore AB : AC = AD : AE.

Cor. If three straight lines be proportionals, the rectangle contained by the extremes is equal to the square of the mean; and if the rectangle contained by the extremes be equal to the square of the mean, the three straight lines are proportionals.

Theorem IX.—If four straight lines be proportionals, and also other four; the rectangles contained by the corresponding terms shall be proportionals; that is, if AB : BC = CD : DE, and BF : BG = DH : DI, then shall rectangle AF : rect. BM = rect. CH : rect. DQ.

Fig. 73.



For in BG and DI produced, if necessary, take BF = BF, and DH = DH, and let FP be parallel to BC, and HN to DE; then (3),

rect. AF : rect. BP = AB : BC,
and rect. CH : rect. DN = CD : DE;

but AB : BC = CD : DE (by hypothesis), therefore,

rect. AF : rect. BP = rect. CH : rect. DN;

now (3) rect. BP : rect. BM = BF : BG, and rect. DN : rect. DQ = DH : DI; but BF : BG = DH : DI (by hypoth.) therefore,

rect. BP : rect. BM = rect. DN : rect. DQ;

but it has been shown that

rect. AF : rect. BP = rect. CH : rect. DN,

therefore (8, 3),

rect. AF : rect. BM = rect. CH : rect. DQ.

Cor. Hence the squares of four proportional straight lines are themselves proportionals.

Theorem X.—If a straight line AC be divided into any two parts at B, the square made upon the whole line

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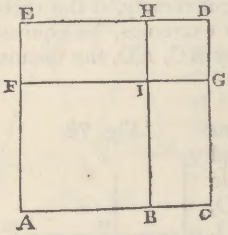
AC shall be equal to the squares made upon the two parts AB, BC, together with twice the rectangle contained by these two parts; which may be expressed thus,

$$AC^2 = AB^2 + BC^2 + 2AB \times BC.$$

Fig. 74.



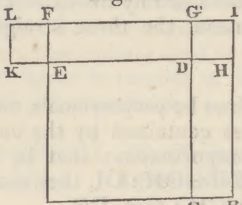
Suppose the square ACDE to be constructed; take $AF = AB$, draw FG parallel to AC, and BH parallel to CD.

The square ACDE is made up of four parts; the first ABIF is the square upon AB, because $AF = AB$; the second IGDH is the square upon BC, for $AC = AE$, and $AB = AF$; therefore $AC - AB = AE - AF$, that is, $BC = EF$; but $BC = IG$, and $EF = DG$ (26, 1); therefore IGDH is the square upon BC; and the remaining two parts are the two rectangles BCGI, FEHI, which have each for their measure $AB \times BC$; therefore the square upon AC is equal to the squares upon AB and BC, and twice the rectangle $AB \times BC$.

Theorem XI.—If a straight line AC be the difference of two straight lines AB, BC, the square made upon AC shall be equal to the excess of the two squares upon AB and BC above twice the rectangle contained by AB and BC; that is,

$$AC^2 = AB^2 + BC^2 - 2AB \times BC.$$

Fig. 75.

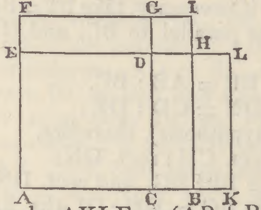


Construct the square ABIF, take $AE = AC$, and draw CG parallel to BI, and HK parallel to AB; and complete the square EFLK. The two rectangles CBIG, GLKD have each $AB \times BC$ for their measure; and if these be taken from the whole figure ABILKEA, that is, from $AB^2 + BC^2$, there will remain the square ACDE, that is, the square upon AC.

Theorem XII.—The rectangle contained by the sum and the difference of two straight lines is equal to the difference of the squares upon those lines; that is,

$$(AB + BC) \times (AB - BC) = AB^2 - BC^2.$$

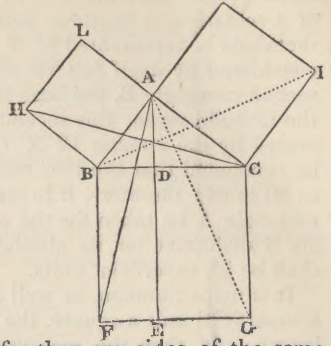
Fig. 76.



Construct upon AB and AC the squares ABIF, ACDE; produce AB, so that $BK = BC$, and complete the rectangle AKLE. The base AK of the rectangle is the sum of the two lines AB, BC; and its altitude AE is the difference of the same lines; therefore the rectangle $AKLE = (AB + BC)(AB - BC)$; but the same rectangle is composed of two parts $ABHE + BHLK$, of which BHLK is equal to the rectangle EDGF, for $BH = DE$, and $BK = FE$; therefore $AKLE = ABHE + EDGF$; but these two parts constitute the excess of the square ABIF above the square DHIG, the former of which is the square upon AB, and the latter the square upon BC; therefore $(AB + BC) \times (AB - BC) = AB^2 - BC^2$.

Theorem XIII.—The square upon the hypothenuse of a right-angled triangle is equal to the sum of the squares upon the two other sides.

Fig. 77.

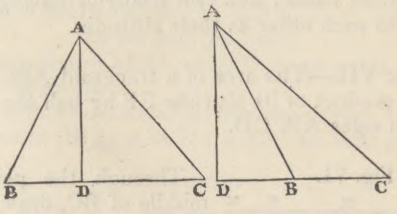


Let ABC be a right-angled triangle; having formed the squares upon its three sides, draw a perpendicular AD from the right angle upon the hypothenuse, and produce it to E, and draw the diagonals AF, CH. The angle ABF is evidently the sum of ABC and a right angle, and the angle HBC is also the sum of ABC and a right angle; therefore the angle $ABF = HBC$. Now $AB = BH$, for they are sides of the same square, and $BC = BF$ for the same reason; therefore the triangles ABF, HBC have two sides, and the included angle of the one equal to two sides, and the included angle of the other, each to each, therefore the triangles are equal (5, 1); but the triangle ABF is the half of the rectangle BDEF (which for brevity's sake we shall call BE), because it has the same base BF, and the same altitude BD (2); and the triangle HBC is in like manner half of the square AH; for the angles BAC, BAL being both right angles, CA and AL constitute a straight line parallel to BH (3, 1); and thus the triangle HBC and the square AH have the same base HB, and the same altitude AB; from which it follows that the triangle is half of the square (2). It has now been proved that the triangle ABF is equal to the triangle HBC; and that the rectangle BE is double of the former, and the square AH double of the latter; therefore the rectangle BE is equal to the square AH. It may be demonstrated in like manner that the rectangle CDEG, or CE, is equal to the square AI; but the rectangles BE, CE make up the square BCGF; therefore the square BCGF upon the hypothenuse is equal to the squares ALHB, AKIC upon the other two sides.

Theorem XIV.—In a triangle ABC, if the angle C be acute; the square of the opposite side AB is less than the squares of the sides which contain the angle C; and if AD a perpendicular be drawn to BC from the opposite angle, the difference shall be equal to twice the rectangle $BC \times CD$; that is,

$$AB^2 = AC^2 + CB^2 - 2BC \times CD.$$

Fig. 78.



First, suppose AD to fall within the triangle, then $BD = BC - CD$, and consequently (11) $BD^2 = BC^2 + CD^2 - 2BC \times CD$; to each of these equals add AD^2; then, observing that $BD^2 + DA^2 = BA^2$, and $CD^2 + DA^2 = CA^2$,

$$AB^2 = BC^2 + CA^2 - 2BC \times CD.$$

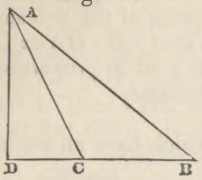
Next, suppose AD to fall without the triangle, so that $BD = CD - BC$, and therefore $BD^2 = CD^2 + BC^2 - 2BC \times CD$ (11), to each of these add AD^2 as before, and we get

$$AB^2 = BC^2 + CA^2 - 2BC \times CD.$$

Theorem XV.—In a triangle ABC, if the angle C be obtuse; the square of the opposite side AB is greater than the sum of the squares of the sides which contain the angle C; and if AD a perpendicular be drawn to BC from the opposite angle; the difference shall be equal to twice the rectangle BC × CD; that is,

$$AB^2 = AC^2 + BC^2 + 2BC \times CD.$$

Fig. 79.

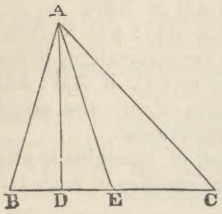


For BD = BC + CD, and therefore (10), $BD^2 = BC^2 + CD^2 + 2BC \times CD$; to each of these equals add AD^2, then, observing that $AD^2 + DB^2 = AB^2$, and $AD^2 + DC^2 = AC^2$,

$$AB^2 = BC^2 + CA^2 + 2BC \times CD.$$

Scholium. It is only when a triangle has one of its angles a right angle, that the sum of the squares of two of its sides can be equal to the square of the third side; for if the angle contained by those sides be acute, the sum of their squares is greater than the square of the opposite side, and if the angle be obtuse, that sum is less than the square of the opposite side.

Fig. 80.



Theorem XVI.—If a straight line AE be drawn from the vertex of any triangle ABC to the middle of its base BC; the sum of the squares of the sides is equal to twice the square of half the base, and twice the square of the line drawn from the vertex to the middle of the base; that is, $AB^2 + AC^2 = 2BE^2 + 2AE^2$.

Draw AD perpendicular to BC, then

$$AB^2 = BE^2 + EA^2 - 2BE \times ED\ (14),$$

$$\text{and } AC^2 = CE^2 + EA^2 + 2CE \times ED\ (15);$$

therefore, by adding equals to equals, and observing that BE = CE, and therefore $BE^2 = CE^2$, and 2BE × ED = 2CE × ED,

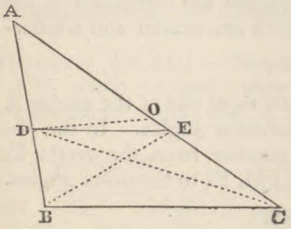
$$AB^2 + AC^2 = 2BE^2 + 2AE^2.$$

Theorem XVII.—A straight line DE drawn parallel to one of the sides of a triangle ABC, divides the other two sides AB, AC proportionally, so that AD : DB = AE : EC.

Join BE and CD. The triangles BDE, CDE, having the same base DE, and the same altitude, are equivalent (2), and the triangles ADE, BDE, having the same altitude, are to one another as their bases (6), that is, ADE : BDE = AD : DB; the triangles ADE, CDE, having also the same altitude, are to one another as their bases; that is, ADE : CDE = AE : EC, but the triangle BDE has been proved equal to CDE; therefore, because of the common ratio in the two proportions, we have (Ax. 3, 3)

$$AD : DB = AE : EC.$$

Fig. 81.



Cor. Hence, by composition, AB : AD = AC : AE; and AB : BD = AC : CE.

Theorem XVIII.—Conversely, if two of the sides AB, AC of a triangle be divided proportionally by the straight line DE, so that AD : DB = AE : EC; then shall the line DE be parallel to the remaining side BC.

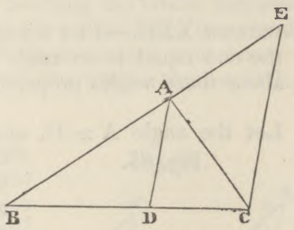
For if DE is not parallel to BC, suppose some other line DO to be parallel to BC; then, AB : BD = AC : CO (17), and since by hypothesis AD : DB = AE : EC, and consequently, by composition, AB : BD = AC : CE, therefore, AC : CO = AC : CE; therefore, CO = CE (2 Ax. 3), which is impossible; therefore DO is not parallel to BC.

Cor. If it be supposed that BA : AD = CA : AE; still DE will be parallel to BC; for by division BD : AD = CE : AE, this proportion being the same as in the theorem, the conclusion must be the same.

Theorem XIX.—A straight line AD, which bisects the angle BAC of a triangle, divides the base BC into two segments proportional to the adjacent sides BA, AC; that is, BD : DC = BA : AC.

Through the point C draw CE parallel to AD, so as to meet BA produced. In the triangle BCE, the line AD is parallel to one of its sides CE, therefore BD : DC = BA : AE; now the triangle CAE is isosceles, for, because of the parallels AD, CE, the angle ACE = DAC, and the angle AEC = BAD, (21, 1); but by hypothesis DAC = BAD, therefore ACE = AEC; and consequently, AE = AC (12, 1), therefore, substituting AC instead of AE in the above proportion, it becomes BD : DC = BA : AC.

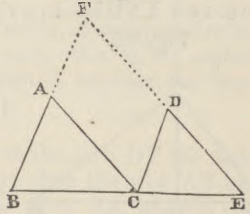
Fig. 82.



Theorem XX.—If two triangles be equiangular, their homologous sides are proportional, and the triangles are similar.

Let ABC, CDE be two equiangular triangles, which have the angle BAC = CDE, ABC = DCE, and ACB = DEC; the homologous sides, or the sides adjacent to the equal angles, shall be proportional; that is, BC : CE = AB : CD = AC : DE.

Fig. 83.



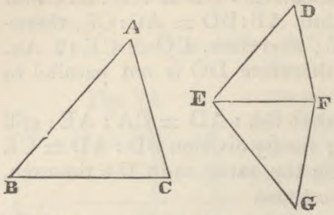
Place the homologous sides BC, CE in the same direction, and produce the sides BA, ED, till they meet in F. Because BCE is a straight line, and the angle BCA is equal to CED, the lines CA, EF are parallel (22, 1); and in like manner, because the angle ABC = DCE, the lines BF, CD are parallel; therefore the figure ACDF is a parallelogram, and hence AF = CD, and CA = DF (26, 1). In the triangle BFE the line AC is parallel to the side FE, therefore BC : CE = BA : AF; or since AF = CD, BC : CE = BA : CD. Again, in the same triangle, because CD is parallel to the side BF, BC : CE = FD : DE, or, since FD = AC, BC : CE = AC : DE; having now shown that BC : CE = BA : CD, and that BC : CE = AC : DE, it follows that BA : CD = AC : DE; therefore the equiangular triangles BAC, CDE have their homologous sides proportional, and hence (Def. 2) the triangles are similar.

Scholium. It is manifest that the homologous sides are opposite to the equal angles.

Theorem XXI.—If two triangles have their homologous sides proportional, they are equiangular and similar.

Suppose that BC : EF = AB : DE = AC : DF; then shall A = D, B = E, C = F. At the point E make the and angle $FEG = B$, and at the point F make $EFG = C$; then the third angle G shall be equal to the third angle A, and the two triangles ABC, GEF shall be equiangular; therefore, by the last theorem, $BC : EF = AB : GE$; but by hypothesis $BC : EF = AB : DE$; therefore $GE = DE$ (Ax. 2, 3). In like manner, because by the same theorem $BC : EF = CA : FG$; and by hypothesis $BC : EF = CA : FD$; therefore $FG = FD$; but it was shown that $EG = ED$, therefore, the triangles GEF, DEF, having the sides of the one equal to those of the other, each to each, are equal; but, by construction, the triangle GEF is equiangular to ABC, therefore also the triangles DEF, ABC are equiangular and similar.

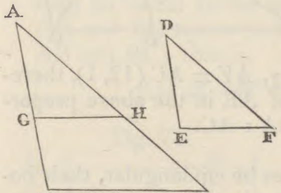
Fig. 84.



Theorem XXII.—Two triangles which have an angle of the one equal to an angle of the other, and the sides about these angles proportional, are similar.

Let the angle $A = D$, and let $AB : DE = AC : DF$, the triangle ABC is similar to DEF. Take $AG = DE$, and draw GH parallel to BC, then the angle $AGH = ABC$ (21, 1), therefore the triangle AGH is equiangular to ABC, and consequently (20) $AB : AG = AC : AH$; but by hypothesis $AB : DE = AC : DF$, and by construction $AG = DE$, therefore $AH = DF$; the two triangles AGH, DEF are therefore equal (5, 1), but the triangle AGH is similar to ABC, therefore DEF is similar to ABC.

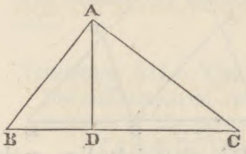
Fig. 85.



Theorem XXIII.—In a right-angled triangle, if a perpendicular AD be drawn from the right angle upon the hypothenuse, then,

1. The triangles ABD, CAD on each side of the perpendicular are similar to the whole triangle BAC, and to one another.
2. Each side AB or AC is a mean proportional between the hypothenuse BC, and the adjacent segment BD or DC.
3. The perpendicular AD is a mean proportional between the two segments BD, DC.

Fig. 86.



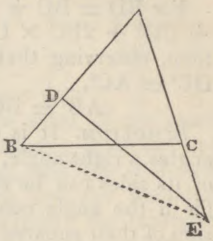
1. The triangles BAD, BAC have the common angle B; besides, the right angle BAC is equal to the right angle BDA, therefore the third angle BAD of the one is equal to the third angle BCA of the other; therefore, these triangles are equiangular and similar; and in the same manner it may be shown that the triangle DAC is equiangular and similar to BAC; therefore the three triangles are equiangular and similar to each other.

2. Because the triangle BAD is similar to the triangle BAC, their homologous sides are proportional. Now the side BD of the lesser triangle is homologous to the side BA of the greater, because they are opposite to the equal angles BAD, BCA; in like manner BA, considered as a side of the lesser triangle, is homologous to the side BC of the greater, each being opposite to a right angle; therefore, $BD : BA = BA : BC$. In the same manner it may be shown that $CD : CA = CA : CB$, therefore each side is a mean proportional between the hypothenuse and the segment adjacent to that side.

3. By comparing the homologous sides of the two similar triangles ABD, ACD, it appears that $BD : DA = DA : DC$; therefore the perpendicular is a mean proportional between the segments of the hypothenuse.

Theorem XXIV.—Two triangles which have an angle of the one equal to an angle of the other, are to each other as the rectangles of the sides which contain the equal angles; that is, the triangle ABC is to the triangle ADE as the rectangle $AB \times AC$ to the rectangle $AD \times AE$.

Fig. 87.



Join BE; because the triangles ABE, ADE, have a common vertex E, they have the same altitude, therefore $ABE : ADE = AB : AD$ (Cor. to 6); but $AB : AD = AB \times AE : AD \times AE$ (3), therefore,

$$ABE : ADE = AB \times AE : AD \times AE.$$

In the same manner, it may be demonstrated that

$$ABC : ABE = AB \times AC : AB \times AE;$$

therefore (8, 3) $ABC : ADE = AB \times AC : AD \times AE$.

Cor. Therefore the two triangles are equivalent, if the rectangle $AB \times AC = AD \times AE$, or (8), if $AB : AD = AE : AC$, in which case the sides about the equal angles are said to be *reciprocally* proportional.

Scholium. What has been proved of triangles is also true of parallelograms, they being the doubles of such triangles.

Theorem XXV.—Two similar triangles are to each other as the squares of their homologous sides. (See fig. 85.)

Let the angle $A = D$, the angle $B = E$, and therefore the angle $C = F$,

$$\text{then (20) } AB : DE = AC : DF;$$

$$\text{now } AB : DE = AB : DE,$$

for the two ratios are identical, therefore (9),

$$AB^2 : DE^2 = AB \times AC : DE \times DF;$$

$$\text{but } ABC : DEF = AB \times AC : DE \times DF \text{ (24)},$$

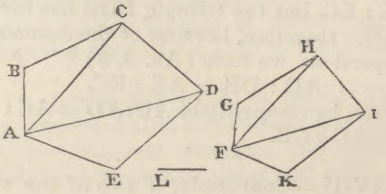
$$\text{therefore } ABC : DEF = AB^2 : DE^2 \text{ (Ax. 3, 3)},$$

therefore the two similar triangles ABC, DEF are to each other as the squares of the homologous sides AB, DE, or as the squares of any of the other homologous sides.

Theorem XXVI.—Similar polygons are composed of the same number of triangles which are similar and similarly situated.

In the polygon ABCDE, draw from one of the angles A the diagonals AC, AD to all the other angles. In the polygon FGHIK, draw in like manner from the angle F, homologous to A, the diagonals FH, FI to the other angles.

Fig. 88.



Because the polygons are similar, the angle ABC is equal to its homologous angle FGH (Def. 2), also the sides AB, BC are proportional to FG, GH; so that $AB : FG = BC : GH$, therefore the triangles ABC, FGH are similar (22);

therefore the angle BCA = GHF, and these being taken from the equal angles BCD, GHI, the remainders ACD, FHI are equal; but the triangles ABC, FGH being similar, AC : FH = BC : GH, besides, because of the similarity of the polygons, BC : GH = CD : HI; therefore AC : FH = CD : HI; now it has been already shown that the angle ACD = FHI, therefore the triangles ACD, FHI are similar (22). It may be demonstrated in the same manner that the remaining triangles are similar, whatever be the number of sides of the polygon; therefore two similar polygons are composed of the same number of triangles similar to each other, and similarly situated.

Theorem XXVII.—The perimeters of similar polygons are as the homologous sides; and the polygons themselves are as the squares of the homologous sides. (See fig. 88.)

For, since by the nature of similar figures AB : FG = BC : GH = CD : HI, &c. therefore (12, 3) AB + BC + CD, &c. the perimeter of the first figure, is to FG + GH + HI, &c. the perimeter of the second, as the side AB to its homologous side FG.

Again, because the triangles ABC, FGH are similar, $ABC : FGH = AC^2 : FH^2$ (25), in like manner $ACD : FHI = AC^2 : FH^2$; therefore,

$$ABC : FGH = ACD : FHI.$$

By the same manner of reasoning,

$$ACD : FHI = ADE : FIK,$$

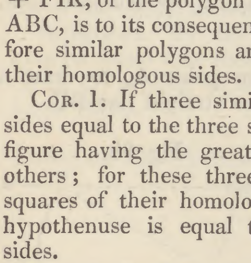
and so on if there be more triangles; hence, from this series of equal ratios, it follows (12, 3) that ABC + ACD + ADE, or the polygon ABCDE, is to FGH + FHI + FIK, or the polygon FGHIK, as one of the antecedents ABC, is to its consequent FGH, or as AB^2 to FG^2; therefore similar polygons are to each other as the squares of their homologous sides.

Cor. 1. If three similar figures have their homologous sides equal to the three sides of a right-angled triangle, the figure having the greatest side shall be equal to the two others; for these three figures are proportional to the squares of their homologous sides, and the square of the hypothenuse is equal to the squares of the other two sides.

Cor. 2. Similar polygons have to each other the duplicate ratio of their homologous sides. For let L be a third proportional to the homologous sides AB, FG, then (Def. 10, 3) AB has to L the duplicate ratio of AB to FG; but $AB : L = AB^2 : AB \times L$ (3), or since $AB \times L = FG^2$, (Cor. to 8) $AB : L = AB^2 : FG^2 = ABCDE : FGHIK$; therefore the figure ABCDE has to the figure FGHIK, the duplicate ratio of AB to FG.

Theorem XXVIII.—The segments of two chords AB, CD, which cut each other within a circle, are reciprocally proportional, that is, AO : DO = CO : OB.

Fig. 89.

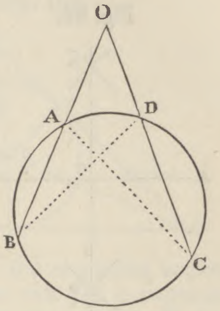


Join AC and BD; and because the triangles AOC, BOD have the angles at O equal (4, 1), and the angle A = D and the angle C = B (15, 2), the triangles are similar; therefore the homologous sides are proportional (20), that is, AO : DO = CO : BO.

Cor. Hence $AO \times BO = CO \times DO$ (8), that is, the rectangle contained by the segments of the one chord is equal to the rectangle contained by the segments of the other.

Theorem XXIX.—If from a point O without a circle two straight lines be drawn, terminating in the concave arch BC; the whole lines shall be reciprocally proportional to the parts of them without the circle, that is, OB : OC = OD : OA.

Fig. 90.

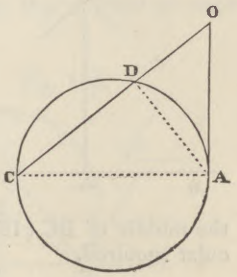


Join AC, BD; then the triangles OAC, OBD have the common angle O, also the angle B = C (15, 2), therefore the triangles are similar, and the homologous sides are proportional, that is, OB : OC = OD : OA.

Cor. Therefore (8) $OA \times OB = OC \times OD$, that is, the rectangles contained by the whole lines, and the parts of them without the circle, are equal to one another.

Theorem XXX.—If from a point O without a circle a straight line OA be drawn touching the circle, and also a straight line OC cutting it; the tangent shall be a mean proportional between the whole line which cuts the circle, and the part of it without the circle; that is, OC : OA = OA : OD.

Fig. 91.



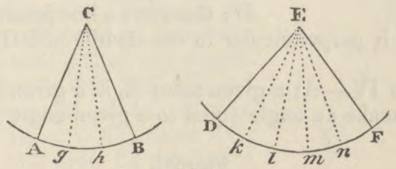
For if AC, AD be joined, the triangles OAD, OCA, have the angle at O common to both, also the angle ACD or ACO equal to DAO (18, 2), therefore the triangles are similar (20), and consequently CO : OA = OA : OD.

Cor. Therefore (Cor. to 8) $CO \times OD = OA^2$, that is, the square of the tangent is equal to the rectangle contained by the whole line which cuts the circle, and the part of it without the circle.

Theorem XXXI.—In the same circle, or in equal circles, any angles ACB, DEF are to each other as the arches AB, DF of the circles intercepted between the lines which contain the angles.

Suppose the arch AB to have to the arch DF the ratio of the number *p* to the number *q*; then the arch AB being supposed divided into equal parts A*g*, *gh*, *h*B, the number of which is *p*, the arch DF shall contain *q* equal parts D*k*, *kl*, *lm*, *mn*, *n*F, each of which is equal to any one of the equal parts into which AB is divided. Draw straight lines from the centres of the circles to the points of division; these lines will divide ACB into *p* angles and DEF into *q* angles, which are all equal (13, 2); therefore the angle ACB has to the angle DEF the ratio of the number *p* to the number *q*, which ratio is the same as that of the arch AB to the arch DF.

Fig. 92.

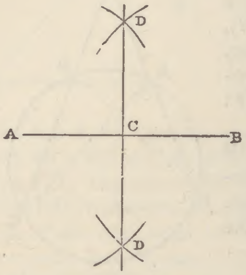


Cor. Hence it appears that angles may be measured and compared with each other by means of arches of circles described on the vertices of the angles as centres; observing, however, that the radii of the circles must be equal.

SECT. V.—PROBLEMS.

Problem I.—To bisect a given straight line AB; that is, to divide it into two equal parts.

Fig. 93.

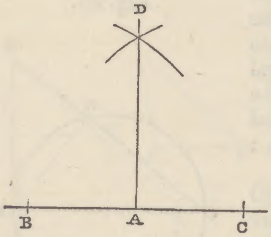


From the points A and B as centres, with any radius greater than the half of AB, describe arches, cutting each other in D and D on each side of the line AB. Draw a straight line through the points D, D, cutting AB in C; the line AB is bisected in C.

For the points D, D, being equally distant from the extremities of the line AB, are each in a straight line perpendicular to the middle of AB (16, 1), therefore the line DCD is that perpendicular, and consequently C is the middle of AB.

Problem II.—To draw a perpendicular to a given straight line BC, from a given point A in that line.

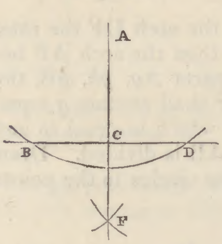
Fig. 94.



Take the points B and C at equal distances from A; and on B and C as centres, with any radius greater than BA, describe arches, cutting each other in D; draw a straight line from A through D, which will be the perpendicular required. For the point D, being at equal distances from the extremities of the line BC, must be in a perpendicular to the middle of BC (16, 1), therefore AD is the perpendicular required.

Problem III.—To draw a perpendicular to a given line BD, from a given point A without that line.

Fig. 95.

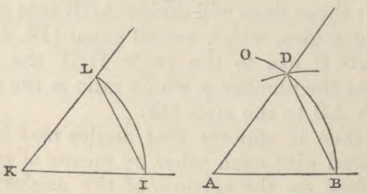


On A as a centre, with a radius sufficiently great, describe an arch, cutting the given line in two points B, D; and on B and D as centres, with a radius greater than the half of BD, describe two arches, cutting each other in F; draw a straight line through the points A and F, meeting BD in C; the line AC is the perpendicular required.

For the two points A and F are each at equal distances from B and D; therefore a line passing through A and F is perpendicular to the middle of BD (16, 1).

Problem IV.—At a given point A, in a given line AB, to make an angle equal to a given angle K.

Fig. 96.

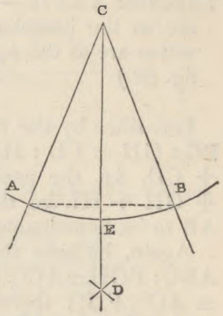


On K as a centre, with any radius, describe an arch to meet the lines containing the angle K in L and I; and on A as a centre, with the same radius, describe an indefinite arch BO; on B as a centre, with a radius equal to the chord LI, describe an arch, cutting the arch BO in D; draw AD, and the angle DAB shall be equal to K.

For the arches BD, LI having equal radii and equal chords, the arches themselves are equal (4, 2), therefore the angles A and K are also equal (13, 2).

Problem V.—To bisect a given arch AB, or a given angle C.

Fig. 97.



First, to bisect the arch AB, on A and B as centres, with one and the same radius, describe arches to intersect in D; join CD, cutting the arch in E, and the arch AE shall be equal to EB.

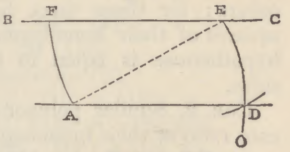
For, since the points C and D are at equal distances from A, and also from B, the line which joins them is perpendicular to the middle of the chord AB (16, 1), therefore the arch AB is bisected at E (6, 2).

Secondly, to bisect the angle C; on C as a centre, with any distance, describe an arch, meeting the lines containing the angle in A and B; then find the point D as before, and the line CD will manifestly bisect the angle C as required.

Scholium. By the same construction we may bisect each of the arches AE, EB; and again we may bisect each of the halves of these arches, and so on; thus, by successive subdivisions, an arch may be divided into four, eight, sixteen parts, &c.

Problem VI.—Through a given point A, to draw a straight line parallel to a given straight line BC.

Fig. 98.

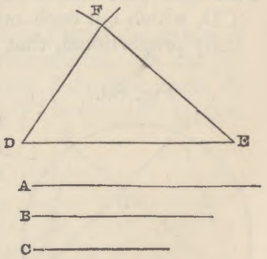


On A as a centre, with a radius sufficiently large, describe the indefinite arch EO; on E for a centre, with the same radius, describe the arch AF; in EO take ED equal to AF, draw a line from A through D, and AD will be parallel to BC.

For if AE be joined, the angle EAD is equal to AEB 13, 2), and they are alternate angles, therefore AD is parallel to BC (22, 1).

Problem VII.—To construct a triangle, the sides of which may be equal to three given lines A, B, C.

Fig. 99.



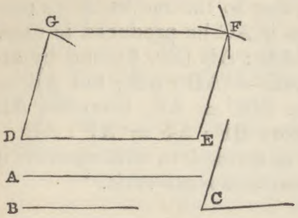
Take a straight line DE, equal to one of the given lines A; on D as a centre, with a radius equal to another of the lines B, describe an arch; on E as a centre, with a radius equal to the remaining line C, describe another arch, cutting the former in F; join DF and EF, and DEF will be the triangle required, as is sufficiently evident.

Scholium. It is necessary that the sum of any two of the lines be greater than the third line (7, 1).

Problem VIII.—To construct a parallelogram, the adjacent sides of which may be equal to two given lines A, B, and the angle they contain equal to a given angle C.

Lines and Figures upon a Plane.

Fig. 100.



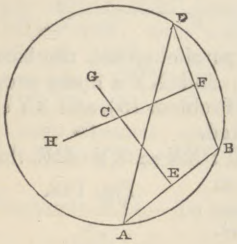
Draw the straight line $DE = A$; make the angle $GDE = C$, and take $DG = B$; describe two arches, one on G as a centre, with a radius $GF = DE$, and the other on E, with a radius $EF = DG$; then DEFG shall be the parallelogram required.

For by construction the opposite sides are equal; therefore the figure is a parallelogram (27, 1), and it is so constructed, that the adjacent sides and the angle they contain have the magnitudes given in the problem.

Cor. If the given angle be a right angle, the figure will be a rectangle; and if the adjacent sides be also equal, the figure will be a square.

Problem IX.—To find the centre of a given circle, or of a circle of which an arch is given.

Fig. 101.



Take any three points A, B, D, in the circumference of the circle, or in the given arch, and having drawn the straight lines AB, BD, bisect them by the perpendiculars EG, FH; the point C where the perpendiculars intersect each other is the centre of the circle, as is evident from Theorem VI. Sect. II.

Scholium. By the very same construction, a circle may be found that shall pass through three given points A, B, C; or that shall be described about a given triangle ADC.

Problem X.—To draw a tangent to a given circle through a given point A.

Fig. 102.

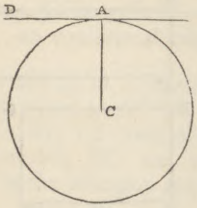
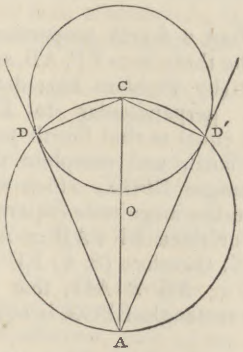


Fig. 103.



If the given point A be in the circumference (fig. 102), draw the radius AC; and through A, draw AD perpendicular to AC, and AD will be a tangent to the circle (9, 2). But if the given point A be without the circle (fig. 103), draw AC to the centre, and bisect AC in O, and on O as a centre, with OA or OC as a radius, describe a circle which will cut the given circle in two points D and D′; join AD and AD′, and each of the lines AD, AD′ will be a tangent to the circle.

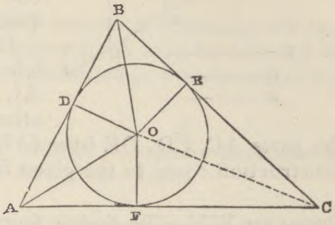
For, draw the radii CD, CD′, then each of the angles ADC, AD′C is a right angle (17, 2); therefore AD and AD′ are both tangents to the circle (9, 2).

Cor. The two tangents AD, AD′ are equal to one another (17, 1).

Problem XI.—To inscribe a circle in a given triangle ABC.

Lines and Figures upon a Plane.

Fig. 104.

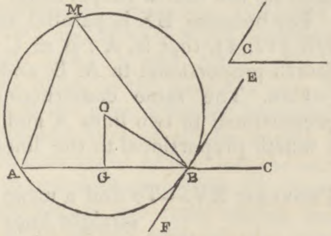


Bisect A and B any two angles of the triangle by the straight lines AO, BO, which meet each other in O; from O draw OD, OE, OF, perpendiculars to its sides; these lines shall be equal to one another.

For in the triangles ODB, OEB, the angle $ODB = OEB$, and the angle $OBD = OBE$; therefore, the remaining angles BOD, BOE, are equal; and as the side OB is common to both triangles, they are equal to one another (6, 1), therefore the side $OD = OE$; in the same manner it may be demonstrated, that $OD = OF$; therefore the lines OD, OE, OF, are equal to one another; and consequently a circle described on O as a centre, with OD as a radius, will pass through E and F; and as the sides of the triangle are tangents to the circle (9, 2), it will be inscribed in the triangle.

Problem XII.—Upon a given straight line AB, to describe a segment of a circle that may contain an angle equal to a given angle C.

Fig. 105.

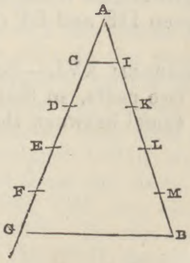


Produce AB towards D, and at the point B make the angle DBE equal to the given angle C; draw BO perpendicular to BE, and GO perpendicular to the middle of AB, meeting BO in O; on O as a centre, with OB as a radius, describe a circle, which will pass through A, and AMB shall be the segment required.

For since FE is perpendicular to BO, FE is a tangent to the circle; therefore the angle EBD (which is equal to C by construction) is equal to any angle AMB in the alternate segment (18, 2).

Problem XIII.—To divide a straight line AB into any proposed number of equal parts; or into parts having to each other the same ratios that given lines have.

Fig. 106.

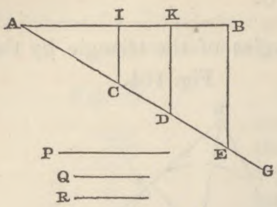


First, let it be proposed to divide the line AB (fig. 106) into five equal parts. Through the extremity A draw an indefinite line AG, take AC of any magnitude, and take CD, DE, EF, and FG, each equal to AC, that is, take AG equal to five times AC; join GB, and draw CI parallel to GB, the line AI shall be one fifth part of AB, and AI being taken five times in AB, the line AB shall be divided into five equal parts.

For since CI is parallel to GB, the sides AG and AB are cut proportionally in C and I; but AC is the fifth part of AG; therefore AI is the fifth part of AB.

Next, let it be proposed to divide AB (fig. 107) into parts, having to each other the ratios that the lines P, Q,

Fig. 107.

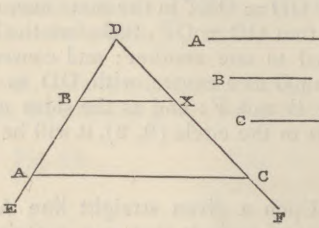


R have. Through A draw AG, and in AG take $AC = P$, $CD = Q$, $DE = R$; join EB, and draw CI and DK parallel to EB; the line AB shall be divided as required.

For, because of the parallels CI, DK, EB; the parts AI, IK, KB have to each other the same ratios that the parts AC, CD, DE have (17, 4), which parts are by construction equal to the given lines P, Q, R.

Problem XIV.—To find a fourth proportional to three given lines A, B, C.

Fig. 108.



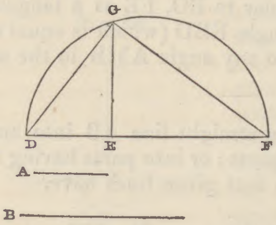
Draw two straight lines DE, DF, containing any angle; on DE take $DA = A$, and $DB = B$, and on DF take $DC = C$; join AC and draw BX parallel to AC; then DX shall be the fourth proportional required.

For because BX is parallel to AC, $DA : DB = DC : DX$ (17, 4), that is, $A : B = C : DX$; therefore DX is a fourth proportional to A, B, and C.

Cor. The same construction serves to find a third proportional to two lines A and B; for it is the same as a fourth proportional to the lines A, B, and B.

Problem XV.—To find a mean proportional between two straight lines A, B.

Fig. 109.

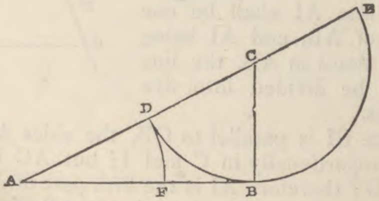


Upon any straight line DF take $DE = A$, and $EF = B$; and on DF as a diameter describe a semicircle DGF; draw EG perpendicular to DF, meeting the circle in G; the line EG shall be the mean proportional required.

For, if DG, FG be joined, the angle DGF is a right angle (17, 2), therefore, in the right-angled triangle DGF, GE is a mean proportional between DE and EF (23, 4).

Problem XVI.—To divide a given straight line AB into two parts, so that the greater may be a mean proportional between the whole line and the other part.

Fig. 110.



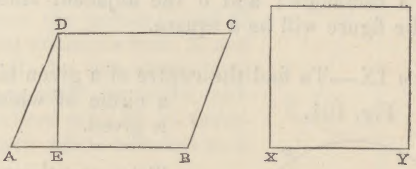
At B, one of the extremities of the line, draw BC perpendicular to AB, and equal to the half of AB; on C as a centre, with CB as a radius, describe a circle; join AC, meeting the circle in D; make $AF = AD$, and AB shall be divided at F in the manner required.

For since AB is perpendicular to the radius, it is a tangent to the circle (9, 2); and if AC be produced to meet the circle in E, $AB : AF = AE : AB$ (30, 4), and by division $AB - AF : AF = AE - AB : AB$; but $AB - AF = BF$; and since $DE = 2BC = AB$, therefore $AE - AB = AD = AF$, therefore $BF : AF = AF : AB$.

Scholium. When a line is divided in this manner, it is said to be divided in *extreme and mean ratio.*

Problem XVII.—To make a square equivalent to a given parallelogram, or to a given triangle.

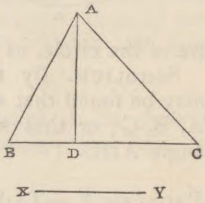
Fig. 111.



First, let ABCD be a given parallelogram, the base of which is AB, and altitude DE; find XY a mean proportional between AB and DE (by Problem 15), and XY shall be the side of the square required.

For since by construction $AB : XY = XY : DE$, therefore $XY^2 = AB \times DE$ (8, 4) = parallelogram ABCD (5, 4).

Fig. 112.

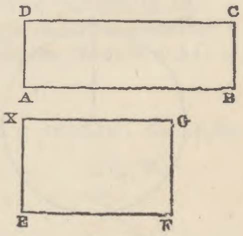


Next, let ABC be a given triangle (fig. 113), BC its base, and AD its altitude; find XY a mean proportional between half the base and the altitude, and XY shall be the side of the square required.

For since $\frac{1}{2}BC : XY = XY : AD$; therefore (8, 4) $XY^2 = \frac{1}{2}BC \times AD$ = triangle ABC (6, 4).

Problem XVIII.—Upon a given line EF, to construct a rectangle EFGX equivalent to a given rectangle ABCD.

Fig. 113.

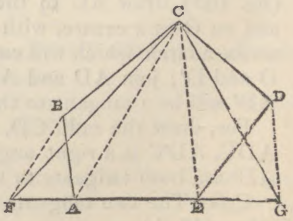


Find a fourth proportional to the three lines EF, AB, and AD (by Problem 14); draw EX perpendicular to EF, and equal to that fourth proportional, and complete the rectangle EFGX, which will have the magnitude required.

For since $EF : AB = AD : EX$, therefore (8, 4) $EF \times EX = AB \times AD$; that is, the rectangle EFGX is equal to the rectangle ABCD.

Problem XIX.—To make a triangle equivalent to a given polygon ABCDE.

Fig. 114.



First, draw the diagonal CE, so as to cut off the triangle CDE; draw DG parallel to CE, to meet AE produced in G; join CG, and the given polygon ABCDE shall be equivalent to another polygon ABCG, which has one side fewer.

For since DG is parallel to CE, the triangle CGE is equivalent to the triangle CDE (2 Cor. 2, 4); to each add the polygon ABCE, and the polygon ABCDE shall be equivalent to the polygon ABCG.

In like manner, if the diagonal CA be drawn, also BF parallel to CA, meeting EA produced, and CF be joined, the triangle CFA is equivalent to the triangle CBA, and thus the polygon ABCDE is transformed to the triangle CFG.

In this way a triangle may be found equivalent to any other polygon; for by transforming the figure into another equivalent figure that has one side fewer, and repeating the operation, a figure will at last be found which has only three sides.

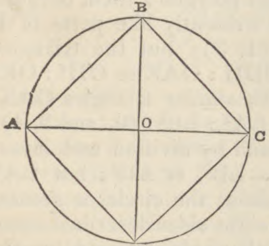
Scholium. As a square may be found equivalent to a triangle, by combining the problem with Prob. XVII. a square may be found equivalent to any rectilineal figure whatever.

Problem XX.—Upon a given line FG to construct a polygon similar to a given polygon ABCDE. (Fig. 88.)

Draw the diagonals AC, AD; at the point F make the angle GFH = BAC, and at the point G make the angle FGH = ABC; thus a triangle FGH will be constructed similar to ABC. Again, on FH construct in like manner a triangle FIH, similar to ADC and similarly situated; and on FI construct a triangle FKI similar to AED, and similarly situated; and these triangles FGH, FHI, FIK shall form a polygon FGHIK similar to ABCDE (26, 4).

Problem XXI.—To inscribe a square in a given circle.

Fig. 115.



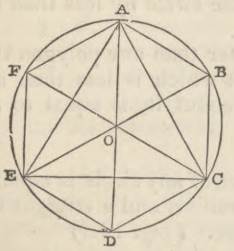
Draw two diameters AC, BD, so as to intersect each other at right angles; join the extremities of the diameters A, B, C, D, and the figure ABCD shall be a square inscribed in the circle.

For the angles AOB, BOC, &c. being all equal, the chords AB, BC, CD, DA are equal; and as each of the angles of the figure ABCD is in a semicircle, it is a right angle (17, 2), therefore the figure is a square.

Problem XXII.—To inscribe a regular hexagon, and also an equilateral triangle, in a given circle.

From any point A in the circumference, apply AB and BC each equal to AO the radius; draw the three diameters AD, BE, CF, and join their adjacent extremities by the lines AB, BC, &c. and the figure ABCDEF thus formed is the hexagon required.

Fig. 116.



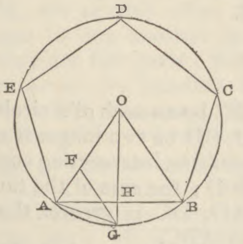
For the triangles AOB, BOC being by construction equilateral, each of the angles AOB, BOC is one third of two right angles (4, Cor. 24, 1); and since AOB + BOC + COD = two right angles, therefore COD = one third of two right angles; therefore the three angles AOB, BOC, COD are equal, and as these are equal to the angles AOF, FOE, EOD, the six angles at the centre are all equal; therefore the chords AB, BC, CD, DE, EF, FA are all equal; thus the figure is equilateral. It is also equiangular, for the angles FAB, ABC, &c. are in equal segments, each having for its base the chords of two sixths of the circumference; therefore the angles A, B, &c. are equal (15, 2).

If straight lines be drawn joining A, C, E, the vertices of the alternate angles of the hexagon, there will be formed an equilateral triangle inscribed in a circle, as is sufficiently evident.

Scholium. As the same manner of reasoning will apply alike to any equilateral polygon; it may be inferred that every equilateral polygon inscribed in a circle is also equiangular.

Problem XXIII.—To inscribe a regular pentagon and decagon in a given circle.

Fig. 117.

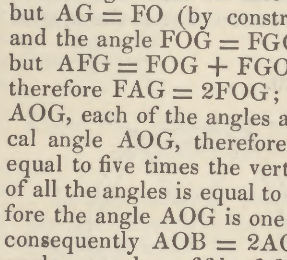


Draw any radius AO, and divide it into two parts AF, FO, such, that AO : OF = OF : AF (16); from A place AG in the circumference equal to OF; join OG, and draw the chord AHB perpendicular to OG, the chord AB shall be a side of the pentagon required.

Join GF, and because AO : OF = OF : AF, and that AG = OF, therefore AO : AG = AG : AF; now the angle A is common to the two triangles OAG, GAF, and it has been shown that the sides about that angle in the two triangles are proportionals; therefore (22, 4), the triangles are similar, and the triangle AOG being isosceles, the triangle AGF is also isosceles, so that AG = GF; but AG = FO (by construction), therefore, GF = FO, and the angle FOG = FGO, and FOG + FGO = 2FOG; but AFG = FOG + FGO (23, 1), and AFG = FAG, therefore FAG = 2FOG; hence in the isosceles triangle AOG, each of the angles at the base is double the vertical angle AOG, therefore the sum of all the angles is equal to five times the vertical angle AOG; but the sum of all the angles is equal to two right angles (24, 1), therefore the angle AOG is one fifth of two right angles, and consequently AOB = 2AOG = two fifths of two right angles, equal one fifth of four right angles, therefore the arch AB is one fifth of the whole circumference. If we now suppose straight lines BC, CD, DE, to be applied in the circle each equal to AB, the chord of one fifth of the circumference, and AE to be joined, the figure thus formed will be an equilateral pentagon, and it is also equiangular (Schol. 22). It is evident that AG is the side of a decagon inscribed in the circle.

Problem XXIV.—Having given ABCD, &c. a regular polygon inscribed in a circle; to describe a regular polygon of the same number of sides about the circle.

Fig. 118.



Draw GH a tangent to the circle at T the middle of the arch AB; do the same at the middle of each of the other arches BC, CD, &c.; these tangents shall form a regular polygon GHIK, &c. described about the circle.

Join OG, OH, &c. also OT and ON. In the triangles OTH, ONH, the side OT = ON, and OH is common to both, and OTH, ONH, are right angles, therefore the triangles are equal (17, 1) and the angle TOH = NOH; now B is the middle of the arch TN, therefore OH passes through B; and in the same manner it appears that I is in the line OC produced, &c. Now because OT bisects the arch AB, it is perpendicular to the chord AB (6, 2); therefore GH is parallel to AB (9, 2, and 18, 1), and HI to BC, therefore the angle $GHO = ABO$, and $IHO = CBO$, and hence $GHI = ABC$; and in like manner it appears that $HIK = BCD$, &c.; therefore the angles of the circumscribed polygon are equal to those of the inscribed polygon. And because of the parallels, $GH : AB = OH : OB$, and $HI : BC = OH : OB$, therefore $GH : AB = HI : BC$; but $AB = BC$; therefore $GH = HI$. For the same reason $HI = IK$, &c., therefore the polygon is regular, and similar to the inscribed polygon.

SECT. VI.—OF THE QUADRATURE OF THE CIRCLE.

Axiom.

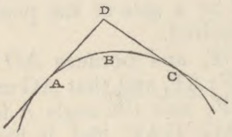


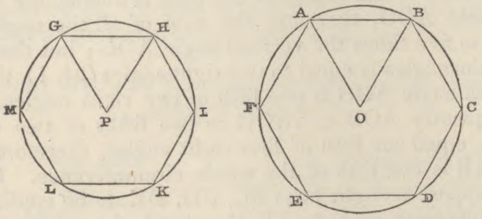
Fig. 119.

If ABC be an arch of a circle, and AD, CD be two tangents at its extremities, intersecting each other in D; the sum of the tangents AD, DC is greater than the arch ABC.

Cor. Hence the perimeter of any polygon described about a circle, is greater than the circumference of the circle.

Prop. I. Theorem.—Equilateral polygons, ABCDEF, GHIKLM, of the same number of sides inscribed in circles are similar, and are to one another as the squares of the radii of the circles.

Fig. 120.

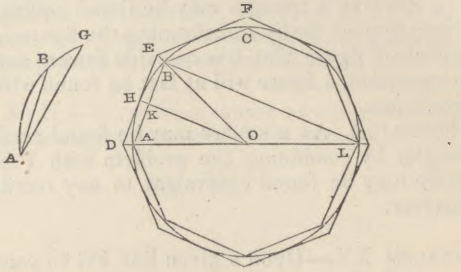


As each of the polygons is by hypothesis equilateral, it will also be equiangular (Schol. 22, 5). Let us suppose, for example, that the polygons are hexagons; then, as the sum of the angles is the same in both, viz. eight right angles (25, 1), the angle A will be one sixth part of eight right angles, and the angle G will be the same; therefore $A = G$; in like manner $B = H$, $C = I$, &c., and as the figures are equilateral, $AB : GH = BC : HI = CD : IK$, &c., therefore (2, Def. 4) the figures are similar. Draw AO, BO, GP, HP to the centres of the circles; then, because the angle AOB is the same part of four right angles that the arch AB is of the whole circumference, and the angle GPH the same part of four right angles that GH is of the whole circumference (13, 2), the angles AOB, GPH are each the same part of four right angles; therefore they are equal; the isosceles triangles AOB, GPH are therefore similar (22, 4), and consequently $AB : GH = AO : GP$; therefore (9 and 27, 4) polygon ABCDEF : polygon $GHIKLM = AO^2 : GP^2$.

Prop. II. Theorem.—A circle being given, two similar polygons may be found, the one inscribed in the circle, and the other described about it, which shall differ from each other by a space less than any given space.

Let AG be the side of a square equal to the given space; and let ABG be such an arch of the given circle, that AG is its chord. Bisect the fourth part of the circumference (5, 5), then bisect one of its halves, and proceed in this manner till, by repeated bisections, there will at length be found an arch AB less than AG. As the arch thus found will be contained in the circumference a certain number of times exactly, its chord AB is the side of a regular figure inscribed in the circle; apply lines in the circle, each equal to AB, thus forming the regular figure ABC, &c., and describe a regular figure DEF, &c. of the same number of sides about the circle. Then the excess of the circumscribed figure above the inscribed figure shall be less than the square upon AG. For draw lines from D and E to O the centre, these lines will pass through A and B (24, 5); also, a line drawn from O, to H the point of contact of the line DE, will bisect AB, and be perpendicular to it; and AB will be parallel to DE. Draw the diameter AL, and join BL, which will be parallel to HO (18, 4). Put P for the circumscribed polygon, and *p* for the inscribed polygon; then, because the triangles ODH, OAK are evidently like parts of P and *p*, $P : p = ODH : OAK$ (1, 3); but the triangles ODH, OAK being similar, $ODH : OAK = OH^2 : OK^2$ (25, 4); and on account of the similar triangles OAK, LAB, OA^2, or $OH^2 : OK^2 = LA^2 : LB^2$ (20, and 9, 4); therefore $P : p = LA^2 : LB^2$, and by division and inversion, $P : P - p = LA^2 : LA^2 - LB^2$, or AB^2; but LA^2, that is, the square described about the circle, is greater than the equilateral polygon of eight sides described about the circle, because it contains that polygon, and for the same reason the polygon of eight sides is greater than the polygon of sixteen sides, and so on; therefore $LA^2 > P$, and as it has been proved that $P : P - p = LA^2 : AB^2$, of which proportion the first term P is less than the third LA^2; therefore (2, 3) the second $P - p$ is less than the fourth AB^2; but $AB^2 \angle AG^2$, therefore $P - p \angle AG^2$.

Fig. 121.



Cor. 1. Because the polygons P and *p* differ from one another more than either of them differs from the circle, the difference between each of them, and the circle, is less than the given space, viz. the square of AG. And therefore, however small any space may be, a polygon may be inscribed in the circle, and another described about it, each of which shall differ from the circle by less than the given space.

Cor. 2. A space which is greater than any polygon that can be inscribed in a circle, but which is less than any polygon that can be described about it, is equal to the circle itself.

Prop. III. Theorem.—The area of any circle is equal to a rectangle contained by the radius, and a straight line equal to half the circumference. (Fig. 121.)

Let ABC, &c. be any equilateral polygon inscribed in the circle, and DEF, &c. a similar polygon described about it; draw lines from the extremities of AB and DE, a side of each polygon, to O the centre; and let OKH be perpendicular to these sides. Put P for the perimeter of

Lines and Figures upon a Plane.

the polygon DEF, &c. and p for the perimeter of the polygon ABC, &c. and n for the number of the sides of each. Then, because $n \times \frac{1}{2}\text{DE} = \frac{1}{2}\text{P}$, $n \times \frac{1}{2}\text{DE} \times \text{OH} = \frac{1}{2}\text{P} \times \text{OH}$, but $n \times \frac{1}{2}\text{DE} \times \text{OH} = n \times$ triangle DOE = polygon DEF, &c.; therefore, $\frac{1}{2}\text{P} \times \text{OH} =$ polygon DEF, &c.; and in like manner it appears that $\frac{1}{2}p \times \text{OK}$ = polygon ABC, &c. Now let Q denote the circumference of the circle, then, because $\frac{1}{2}\text{Q} > \frac{1}{2}p$, and $\text{OH} > \text{OK}$, therefore $\frac{1}{2}\text{Q} \times \text{OH} > \frac{1}{2}p \times \text{OK}$, that is, $\frac{1}{2}\text{Q} \times \text{OH}$ is greater than the inscribed polygon. Again, because $\frac{1}{2}\text{Q} < \frac{1}{2}\text{P}$ (Axiom), therefore $\frac{1}{2}\text{Q} \times \text{OH} \angle \frac{1}{2}\text{P} \times \text{OH}$, that is, $\frac{1}{2}\text{Q} \times \text{OH}$ is less than the circumscribed polygon. Thus it appears that $\frac{1}{2}\text{Q} \times \text{OH}$ is greater than any polygon inscribed in the circle, but less than any polygon described about it; therefore, $\frac{1}{2}\text{Q} \times \text{OH}$ is equal to the circle (2 Cor. to 2).

PROP. IV. THEOREM.—The areas of circles are to one another as the squares of their radii. (Fig. 120, 122).

Let ABCDEF and GHIKLM be equilateral polygons of the same number of sides inscribed in the circles, and OA, PG their radii; and let Q be such a space, that $\text{AO}^2 : \text{GP}^2 =$ circle ABE : Q; then, because $\text{AO}^2 : \text{GP}^2 =$ polygon ABCDEF : polygon GHIKLM, and $\text{AO}^2 : \text{GP}^2 =$ circle ABE : Q, therefore polygon ABCDEF : polygon GHIKLM = circle ABE : Q; but circle ABE $>$ polygon ABCDEF, therefore Q $>$ polygon GHIKLM: that is, Q is greater than any polygon inscribed in the circle GHL. In the same manner it is demonstrated that Q is less than any polygon described about the circle GHL; therefore Q is equal to the circle GHL (2). And because $\text{AO}^2 : \text{GP}^2 =$ circle ABE : Q, therefore $\text{AO}^2 : \text{GP}^2 =$ circle ABE : circle GHL.

Fig. 122.

COR. 1. The circumferences of circles are to one another as their radii. Put M for the circumference of the circle ABE and N for the circumference of GKL; then, circle ABE : circle GHL $= \text{AO}^2 : \text{GP}^2$; but $\frac{1}{2}\text{M} \times \text{AO}$ = circle ABE, also $\frac{1}{2}\text{N} \times \text{GP} =$ circle GHL (3), therefore $\frac{1}{2}\text{M} \times \text{AO} : \frac{1}{2}\text{N} \times \text{GP} = \text{AO}^2 : \text{GP}^2$, and by alternation $\frac{1}{2}\text{M} \times \text{AO} : \text{AO}^2 = \frac{1}{2}\text{N} \times \text{GP} : \text{GP}^2$, therefore (3, 4), $\frac{1}{2}\text{M} : \text{AO} = \frac{1}{2}\text{N} : \text{GP}$; and again, by alternation, $\frac{1}{2}\text{M} : \frac{1}{2}\text{N} = \text{AO} : \text{GP}$, therefore $\text{M} : \text{N} = \text{AO} : \text{GP}$.

COR. 2. A circle described with the hypothenuse of a right-angled triangle as a radius, is equal to two circles described with the other two sides as radii. Let the sides of the triangle be a, b and the hypothenuse h, and let the circles described with these lines as radii be A, B, and H.

Because $\text{A} : \text{H} = a^2 : h^2$
and $\text{B} : \text{H} = b^2 : h^2$,
therefore $\text{A} + \text{B} : \text{H} = a^2 + b^2 : h^2$ (10, 3);
but $a^2 + b^2 = h^2$ (13, 4), therefore $\text{A} + \text{B} = \text{H}$.

PROP. V. PROBLEM.—Having given the area of a regular polygon inscribed in a circle, and also the area of a similar polygon described about it; to find the areas of regular inscribed and circumscribed polygons, each of double the number of sides.

Let AB be the side of the given inscribed polygon, and EF parallel to AB that of the similar circumscribed polygon, and C the centre of the circle; if the chord AM, and the tangents AP, BQ be drawn, the chord AM shall be the side of the inscribed polygon of double the number of sides; and PQ or 2PM that of the similar circumscribed polygon. Put A for the area of the polygon, of which AB is a side, and B for the area of the circumscribed polygon; also a for the area of the polygon of which AM is a side, and b for the area of the similar circumscribed polygon; then A and B are by hypothesis known, and it is required to find a and b.

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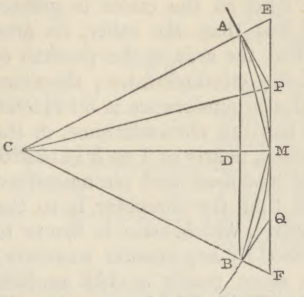
Fig. 123.



I. The triangles ACD, ACM, which have a common vertex A, are to one another as their bases CD, CM; besides, these triangles are to one another as the polygons, of which they form like parts, therefore $\text{A} : a = \text{CD} : \text{CM}$. The triangles CAM, CME, which have a common vertex M, are to each other as their bases CA, CE; they are also to one another as the polygons a and B, of which they are like parts; therefore, $a : \text{B} = \text{CA} : \text{CE}$; but because of the parallels DA, ME, $\text{CD} : \text{CM} = \text{CA} : \text{CE}$; therefore, $\text{A} : a = a : \text{B}$; therefore the polygon a, which is one of the two required, is a mean proportional between the two known polygons A and B, so that $a = \sqrt{\text{A} \times \text{B}}$.

II. The triangles CPM, CPE, having the same altitude CM, are to one another as PM to PE. But as CP bisects the angle MCE, $\text{PM} : \text{PE} = \text{CM} : \text{CE}$ (19, 4) $= \text{CD} : \text{CA} = \text{A} : a$; therefore $\text{CPM} : \text{CPE} = \text{A} : a$; and consequently $\text{CPM} + \text{CPE}$, or $\text{CME} : \text{CPM} = \text{A} + a : \text{A}$, and $\text{CME} : 2\text{CPM} = \text{A} + a : 2\text{A}$; but CME and 2CPM, or CMPA, are to one another as the polygons B and b, of which they are like parts; therefore $\text{A} + a : 2\text{A} = \text{B} : b$. Now the polygon a has been already found, therefore by this last proportion the polygon b is determined; that is,

$$b = \frac{2\text{A} \times \text{B}}{\text{A} + a}.$$

PROP. VI. PROBLEM.—To find nearly the ratio of the circumference of a circle to its diameter.

Let the radius of the circle = 1, then the sides of the inscribed square being the hypothenuse of a right-angled triangle of which the radii are the sides (see fig. 115), the area of the inscribed square will be 2 (13, 4), and the circumscribed square, being the square of the diameter, will be 4. Now, retaining the notation of last problem, if we make $\text{A} = 2$, and $\text{B} = 4$, the formulæ $a = \sqrt{\text{A} \times \text{B}}$, $b = \frac{2\text{A} \times \text{B}}{\text{A} + a}$ give us $a = 2{\cdot}8284271$, &c. the area of the inscribed octagon, and $b = 3{\cdot}31337085$, &c. the area of the circumscribed octagon. By substituting these numbers in the formula, instead of A and B, we shall obtain the areas of the inscribed and circumscribing polygons of 16 sides; and thence we may find those of 32 sides, and so on, as in the following table:

No. of Sides.	Ins. Polygons.	Circ. Polygons.
4	2·0000000	4·0000000
8	2·8284271	3·3137085
16	3·0614674	3·1825979
32	3·1214451	3·1517249
64	3·1365485	3·1441184
128	3·1403311	3·1422236
256	3·1412772	3·1417504
512	3·1415138	3·1416321
1024	3·1415729	3·1416025
2048	3·1415877	3·1415951
4096	3·1415914	3·1415133
8192	3·1415923	3·1415928
16384	3·1415925	3·1415927
32768	3·1415926	3·1415926

Hence it appears that the area of a regular polygon of 32768 sides inscribed in the circle, and of a similar polygon described about it, differ so little from each other that the numbers which express them are the same as far as the eighth decimal place. And as the circle is greater than the one polygon, and less than the other, its area will be nearly 3·1415926. But the area is the product of the radius and the half of the circumference; therefore the radius being unity, half the circumference is 3·1415926 nearly; and the radius is to half the circumference, or the diameter is to the circumference, nearly as 1 to 3·1415926.

Archimedes, by means of inscribed and circumscribed polygons of 96 sides, found that the diameter is to the circumference as 7 to 22 nearly, which ratio is nearer to the truth than can be expressed by any smaller numbers; and Metius found it to be more nearly as 113 to 355. Both of these expressions are convenient on account of the smallness of the numbers, but later mathematicians have carried the approximation to a much greater degree of accuracy. Dr Rutherford has lately calculated the ratio of the circumference of a circle to its diameter to the extent of 208 places of decimals, which is 58 places farther than it had been previously carried. The result is contained in a paper which was published in the Transactions of the Royal Society, and is as follows: $\pi=3·14159265358979$ 323846264338327950288419716939937510582097494459 230781640628620899862803482524211706798214808651 328230664709384460955058223172535940812848473781 392038633830215747399600825931259129401832806517 44, &c. The formula by which the above was calculated is $\frac{\pi}{4}=4\tan^{-1}\frac{1}{5}-\tan^{-1}\frac{1}{70}+\tan^{-1}\frac{1}{99}$.

PART II.—GEOMETRY OF SOLIDS.

SECT. I.—OF PLANES AND SOLID ANGLES.

DEFINITIONS.

I. A straight line is *perpendicular*, or at right angles, to a plane, when it is perpendicular to every straight line which it meets in that plane. The plane is also perpendicular to the line.

II. A line is *parallel* to a plane when they cannot meet each other, although both be produced. The plane is also parallel to the line.

III. Parallel planes are such as cannot meet each other, though produced.

IV. It will be demonstrated (Theor. 3) that the common section of two planes is a straight line; this being premised, the *inclination* of two planes is the angle contained by two straight lines drawn perpendicular to the line which is their common section, from any point in it, the one perpendicular being drawn in the one plane, and the other in the other plane.

This angle may be either acute or obtuse.

V. If it be a right angle, the two planes are perpendicular to each other.

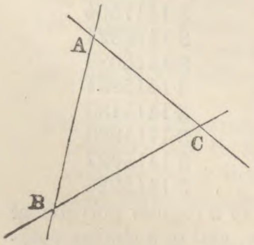
VI. A *solid angle* is that which is made by the meeting of more than two plane angles, which are not in the same plane, in one point. Thus the solid angle V is formed by the plane angles AVB, BVC, CVD, DVA. (Fig. 133.)

THEOREM I.—One part of a straight line cannot be in a plane and another part above it.

For from the definition of a plane (Sect. 1, Part 1), it is manifest, that if a straight line coincide with a plane in two points, it must be wholly in the plane.

THEOREM II.—Two straight lines which cut each other in a plane determine its position; that is, the plane can coincide with these lines only in one position.

Fig. 124.

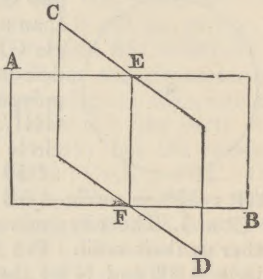


Let the straight lines AB, AC cut each other in A; conceive a plane to pass through AB, and to be turned about that line, till it pass through the point C; and this it can manifestly do only in one position; then, as the points A and C are in the plane, the whole line AC must be in the plane; therefore there is only one position in which the plane can coincide with the same two lines AB, AC.

COR. Therefore a triangle ABC, or three points A, B C, not in a straight line, determine the position of plane.

THEOREM III.—If two planes AB, CD intersect each other; their intersection is a straight line.

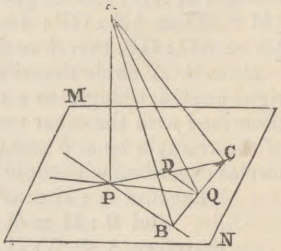
Fig. 125.



Let E and F be two points in the line of common section, and let a straight line EF be drawn between them; then the line EF must be in the plane AB (Def. 1), and the same line must also be in the plane CD; therefore it must be the common section of them both.

THEOREM IV.—If a straight line AP be perpendicular to two straight lines PB, PC at P, the point of their intersection; it will also be perpendicular to the plane MN, in which these lines are.

Fig. 126.



Draw any other line PQ in the plane MN, and from Q, any point in that line, draw QD parallel to PB; make DC = DP; join CQ, meeting PB in B; and join AB, AQ, AC. Because DQ is parallel to PB, and PD = DC; therefore BQ = QC, and BC is bisected in Q. Hence in the triangle BAC,

$$AB^2+AC^2=2AQ^2+2BQ^2\ (16,4),$$

and in the like manner, in the triangle PBC,

$$PB^2+PC^2=2PQ^2+2CQ^2;$$

therefore, taking equal quantities from equal quantities, that is, subtracting the two last quantities, which are put equal to each other, from the two first, and observing, that as APB, APC are by hypothesis right-angled triangles, $AB^2-BP^2=AP^2$, and $AC^2-CP^2=AP^2$, we have

$$AP^2+AP^2=2AQ^2-2PQ^2,$$

and therefore $AP^2=AQ^2-PQ^2$, or $AP^2+PQ^2=AQ^2$; therefore the triangle APQ is right-angled at P (Schol. 15, 4, Part 1), and consequently AP is perpendicular to the plane MN (Def. 1).

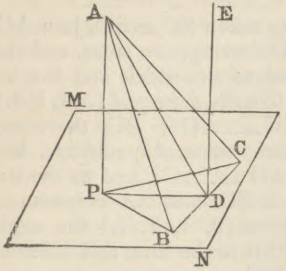
Cor. 1. The perpendicular AP is shorter than any oblique line AQ, therefore it measures the distance of the point A from the plane.

Cor. 2. From the same point P in a plane no more than one perpendicular can be drawn. For if it be possible that there can be two perpendiculars, conceive a plane to pass through them, and to intersect the plane MN in the straight line PQ; then these perpendiculars will be in the same plane, and both perpendicular to the same line PQ, at the same point P in that line, which is impossible.

It is also impossible that from a point without a plane two perpendiculars can be drawn to the plane; for if the straight lines AP, AQ could be two such perpendiculars, then the triangle APQ would have two right angles, which is impossible.

Theorem V.—If a straight line AP be perpendicular to a plane MN, every straight line DE parallel to AP is perpendicular to the same plane.

Fig. 127.



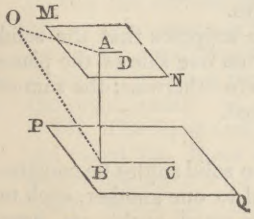
Let a plane pass through the parallel lines AP, DE, and intersect the plane MN in the line PD; through D draw BC at right angles to PD; take DC = DB, and join PB, PC, AB, AC, AD. Because DB = DC, therefore PB = PC (Cor. 5, 1, Part I.); and because AP is perpendicular to the plane MN, so that APB, APC are right angles, AB = AC, therefore ABC is an isosceles triangle; and since its base BC is bisected at D, BC is perpendicular to AD (Schol. 11, 1, P. I.); but by construction BC is perpendicular to PD; therefore (4) BC or BD is perpendicular to the plane passing through the lines AD and PD, or AP and DE; hence BD is perpendicular to DE, but PD is also perpendicular to DE (19, 1, P. I.), therefore DE is perpendicular to the two lines DP, DB; and therefore it is perpendicular to the plane MN passing through them.

Cor. 1. Conversely, if the straight lines AP, DE be perpendicular to the same plane MN, they are parallel; for if not, through D draw a parallel to AP; this parallel will be perpendicular to the plane MN (by the theorem), therefore, from the same point D two perpendiculars may be drawn to a plane, which is impossible (4).

Cor. 2. Two straight lines A and B which are parallel to a third line C, though not in the same plane, are parallel to each other. For suppose a plane to be perpendicular to the line C, the lines A and B parallel to this perpendicular are perpendicular to the same plane; therefore, by the preceding corollary, they are parallel between themselves.

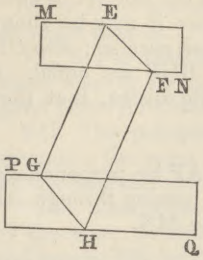
Theorem VI.—Two planes MN, PQ, perpendicular to the same straight line AB, are parallel to each other.

Fig. 128.



For, if they can meet each other, let O be a point common to both, and join OA, OB; then the line AB, which is perpendicular to the plane MN, must be perpendicular to AO, a line drawn in the plane MN from the point in which AB meets that plane. For the same reason AB is perpendicular to BO; therefore OA, OB are two perpendiculars drawn from the same point O, to the same straight line AB, which is impossible.

Fig. 129.



Theorem VII.—The intersections EF, GH of two parallel planes MN, PQ with a third plane FG, are parallel.

For if the lines EF, GH, situated in the same plane, are not parallel, they must meet if produced; therefore the planes MN, PQ, in which they are, must also meet, which is contrary to the hypothesis of their being parallel.

Theorem VIII.—Any straight line AB, perpendicular to MN one of two parallel planes MN, PQ, is also perpendicular to PQ the other plane. (Fig. 128.)

From B draw any straight line BC in the plane PQ, and let a plane pass through the lines AB, BC, and meet the plane MN in the line AD, then AD will be parallel to BC (7); and since AB is perpendicular to the plane MN, it must be perpendicular to the line AD, therefore it is also perpendicular to BC (19, 1, P. I.); hence (Def. 1) the line AB is perpendicular to the plane PQ.

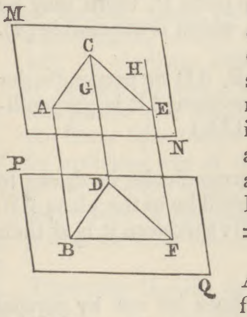
Theorem IX.—Parallel straight lines EG, FH, comprehended between two parallel planes MN, PQ, are equal. (Fig. 129.)

Let a plane pass through the lines EG, FH, and meet the parallel planes in EF and GH; then EF and GH are parallel (7) as well as EG and FH; therefore EGHF is a parallelogram, and EG = HF.

Cor. Hence two parallel planes are everywhere at the same distance from each other. For if EG and FH be perpendicular to the two planes, they are parallel (1 Cor. 5); therefore they are equal.

Theorem X.—If two straight lines CA, EA, meeting one another, be parallel to two other lines DB, FB, that meet one another, though not in the same plane with the first two; the first two and the other two shall contain equal angles, and the plane passing through the first two shall be parallel to the plane passing through the other two.

Fig. 130.



Take AC = BD, AE = BF, and join CE, DF, AB, CD, EF. Because AC is equal and parallel to BD, the figure ABDC is a parallelogram; therefore CD is equal and parallel to AB. For a similar reason EF is equal and parallel to AB; therefore also CE is equal and parallel to DF (Cor. 5, and 28, 1, P. I.); therefore the triangles CAE, DBF are equal (10, 1, P. I.), hence the angle CAE = DBF.

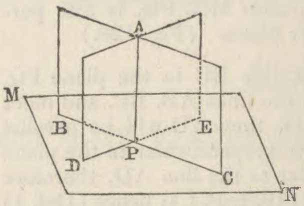
In the next place, the plane ACE is parallel to the plane BDF: for suppose that the plane parallel to BDF, passing through the point A, meets the lines CD, EF in any other points than C and E (for example in G and H), then (9) the three lines AB, GD, FH are equal; but the three lines AB, CD, EF have been shown to be equal; therefore CD = GD, and FH = EF, which is absurd, therefore the plane ACE is parallel to BDF.

Theorem XI.—If three straight lines AB, CD, EF, not situated in the same plane, are equal and parallel; the triangles ACE, BDF formed by joining the extremities of these lines are equal, and their planes parallel. (See fig. 130.)

For since AB is equal and parallel to CD, the figure ABDC is a parallelogram; therefore the side AC is equal and parallel to BD. In like manner it may be shown that the sides AE, BF are equal and parallel; also CE, DF; therefore the triangles CAE, BDF are equal. It may be demonstrated, as in last proposition, that their planes are parallel.

Theorem XII.—If a straight line AP be perpendicular to a plane MN; any plane APB, passing through AP, shall be perpendicular to the plane MN.

Fig. 131.



Let BC be the intersection of the planes AB, MN; if in the plane MN the line DE be drawn perpendicular to BP, the line AP, being perpendicular to the plane MN, shall be perpendicular to each of the straight lines BC, DE; therefore the angle APD is a right angle; now PA and PD are drawn in the planes AB, MN perpendicular to their common section, therefore (5 Def.) the planes AB, MN are perpendicular to each other.

Scholium. When three straight lines, such as AP, BP, DP, are perpendicular to each other, each is perpendicular to the plane of the two other lines.

Theorem XIII.—If the plane AB be perpendicular to the plane MN, and if in the plane AB a straight line PA be drawn perpendicular to BP, the common intersection of the planes; then shall PA be perpendicular to the plane MN. (Fig. 131.)

For, if in the plane MN, a line PD be drawn perpendicular to PB, the angle APD shall be a right angle, because the planes are perpendicular to each other; therefore the line AP is perpendicular to the two lines PB, PD, and therefore it is perpendicular to their plane MN.

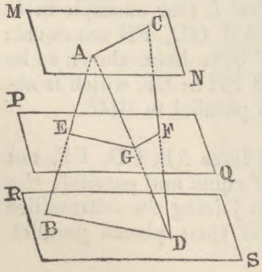
Cor. If the plane AB be perpendicular to the plane MN, and from any point P, in their common intersection, a perpendicular be drawn to the plane MN; this perpendicular shall be in the plane AB; for if it is not, a perpendicular AP may be drawn in the plane AB to the common intersection BP, which will be at the same time perpendicular to the plane MN; therefore, at the same point P, there may be two perpendiculars to a plane NM, which is impossible (4).

Theorem XIV.—If two planes AB, AD be perpendicular to a third; their common intersection AP is perpendicular to the third plane. (Fig. 131.)

For, if through the point P a perpendicular be drawn to the plane MN, this perpendicular shall be in the plane AB, and also in the plane AD (Cor. 12); therefore it is at their common intersection AP.

Theorem XV.—If two straight lines be cut by parallel planes; they shall be cut in the same ratio.

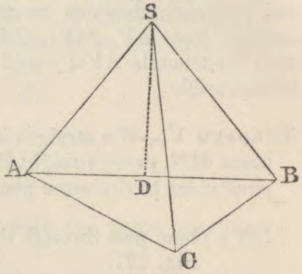
Fig. 132.



Let the line AB meet the planes MN, PQ, RS, in A, E, B; and let CD meet them in C, F, D, then shall AE : EB = CF : FD. For draw AD meeting the plane PQ in G, and join AC, EG, GF, BD; the lines EG, BD being the common sections of the plane of the triangle ABD and the parallel planes PQ, RS, they are parallel (7); and in like manner it appears, that AC, GF are parallel; therefore AE : EB (= AG : GD) = CF : FD.

Theorem XVI.—If a solid angle be contained by three plane angles; the sum of any two of these is greater than the third.

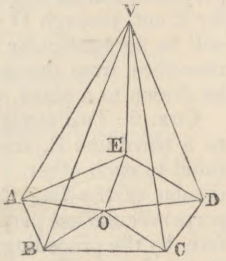
Fig. 133.



It is evidently only necessary to demonstrate the theorem, when the plane angle which is compared with the sum of the other two is greater than either of them; for, if it were equal to or less than one of them, the theorem would be manifest; therefore let S be a solid angle formed by three plane angles ASB, ASC, BSC, of which ASB is the greatest. In the plane ASB make the angle BSD = BSC; draw any straight line ADB, and having taken SC = SD, join AC, BC; the triangles BSC, BSD, having two sides, and the included angle of the one equal to two sides, and the included angle of the other, each to each, are equal (5, 1, P. I.), therefore BD = BC; now $AB \angle AC + BC$, therefore, taking BD from the first of these unequal quantities, and BC from the second, we get $AD \angle AC$; and as the triangles ASD, ASC have SD = SC, and SA common to both, and $AD \angle AC$, therefore (9, 1, P. I.) the angle $ASD \angle ASC$; and, adding DSB to the one, and CSB to the other, $ASB \angle ASC + BSC$.

Theorem XVII.—The sum of all the plane angles which form any solid angle is less than four right angles.

Fig. 134.



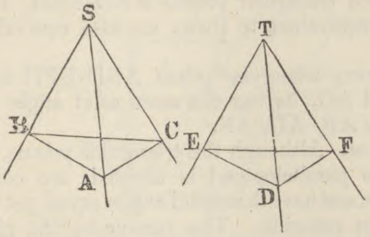
Let the solid angle V be cut by any plane ABCDE; from a point O taken in this plane, draw to all its angles the lines OA, OB, OC, OD, OE. The sum of all the angles of the triangles AVB, BVC, &c. formed about the vertex V is equivalent to the sum of the angles of a like number of triangles AOB, BOC, &c. formed about the point O. Now at B the angle ABC, which is the sum of OBA and OBC, is less than the sum of the angles VBA, VBC (16); in like manner at C, $OCB + OCD \angle VCB + VCD$, and so on with all the angles of the polygon ABCDE. Hence, in the triangles of which the common vertex is O, the sum of the angles at their bases is less than the sum of the angles at the bases of the triangles which have their vertex at V; therefore the sum of the angles about the point O is greater than the sum of the angles about the point V. But the sum of the angles about O is equal to four right angles, therefore the sum of the plane angles which form the solid angle about the vertex V is less than four right angles.

Scholium. This demonstration supposes that the solid angle is convex, or that it lies all on one side of the plane of any one of its faces. If it were otherwise, the sum of the solid angles would be unlimited.

Theorem XVIII.—If each of two solid angles be contained by three plane angles equal to one another, each to each; the planes in which the equal angles are, have the same inclination to one another.

Let the angle ASB = DTE, the angle ASC = DTF, and the angle BSC = ETF; the two planes ASB, ASC shall have to each other the same inclination as the two planes DTE, DTF.

Fig. 135.



Take A any point in SA, and in the two planes ASB, ASC draw AB and AC perpendiculars to AS, then (Def. 4) the angle BAC is the inclination of these planes; again, take TD = SA, and in the planes TDE, TDF draw DE and DF perpendiculars to TD, and the angle EDF shall be the inclination of these other planes; join BC, EF. The triangles ASB, DTE have the side AS=DT, the angle SAB = TDE and ASB = DTE, therefore the triangles are equal, and thus AB = DE, and SB = TE. In like manner it appears that the triangles ASC, DTF are equal, and therefore that AC = DF, and SC = TF. Now the triangles BSC, ETF, having BS = TE, SC = TF, and the angle BSC = ETF, are also equal, and therefore BC = EF; but it has been shown that AB = DE, and that AC = DF; therefore the triangles BAC, EDF are equal, and consequently the angle BAC = EDF; that is, the inclination of the planes ASB and ASC is equal to the inclination of the planes DTE and DTF. In the same manner it may be proved that the other planes have the same inclination to one another.

Scholium. If the three plane angles which contain the solid angles are equal, each to each; and if the angles are also *disposed in the same order* in the two solid angles, then these angles when applied to one another will coincide and be equal. But if the plane angles be *disposed in a contrary order*, the solid angles will not coincide, although the theorem is equally true in both cases. In this last case, the solid angles are called *Symmetrical angles*, and they must be accounted equal, because they are equal in every thing that determines their magnitude.

SECT. II.—OF SOLIDS BOUNDED BY PLANES.

Definitions.

I. A *Solid* is that which has length, breadth, and thickness.

II. A *Prism* is a solid contained by plane figures, of which two that are opposite are equal, similar, and parallel; and the others are parallelograms.

To construct this solid, let ABCDE be any polygon, fig. 136; if in a plane parallel to ABC there be drawn straight lines FG, GH, HI, &c. equal and parallel to the sides AB, BC, CD, &c. so as to form a polygon FGHIK equal to ABCDE, and straight lines AF, BG, CH, &c. be drawn, joining the vertices of the homologous angles in the two planes; the planes or faces ABGF, BCHG, &c. thus formed will be parallelograms; and the solid ABCDEFGHIK contained by these parallelograms and the two polygons is the prism itself.

III. The equal and parallel polygons ABCDE, FGHIK are called the *Bases* of the prism; and the distance between the bases is its *Altitude*.

IV. When the base of a prism is a parallelogram, and consequently the figure has all its faces parallelograms; it is called a *parallelopiped*. A parallelopiped is *rectangular*, when all its faces are rectangles.

V. A *Cube* is a rectangular parallelopiped contained by six equal squares.

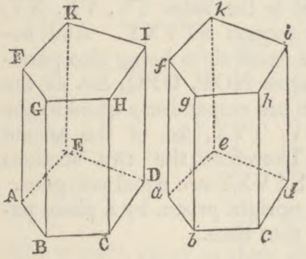
VI. A *Pyramid* is a solid contained by several planes, which meet in the same point V, and terminate in a polygonal plane ABCDE. Fig. 134.

VII. The polygon ABCDE is called the *Base* of the pyramid; the point V is its *Vertex*; and a perpendicular let fall from the vertex upon the base is called its *Altitude*.

VIII. Two solids are *similar* when they are contained by the same number of similar planes, similarly situated, and having like inclinations to one another.

Theorem I.—Two prisms are equal when the three planes which contain a solid angle of the one are equal to the three planes which contain a solid angle of the other, each to each, and are similarly situated.

Fig. 136.



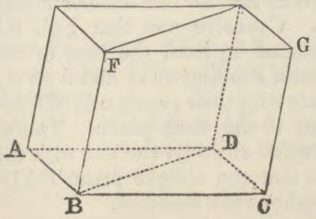
Let the base ABCDE be equal to the base *abcde*, the parallelogram ABGF equal to the parallelogram *abgf*, and the parallelogram BCHG equal to the parallelogram *bchg*; the prism ABCI shall be equal to the prism *abci*.

For let the base ABCDE be applied to its equal the base *abcde*, so that they may coincide with each other; then, because the three plane angles which form the solid angle B are equal to the three plane angles which form the angle *b*, each to each, viz. ABC = *abc*, ABG = *abg*, and GBC = *gbc*, and because these angles are similarly situated, the solid angles B and *b* are equal (15, 1), therefore the side BG shall fall upon the side *bg*; and because the parallelograms ABGF, *abgf* are equal, the side FG shall fall upon its equal *fg*; in like manner it may be shown that GH falls upon *gh*, therefore the upper base FGHIK coincides entirely with its equal *fghik*, and the two solids coincide with each other, or occupy the same space, therefore the prisms are equal.

Cor. Two right prisms which have equal bases and equal altitudes are equal to one another. If the equal angles of the lower bases follow each other in the same order, then the three planes which contain each solid angle of the one prism will be respectively equal to the three planes which contain a solid angle of the other prism, and will be similarly situated; and when the one solid angle is applied to the other, these planes will coincide, and the prisms will exactly coincide. If the equal angles of the lower base follow each other in a contrary order, then, by inverting one of the prisms, so that its upper may become its lower base, the angles of the two bases will follow each other in the same order; so that in either case the prisms coincide and are equal.

Theorem II.—In any parallelopiped, the opposite planes are equal and parallel.

Fig. 137.



From the nature of the solid (4 Def.), the bases ABCD, EFGH are equal parallelograms, and their sides are parallel; therefore the planes AC, EG are parallel; and because AD is equal and parallel to BC, and AE is equal and parallel to BF, the angle DAE = CBF, and the plane DAE is parallel to the plane CBF (10, 1); therefore also the parallelogram DAEH is equal to the parallelogram CBFG. It may in like manner be demonstrated that the opposite parallelograms ABFE, DCGH are equal and parallel.

Cor. Any two opposite faces of a parallelopiped may be taken for its bases.

Theorem III.—In every prism ABCDE-FGHIK, the sections NOPQR, STVXY, made by parallel planes, are equal polygons.

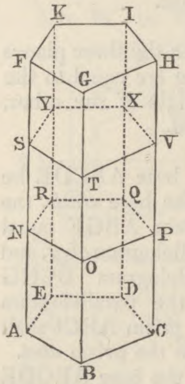


Fig. 138.

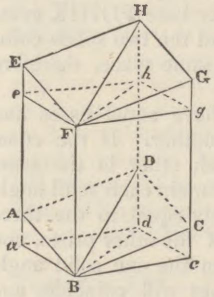
Because the parallel planes NOPQR, STVXY are cut by a third plane NOST; the sections NO, ST are parallel; and these lines are included between the parallels NS, OT, which are sides of the prism; therefore NO is equal to ST. For a like reason the sides OP, PQ, QR, &c. of the section NOPQR are respectively equal to the sides TV, VX, XY, &c. of the section STVXY. And besides, these equal sides being also parallel, the angles NOP, OPQ, &c. of the first section are respectively equal to the angles STV, TVX, &c. of the second section. Therefore the two sections NOPQR, STVXY are equal polygons.

Cor. Every section of an upright prism, by a plane parallel to the base, is equal to that base.

Theorem IV.—If a parallelopiped AG be cut by a plane passing through BD, FH, the diagonals of two of the opposite planes; it will be cut into two equivalent prisms ABDHEF, GHFBCD equal to one another.

Through B and F, the extremities of one of the sides, draw the planes B*adc*, F*ehg*, perpendicular to BF, to meet the three other sides of the solid in *a*, *d*, *c*, and in *e*, *h*, *g*. These sections are equal (3), because the planes are perpendicular to FB, and therefore parallel. They are also parallelograms (7, 1), because *a*B, *dc*, the opposite sides of the same section, are the intersections of two parallel planes ABFE, DCGH by the same plane. For a like reason, the figure B*ae*F is a parallelogram, as also the other lateral faces BFGC, *cdhg*, *adhe* of the solid B*adc*-F*ehg*. Therefore this solid is a prism (Def. 2), and it is a right prism, because BF is perpendicular to the plane of the base.

Fig. 139.



From the constitution of the figure, the right prism B*h* is divided into two right triangular prisms *a*B*d*-*e*F*h*, *c*B*d*-*g*F*h*, and it is now to be proved that the oblique triangular prism ABCD-EFGH is equal to the right triangular prism *a*B*d*-*e*F*h*. Since these two prisms have a common part ABD-*efh*, it is only necessary to prove that the remainders, viz. the solids B*a*AD*d*, F*e*FH*h* are equivalent to each other.

Because BAEF, B*ae*F are parallelograms, therefore AE = BF = *ae*; hence A*a* = E*e*. In like manner it may be proved that D*d* = H*h*. Conceive now that F*eh*, the base of the solid F*eh*, is placed on B*ad*, the base of the solid B*a*AD*d*; then, the point *e* falling on *a*, and *h* on *d*; the lines *e*E, *h*H will coincide with their equals *a*A, *d*D, because they are perpendicular to the same plane. Therefore, the two solids will coincide entirely, the one with the other; and hence it follows that the oblique prism BAD-FEH is equivalent to the right prism B*ad*-F*eh*.

In the same manner it may be demonstrated that the oblique prism BCD-FGH is equal to the right prism B*cd*-F*gh*. But the two prisms are equal (Cor. to 1), since they have the same altitude, BF and their bases are equal, they being halves of the same parallelogram; therefore the two triangular prisms BAD-FEH, BCD-FGH, which are equivalent to them, are also equivalent to each other.

Cor. Every triangular prism ABD-EFH is half a parallelopiped AG, having the same solid angle A with the same edges AB, AD, AE.

Scholium. Although the triangular prisms, into which the oblique parallelopiped is divided, are contained by equal planes, and have their solid angles equal, yet they cannot be made to coincide. The reason is, the plane angles about the corresponding solid angles are not placed in the same order. These solid angles are therefore symmetrical, and cannot be brought to coincide (18, 1). Two prisms, or two solids of any kind so constituted, are called *symmetrical solids.* An exact notion of their relation to each other may be acquired, by considering that any object, and its image reflected from a plane mirror, are symmetrical figures. They resemble each other exactly; but every part is placed in a reverse order; thus, the reflected image of a right hand is a left hand.

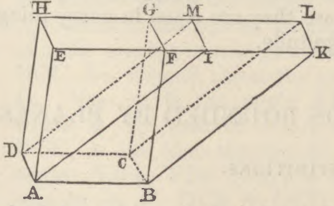
In symmetrical solids every circumstance on which the magnitude of each depends is the very same in both; hence it might be assumed, as an axiom in the geometry of solids, that they are equivalent.

Theorem V.—If two parallelopipeds AG, AL have a common base ABCD, and have their upper bases EFGH, IKLM in the same plane, and between the same parallels EK, HL; the two parallelopipeds are equivalent to each other.

There may be three cases, according as EI is greater or smaller than EF, or equal to it; but the demonstration is the same for them all. In the first place we shall prove that the triangular prism AEI-DHM is equal to the triangular prism BFK-CGL.

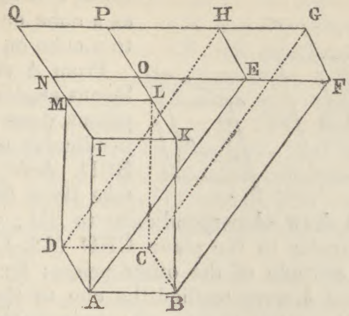
Since AE is parallel to BF, and HE to GF, the angle AEI = BFK, HEI = GFK, and HEA = GFB. Of these six angles, the three first form the solid angle E, and the three others form the solid angle F; therefore, since the plane angles are equal each to each, and similarly situated, the solid angles E and F are equal. Now, if the prism AEI-DHM be applied to the prism BFK-CGL, so that their bases AEI, BFK, which are equal, may coincide with each other; then, because the solid angle E is equal to the solid angle F, the side EH shall fall upon FG, and this is all that is necessary to prove that the two prisms coincide entirely; for the base AEI and the edge EH determine the prism AEM, and the base BFK and the edge FG determine the prism BFL (1); therefore the prisms are equal. Now, if from the solid AEL, the prism AEM be taken away, there will remain the parallelopiped AIL; and if from the same solid AEL, the prism BFL be taken away, there will remain the parallelopiped AEG; therefore the parallelopipeds AIL, AEG are equivalent to each other.

Fig. 140.



Theorem VI.—Two parallelopipeds upon the same base, and having the same altitude, are equivalent to one another.

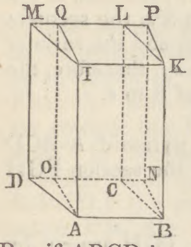
Fig. 141.



Let ABCD be the common base of the two parallelopipeds AG, AL, which, because they have the same altitude, will have their upper bases in the same plane. Then, because EF and AB are equal and parallel, as also IK and AB, EF is equal and parallel to IK (Cor. 2, 5, 1); for a similar reason GF is equal and parallel to LK. Let the sides EF, HG, as also the sides LK, IM, be produced, so as to form by their intersections the parallelogram NOPQ; it is manifest that this parallelogram is equal to each of the bases EFGH, IKLM. Now, if we suppose a third parallelopiped, which, with the same lower base ABCD, has for its upper base NOPQ, this third parallelopiped will be equivalent to the parallelopiped AG (4); for the same reason the third parallelopiped will be equivalent to the parallelopiped AL · therefore the two parallelopipeds AG, AL, which have the same base and the same altitude, are equivalent to one another.

Theorem VII.—Any parallelopiped may be changed into a rectangular parallelopiped having the same altitude, and an equivalent base. (Fig. 141 and 142.)

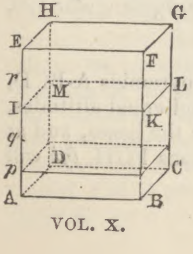
Fig. 142.



At the points A, B, C, D (fig. 141) let AI, BK, CL, DM, be drawn perpendicular to the plane ABCD, and terminating in the plane of the upper base; then, IK, KL, LM, MI, being joined, a parallelopiped AL will thus be formed, which will manifestly have its lateral faces AK, BL, CM, DI rectangles; and if the base AC be a rectangle, the solid AL will be a rectangular parallelopiped equivalent to the parallelopiped AG. But if ABCD be not a rectangle (fig. 142), draw AO and BN perpendicular to CD, and OQ and NP perpendicular to DC, meeting ML in Q and P; the solid ABNOIKPQ will manifestly be a rectangular parallelopiped, which will be equal to the parallelopiped AL; for they have the same base ABKI, and the same altitude, viz. AO; therefore the rectangular parallelopiped AP is equivalent to the parallelopiped AG (fig. 141), and they have the same altitude, and the base ABNO of the former is equivalent to the base ABCD of the latter.

Theorem VIII.—Two rectangular parallelopipeds AG, AL, which have the same base ABCD, are to each other as their altitudes AE, AI.

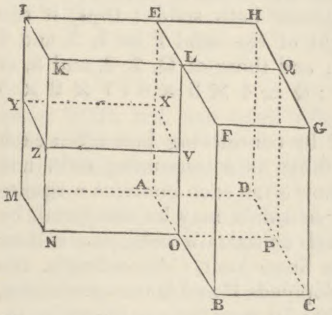
Fig. 143.



Suppose that the altitudes AE, AI are to each other as the numbers m and n, so that AE contains m such equal parts pq, &c. as AI contains n. Let AE and AI be divided into m and n equal parts respectively, and let planes pass through the points of division parallel to the base ABCD; thus the parallelopiped AG will be divided into m solids, which will also be parallelopipeds having equal bases (3) and equal altitudes, therefore they will be equal among themselves; and in like manner the parallelopiped AL will be divided into n equal solids; and as each of the solids in AG is equal to each of the solids in AL, the parallelopiped AG will contain m such equal parts as the parallelopiped AL contains n; therefore the parallelopiped AG will be to the parallelopiped AL as the number m to the number n, that is, as AE the altitude of the former to AI the altitude of the latter.

Theorem IX.—Two rectangular parallelopipeds AG, AK, which have the same altitude AE, are to each other as their bases ABCD, AMNO.

Fig. 144.



Let the two solids be placed, the one by the side of the other, as represented in the figure, and let the plane ONKI, be produced, so as to meet the plane DCGH in PQ, thus forming a third parallelopiped AQ, which may be compared with each of the parallelopipeds AG, AK. The two solids AG, AQ, having the same base ADHE, are to each other as their altitudes AB, AO (8); and, in like manner, the two solids AQ, AK having the same base AOLE, are to each other as their altitudes AD, AM; that is,

$$\text{solid AG} : \text{sol. AQ} = \text{AB} : \text{AO},$$
$$\text{sol. AQ} : \text{sol. AK} = \text{AD} : \text{AM};$$
but $\text{AB} : \text{AO} = \text{base AC} : \text{base AP}$ (3, 4, Part 1.)
and $\text{AD} : \text{AM} = \text{base AP} : \text{base AN}$,
therefore,
$$\text{sol. AG} : \text{sol. AQ} = \text{base AC} : \text{base AP},$$
$$\text{sol. AQ} : \text{sol. AK} = \text{base AP} : \text{base AN},$$
therefore, *ex æquo*,
$$\text{sol. AG} : \text{sol. AK} = \text{base AC} : \text{base AN}.$$

Theorem X.—Two rectangular parallelopipeds are to each other as the products of numbers proportional to their bases and altitudes, or as the products of the numbers which express their three dimensions. (Fig. 144.)

Let AG be a parallelopiped, the three dimensions of which are expressed by the lines AB, AD, AE, and AZ another parallelopiped the dimensions of which are expressed by the lines AO, AM, AX. Let the two solids AG, AZ be so placed, that their surfaces may have a common angle BAE; produce such of the planes as are necessary, so as to form a third parallelopiped AK, having the same altitude as the parallelopiped AG. By the last proposition,

$$\text{sol. AG} : \text{sol. AK} = \text{base AC} : \text{base AN},$$
and by the last theorem but one,
$$\text{sol. AK} : \text{sol. AZ} = \text{AE} : \text{AX};$$
but, considering the bases AC, AN as measured by numbers, as also the altitudes AE, AX, by 1 of Sect. III. Part I.
$$\text{base AC} : \text{base AN} = \text{AE} \times \text{base AC} : \text{AE} \times \text{base AN},$$
and $\text{AE} : \text{AX} = \text{AE} \times \text{base AN} : \text{AX} \times \text{base AN}$,
therefore,
$$\text{sol. AG} : \text{sol. AK} = \text{AE} \times \text{base AC} : \text{AE} \times \text{base AN},$$
$$\text{sol. AK} : \text{sol. AZ} = \text{AE} \times \text{base AN} : \text{AX} \times \text{base AN},$$
therefore, *ex æquo*,
$$\text{sol. AG} : \text{sol. AZ} = \text{AE} \times \text{base AC} : \text{AX} \times \text{base AN};$$
which proportion, by substituting for the bases AC, AN

their numerical values AB × AD and AO × AM, becomes sol. AG : sol. AZ = AB × AD × AE : AO × AM × AX.

Scholium. Hence it appears that the product of the base of a rectangular parallelopiped by its altitude, or the product of its three dimensions, may be taken as its numerical measure; and it is upon this principle that all other solids are estimated. When two parallelopipeds are compared by means of their bases and altitudes, their bases must be considered as measured by the same superficial unit, and their altitudes by the same linear unit; thus, if P and Q denote two parallelopipeds, and the base of P contain three such equal spaces as that of Q contains four; and the altitude of P contains two such equal lines as that of Q contains five, then P : Q = 3 × 2 : 4 × 5 = 6 : 20.

If all the dimensions of each solid be used in comparing them, then, the same linear unit must be employed in estimating all the dimensions of both solids; thus, if the length, breadth, and height of the solid P be 4, 3, and 6 linear units, respectively; and those of Q, 7, 2, and 5, of the same units; then P : Q = 4 × 3 × 6 : 7 × 2 × 5 = 72 : 70.

As lines are compared by considering how often each contains some other line taken as a measuring unit, and surfaces, by considering how often each contains a square whose side is that unit; so solids may be compared, by considering how often each contains a cube, the side or edge of which is the same linear unit. Accordingly, the dimensions of the parallelopipeds P and Q being as above, the proportion P : Q = 72 : 70 may be considered as indicating that P contains 72 such equal cubes as Q contains 70.

The magnitude of a solid, its bulk, or its extension, constitutes its *solidity*, or its *content;* thus, we say, that the solidity or the content of a rectangular parallelopiped is equal to the product of its base by its altitude, or to the product of its three dimensions.

Theorem XI.—The solidity of any parallelopiped, or in general of any prism, is equal to the product of its base by its altitude.

1. Any parallelopiped is equivalent to a rectangular parallelopiped of the same altitude, and an equivalent base (7); and it has been shown that the solidity of such a parallelopiped is equal to the product of its base by its altitude.

2. Every triangular prism is the half of a parallelopiped of the same altitude, but having its base double that of the prism (3); therefore the solidity of the prism is half that of the parallelopiped, or it is half the product of the base of the parallelopiped by its altitude, that is, it is equal to the product of the base of the prism by its altitude.

3. Any other prism may be divided into as many triangular prisms as there can be triangles in the polygon which forms its base; but the solidity of each prism is equal to the product of its base by their common altitude; therefore the solidity of the whole prism is equal to the product of the sum of all their bases by the common altitude, or it is equal to the product of the base of the prism, which is the sum of them all, by its altitude.

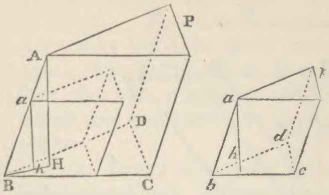
Cor. Two prisms having the same altitude are to each other as their bases; and two prisms having the same base are to each other as their altitudes.

Note. The cube of a line AB is expressed thus; AB × AB × AB, but more commonly by AB^3.

Theorem XII.—Similar prisms are to one another as the cubes of their homologous sides.

Let P and *p* be two prisms, of which BC, *bc* are the homologous sides; the prism P is to the prism *p* as a cube on the line BC to a cube on *bc*.

Fig. 145.



From A and *a*, homologous angles of the two prisms, draw AH, *ah* perpendicular to their bases BCD, *bcd*. Join BH; take B*a* = *ba*, and in the plane BHA draw *ah* perpendicular to BH; then *ah* shall be perpendicular to the plane CBD (13, 1), and equal to *ah*, the altitude of the other prism; for if the solid angles B and *b* were applied the one to the other, the planes which contain them, and consequently the perpendiculars *ah*, *ah* would coincide (Schol. 18, 1).

Now, because of the similar triangles ABH, *abh*, and the similar figures AC, *ac*,

$$AH : ah = AB : ab = BC : bc;$$

and because of the similar bases,

$$\text{base } BCD : \text{base } bcd = BC^2 : bc^2 \text{ (25, 4, Part I.)}$$

From these two proportions, by considering all the quantities, as expressed by numbers (by 11, 3, Part I.),

$$AH \times \text{base } BCD : ah \times \text{base } BCD = BC^3 : bc \times BC^2,$$
$$ah \times \text{base } BCD : ah \times \text{base } bcd = bc \times BC^2 : bc^3,$$

therefore, *ex æquo*,

$$AH \times \text{base } BCD : ah \times \text{base } bcd = BC^3 : bc^3.$$

But AH × base BCD expresses the content of the prism P; and *ah* × base *bcd* expresses that of the other prism *p;* therefore

$$\text{prism } P : \text{prism } p = BC^3 : bc^3.$$

Cor. Similar prisms are to one another in the triplicate ratio of their homologous sides. Let S and *s* denote the homologous sides of two similar prisms P and *p*. It is manifest that

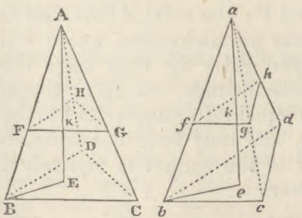
$$S^3,\ S^2s,\ Ss^2,\ s^3,$$

are four continual proportionals; therefore (Def. 11, Sect. III. Part I.), the ratio of S^3, the first, to s^3, the last, is the triplicate of the ratio of S^3, the first, to S^2s, the second; now, by the proposition, $P : p = S^3 : s^3$, and the ratio of S^3 to S^2s is the same as the ratio of S to *s;* therefore, the ratio of P to *p* is triplicate of the ratio of S to *s*.

Prop. XIII. Theor.—If a triangular pyramid A-BCD be cut by a plane parallel to its base, the section FGH is similar to the base.

For because the parallel planes BCD, FGH are cut by a third plane ABC, the sections FG, BC are parallel (7, 1). In like manner it appears that FH is parallel to BD; therefore the angle HFG is equal to the angle DBC (10, 1.) And because the triangle ABC is similar to the triangle AFG, and the triangle ABD is similar to the triangle AFH, we have

Fig. 146.



$$BC : BA = FG : FA, \text{ and } BA : BD = FA : FH.$$

Therefore, *ex æquali*, BC : BD = FG : FH; now the angle DBC has been shown to be equal to the angle HFG; therefore the triangles DBC, HFG are equiangular (20, 4, Part I.)

Prop. XIV. Theor.—If two triangular pyramids A-BCD, *a-bcd*, which have equivalent bases and equal altitudes, be cut by planes that are parallel to the bases, and at equal distances from them; the sections FGH, *fgh* will be equal. (Fig. 146.)

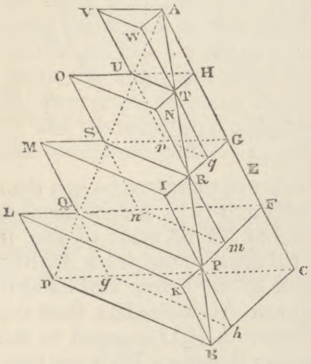
Draw AKE, ake perpendicular to the bases BCD, bcd, meeting the cutting planes in K and k; then, because of the parallel planes, we have $AE : AK = AB : AF$, and $ae : ak = ab : af$ (15, 1); but, by hypothesis, $AE = ae$, and $AK = ak$; therefore, $AB : AF = ab : af$. Again, because of similar triangles, $AB : AF = BC : FG$, and $ab : af = bc : fg$; therefore $BC : FG = bc : fg$; and hence $BC^2 : FG^2 = bc^2 : fg^2$ (23, 4, Part I.); but because of the similar triangles BDC, FHG, $BC^2 : FG^2 =$ trian. BDC : trian. FHG, and in like manner $bc^2 : fg^2 =$ trian. bcd : trian. fgh (25, 4, Part I.), therefore

trian. BCD : trian. FGH = trian. bcd : trian. fgh.

Now, trian. BCD = trian. bcd (by hypothesis), therefore the triangle FHG is equal to the triangle fhg.

THEOREM XV.—A series of prisms of the same altitude may be circumscribed about any pyramid ABCD, such, that the sum of the prisms shall exceed the pyramid by a solid less than any given solid Z.

Fig. 147.

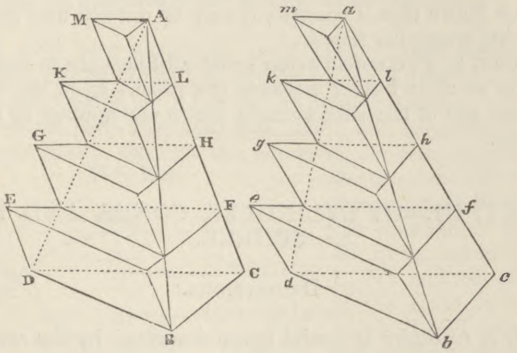


Let Z denote a prism standing on the same base with the pyramid, viz. the triangle BCD, and having for its altitude the perpendicular drawn from a certain point E in the line AC upon the plane BCD. It is evident that CE multiplied by a certain number m will be greater than AC; divide CA into as many equal parts as there are units in m, and let these be CF, FG, GH, HA, each of which will be less than CE. Through each of the points F, G, H, let planes be made to pass parallel to the plane BCD, making with the sides of the pyramid the sections FPQ, GRS, HTU, which will be all similar to one another, and to the base BCD (13). From the point B draw in the plane of the triangle ABC the straight line BK parallel to CF, meeting FP produced in K. In like manner, from D draw DL parallel to CF, meeting FQ in L; join KL, and it is plain that the solid KBCDLF is a prism. By the same construction let the prisms PM, RO, TV be described. Also let the straight line IP, which is in the plane of the triangle ABC, be produced till it meet BC in h; and let the line MQ be produced till it meet DC in g. Join hg, then hCg QFP is a prism; and is equal to the prism PM (Cor. 11). In the same manner is described the prism mS equal to the prism RO, and the prism qU equal to the prism TV. The sum, therefore, of all the inscribed prisms hQ, mS, and qU is equal to the sum of the prisms PM, RO, and TV, that is, to the sum of all the circumscribed prisms except the prism BL; wherefore, BL is the excess of the prisms circumscribed about the pyramid above the prisms inscribed within it. But the prism BL is less than the prism which has the triangle BCD for its base, and for its altitude the perpendicular from E upon the plane BCD, which prism is, by hypothesis, equal to the given solid Z; therefore the excess of the circumscribed above the inscribed prisms is less than the solid Z. But the excess of the circumscribed prisms above the inscribed is greater than their excess above the pyramid ABCD, because ABCD is greater than the sum of the inscribed prisms; much more therefore is the excess of the circumscribed prisms above the pyramid less than the solid Z. A series of prisms of the same altitude has therefore been circumscribed about the pyramid ABCD exceeding it by a solid less than the given solid Z.

PROP. XVI. THEOR.—Pyramids that have equal bases and altitudes are equal to one another.

Let A-BCD, a-bcd be two pyramids that have equal bases BCD, bcd, and equal altitudes; viz. the perpendiculars drawn from the vertices A and a upon the planes BCD, bcd, the pyramid A-BCD is equal to the pyramid a-bcd.

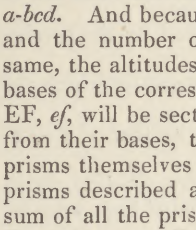
Fig. 148.



For if they are not equal, let Z represent the solid which is equal to the excess of one of them, a-bcd, above the other A-BCD; and let a series of prisms CE, FG, HK, LM, of the same altitude be circumscribed about the pyramid A-BCD, so as to exceed it by a solid less than Z, which is always possible (15); also let a series of prisms, ce, fg, hk, lm, equal in number to the other, and of the same altitude, be circumscribed about the pyramid a-bcd. And because the pyramids have equal altitudes, and the number of prisms described about each is the same, the altitudes of the prisms will be all equal, and the bases of the corresponding prisms in the two pyramids, as EF, ef, will be sections of the pyramids at equal distances from their bases, therefore they are equal (14), and the prisms themselves are equal (1), and the sum of all the prisms described about the one pyramid is equal to the sum of all the prisms described about the other pyramid. To abridge, put P and p to denote the pyramids A-BCD, and a-bcd respectively, and Q and q to express the sums of the prisms described about them. Then, because by hypothesis $Z = p - P$, and by construction $Z > Q - P$, therefore $p - P > Q - P$, hence p must be greater than Q; but Q is equal to q, therefore p must be greater than q, that is, the pyramid p is greater than q, the sum of the prisms described about it, which is impossible; therefore the pyramids P, p are not unequal, that is, they are equal.

THEOREM XVII.—Every prism having a triangular base may be divided into three pyramids that have triangular bases, and that are equal to one another.

Fig. 149.



Let ABC, DEF be the opposite bases of a triangular prism. Join AE, EC, CD; and because ABED is a parallelogram, of which AE is the diameter, the triangle ADE is equal to the triangle ABE; therefore the pyramid of which the base is the triangle ADE and vertex the point C, is equal to the pyramid of which the base is the triangle ABE, and vertex the point C. But the pyramid of which the base is the triangle ABE and vertex the point C, that is, the pyramid ABCE, is equal to the pyramid DEFC (16), for they have equal bases, viz. the triangles ABC, DFE, and the same altitude, viz. the altitude of the prism ABCDEF. Therefore, the three pyramids ADEC, ABEC, DFEC are equal to one

Geometry of Solids.

another; but these pyramids make up the whole prism ABCDEF; therefore, the prism ABCDEF is divided into three equal pyramids.

Cor. 1. From this it is manifest that every pyramid is the third part of a prism which has the same base and the same altitude with it; for if the base of the prism be any other figure than a triangle, it may be divided into prisms having triangular bases.

Cor. 2. Pyramids having equal altitudes are to one another as their bases; because the prisms upon the same bases, and of the same altitude, are to one another as their bases.

SECT. III.—OF CYLINDERS, CONES, AND THE SPHERE.

Definitions.

I. A *Cylinder* is a solid figure described by the revolution of a right-angled parallelogram about one of its sides, which remains fixed.

The *Axis* of the cylinder is the fixed straight line about which the parallelogram revolves.

The *Bases* of the cylinder are the circles described by the two revolving opposite sides of the parallelogram.

II. A *Cone* is a solid figure described by the revolution of a right-angled triangle about one of the sides containing the right angle, which side remains fixed.

The *Axis* of the cone is the fixed line about which the triangle revolves.

The *Base* of the cone is the circle described by that side containing the right angle which revolves.

III. A *Sphere* is a solid figure described by the revolution of a semicircle about a diameter.

The *Axis* of a sphere is the fixed line about which the semicircle revolves.

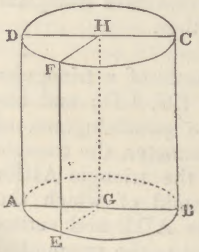
The *Centre* of a sphere is the same with that of the semicircle.

The *Diameter* of a sphere is any straight line which passes through the centre, and is terminated both ways by the superficies of the sphere.

IV. *Similar* cones and cylinders are those which have their axes and diameters of their bases proportional.

Theorem I. If from any point E in the circumference of the base of a cylinder ABCD, a perpendicular EF be drawn to the plane of the base AEB; the straight line EF is wholly in the cylindric superficies.

Fig. 150.

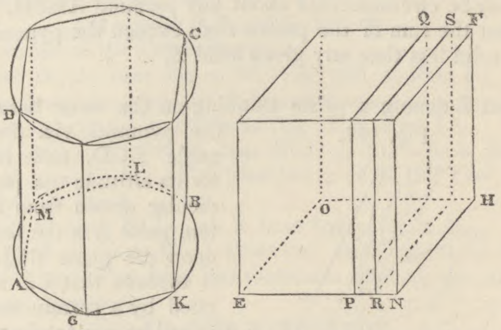


Let GH be the axis, and AGHD the rectangle, which by its revolution describes the cylinder. Because HG is perpendicular to AG in every position of the revolving rectangle, it is perpendicular to the plane of the circle described by AG; and because AD, the line which describes the cylindric superficies, is parallel to GH, it is also perpendicular to the plane of that circle (5, 1). Now when by the revolution of the rectangle AGHD the point A coincides with the point E, the line EF will coincide with AD, and thus will be wholly in the cylindric superficies; for otherwise two perpendiculars might be drawn to the same plane, from the same point, which is impossible (2 Cor. 4, 1).

Theorem II.—A cylinder and a parallelopiped having equivalent bases, and the same altitude, are equal to one another.

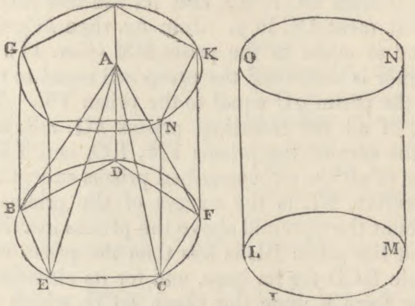
Let ABCD be a cylinder and EF a parallelopiped having equivalent bases, viz. the circle AGB and the parallelogram EH, and having also equal altitudes; the cylinder ABCD is equal to the parallelopiped EF. If not, let them be unequal; and first let the cylinder be less than the parallelopiped EF; and from the parallelopiped EF let there be cut off a part EQ by a plane PQ parallel to NF, equal to the cylinder ABCD. In the circle AGB inscribe the polygon AGKBLM that shall differ from the circle by a space less than the parallelogram PH (1 Cor. 2, 6, P. I.), and cut off from the parallelogram EH a part OR equal to the polygon AGKBLM, then it is manifest that the parallelogram OR is greater than the parallelogram OP, therefore the point R will fall between P and N. On the polygon AGKBLM let an upright prism be constituted of the same altitude with the cylinder, which will therefore be less than the cylinder, because it is within it (1); and if through the point R a plane RS parallel to NF be made to pass, it will cut off the parallelopiped ES equal to the prism AGBC, because its base is equal to that of the prism, and its altitude is the same. But the prism AGBC is less than the cylinder ABCD, and the cylinder ABCD is equal to the parallelopiped EQ, by hypothesis; therefore, ES is less than EQ, and it is also greater, which is impossible. The cylinder ABCD therefore is not less than the parallelopiped EF; and in the same manner it may be shown not to be greater than EF, therefore they are equal.

Fig. 151.



Theorem III.—If a cone and cylinder have the same base and the same altitude; the cone is the third part of the cylinder.

Fig. 152.

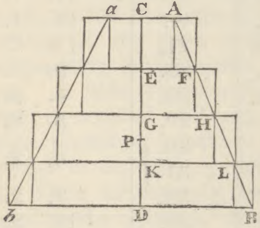


Let the cone ABCD and the cylinder BFKG have the same base, viz. the circle BCD, and the same altitude, viz. the perpendicular from the point A upon the plane BCD; the cone ABCD is the third part of the cylinder BFKG. If not, let the cone ABCD be the third part of another cylinder LMNO having the same altitude with the cylinder BFKG; but let the bases BCD, LIM be unequal, and first let BCD be greater than LIM. Then, because the circle BCD is greater than the circle LIM, a polygon may be inscribed in BCD that shall differ from it less than LIM does (1 Cor. 2, 6, P. I.), and which therefore will be greater than

LIM. Let this be the polygon BECFD, and upon BECFD let there be constituted the pyramid ABECFD, and the prism BCFKHG. Because the polygon BECFD is greater than the circle LIM, the prism BCFKHG is greater than the cylinder LMNO, for they have the same altitude, but the prism has the greater base. But the pyramid ABECFD is the third part of the prism BCFHG (17, 1); therefore it is greater than the third part of the cylinder LMNO. Now the cone ABECFD is by hypothesis the third part of the cylinder LMNO; therefore, the pyramid ABECFD is greater than the cone ABCD, and it is also less, because it is inscribed to the cone, which is impossible. Therefore the cone ABCD is not less than the third part of the cylinder BFKG. And in the same manner, by circumscribing a polygon about the circle BCD, it may be shown, that the cone ABCD is not greater than the third part of the cylinder BFKG; therefore, it is equal to the third part of the cylinder.

Theorem IV.—Let ABDC be a plane figure, bounded by a straight line CD, a line of any kind AB, which is terminated by perpendiculars at the extremities of CD, and by these perpendiculars AC, BC. Let AB *b a* be a solid generated by the revolution of this figure about CD as an axis; a series of cylinders may be described about the solid, and another series may be inscribed in it, having all the same altitude, and such that the sum of the circumscribed cylinders shall exceed the sum of the inscribed cylinders by less than any given solid S.

Fig. 153.



Let S denote a solid which is a cylinder, having B*b* for the diameter of its base, and DP for its height. Suppose the fixed axis CD to be divided into a number of equal parts DK, KG, GE, EC, each less than DP. In the plane of the figure ABDC, draw perpendiculars EF, GH, KL to meet the line AB in F, H, L. Construct the inscribed rectangles AE, FG, HK, LD, also the circumscribed rectangles CF, EH, GL, KB. By the rotation of the plane figure about the axis CD, these rectangles will evidently generate a series of cylinders inscribed in the solid, and another series described about it. Let the circumscribed cylinders, reckoned from the bottom of the solid to the top, be denoted by V, X, Y, Z, and the inscribed cylinder by v, x, y, z, then the sums of the circumscribed and inscribed cylinder will be

$$V + X + Y + Z,$$

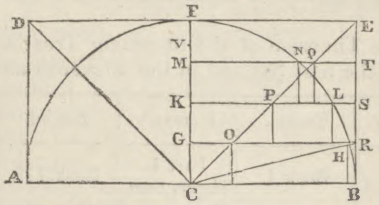
$$\text{and} \qquad v + x + y + z.$$

Now by the nature of the figure, each circumscribed cylinder is equal to the inscribed cylinder next below it; therefore $X = v$, $Y = x$, and $Z = y$, and hence the excess of the sum of all the circumscribed above the inscribed cylinders will be the same as the excess of the greatest circumscribed above the least inscribed cylinder; that is, it will be equal to $V - z$, and consequently will be less than V; but the lowest circumscribed cylinder V is less than the solid S, because it has the same base (viz. the circle having for its diameter B *b*), and a less altitude KD, by construction; therefore the excess of the series of circumscribed above the series of inscribed cylinders is less than the given solid S.

Cor. The difference between the solid AB *ba* and either of the two series of cylinders will be less than the greatest circumscribed cylinder: For the solid AB *ba* is greater than the one series of cylinders and less than the other; therefore it will differ from either series by a quantity less than the difference between the two.

Theorem V.—If a cone and hemisphere have equal bases and altitudes, and if a series of cylinders be described about the cone, and another series be inscribed in the hemisphere, and the cylinders have all the same altitude; the sum of the two series will be equal to a cylinder having the same base and altitude as the hemisphere.

Fig. 154.



Let AFB be a semicircle, and CFDA, CFEB, squares described on the radius CF, and let CE be the diagonal of one of the squares BF: Let CF be divided into any number of equal parts CG, GK, KM, MF; and let perpendiculars be drawn through the points of division, meeting the diagonal CE, in the points O, P, Q; the quadrantal arc BF in the points H, L, N; and the side of the square in the points R, S, T; construct the rectangles CO, GP, KQ, ME, which will circumscribe the triangle CFE; construct also the rectangles CH, GL, KN, which will be inscribed in the quadrant CFB. Suppose now the plane of the square to revolve about its side CF as an axis; the triangle CFE will then generate a cone, which will have DE for the diameter of its base, and C for its vertex; the quadrant CFB will generate a hemisphere, having for its base a circle of which AB is a diameter; and the square CBEF will generate a cylinder, having the same base and altitude as the hemisphere: also, the rectangles described about the triangle CFE will manifestly generate a series of cylinders circumscribing the cone; the rectangles inscribed in the quadrant will generate a series of cylinders inscribed in the hemisphere; and the rectangles CR, GS, KT, ME will generate a series of cylinders which will compose a cylinder having the same base and altitude as the hemisphere.

The triangles CFE, CGO are manifestly similar, and $CF = FE$; therefore $CG = GO$. In like manner, it may be proved that $CK = KP$ and that $CM = MQ$.

Join CH, and because CGH is a right-angled triangle, a circle described with CH as a radius will be equal to two circles described with CG and GH as radii (2 Cor. 4, 6, Part I.), but $CG = GO$, and $CH = GR$; therefore a circle described with GR as a radius will be equal to two circles described with GO and GH as radii; hence again it follows, that the cylinder generated by the rectangle CR will be equal to both the cylinders generated by the rectangles CO and CH, for they have all the same altitude, and the base of the first is equal to the sum of the bases of the other two. It may be demonstrated in the same manner that the cylinder generated by the rectangle GS is equal to the sum of the cylinders generated by the rectangles GP and GL, and the same of all the rest; therefore the sum of the cylinders generated by the rectangles CR, GS, KT, ME is equal to the two series of cylinders, one generated by the rectangles CO, GP, KQ, ME, and the other generated by the rectangles CH, GL, KN; that is, a cylinder having the same base and altitude as the hemisphere, is equal to the sum of the two series of cylinders, one described about the cone, and the other described in the hemisphere.

Theorem VI.—Every sphere is two thirds of the circumscribing cylinder. (Fig. 154.)

Let a figure be constructed exactly as is last proposition; and to abridge, let C denote the cone, *c* the series of cylinders described about it, H the hemisphere, *h* the cylinders described in it, and K the cylinder having the same base and altitude as the hemisphere, or cone. Moreover, put *d* for the difference between the cone and its circumscribed cylinders, and d' for the difference between the hemisphere and its inscribed cylinders; then we have

$$C + d = c, \text{ and } H = h + d',$$

and adding equals to equals,

$$C + H + d = c + h + d'.$$

But $c + h = K$ (5); therefore, $C + H + d = K + d'$, and $C + H + d - d' = K$, also $C + H = K + d' - d$. Hence it appears that the difference between $C + H$ and K is equal to the difference between d and d'. Now d is less than the cylinder generated by the rotation of the rectangle ME (Cor. to Prop. 4), and d' is less than the cylinder generated by the rectangle CR, which is equal to ME; therefore the difference between d and d' must be less than the same rectangle; hence the difference between $C + H$ and K is less than the cylinder generated by the revolution of the rectangle ME, or is less than a cylinder having the same base as the cone, and the line FM for its altitude. From this we may infer, that $C + H$ is exactly equal to K; for if there can be any difference, let it be a cylinder having the same base as the cone, and its altitude equal to FV; then FM must be greater then FV; but the number of parts into which FC is divided may be so great that FM may be less than FV; therefore $C + H$ cannot be unequal to K; and since $C + H = K$, and $C = \frac{1}{3}K$ (3), therefore $H = \frac{2}{3}K$; that is, the hemisphere is two thirds of its circumscribing cylinder; and taking the doubles of these, the whole sphere is two thirds of its circumscribing cylinder.

A Table showing the Theorem of the foregoing Treatise, that corresponds to each of the principal Propositions in the first Six and in the Eleventh and Twelfth Books of Euclid's *Elements*.

Euclid.	Geometry.
Book I.	Part I. Theor. Sect.
Prop. 4.	5. 1.
5.	11. 1.
6.	12. 1.
8.	10. 1.
13.	1. 1.
14.	3. 1.
15.	4. 1.
16.	23. 1.
17.	24. 1.
18. 19.	13. 1.
20.	7. 1.
21.	8. 1.
24. 25.	9. 1.
26.	6. 1.
27. 28.	22. 1.
29.	21. 1.
30.	20. 1.
32.	23. 24. 1. 25.
33.	28. 1.
34.	26. 1.
35. 36.	1. 4.
37. 38.	2 Cor. to 2. 4.

Euclid.	Geometry.
Book I.	Part I. Theor. Sect.
Pr. 41.	2. 4.
47.	13. 4.
48.	Scholium 15. 4.
Book II.	Theor. Sect.
Pr. 4.	10. 4.
5. 6.	12. 4.
7.	11. 4.
12.	15. 4.
13.	14. 4.
Book III.	Theor. Sect.
Pr. 2.	3. 2.
3.	6. 2.
10.	Cor. to 7. 2.
11.	12. 2.
12.	11. 2.
14.	8. 2.
15.	2. 2. 8. 2.
16.	9. 2.
20.	14. 2.
21.	15. 2.
22.	16. 2.
26. 27.	13. 2.

Euclid.	Geometry.
Book III.	Part I. Theor. Sect.
Pr. 28. 29.	4. 2.
31.	17. 2.
32.	18. 2.
35.	28. 4.
36.	29. 4. 30. 4.
Book V.	Theor. Sect.
Pr. 4.	7. 3.
12.	12. 3.
15.	1. 3.
16.	3. 3.
17.	5. 3.
18.	4. 3.
22.	8. 3.
23.	9. 3.
24.	10. 3.
Book VI.	Theor. Sect.
Pr. 1.	Cor. to 5. 4. Cor. to 6. 4.

Euclid.	Geometry.
Book VI.	Part I. Theor. Sect.
Pr. 2.	17. 4. 18. 4.
3.	19. 4.
4.	20. 4.
5.	21. 4.
6.	22. 4.
8.	23. 4.
14. 15.	Cor. 24. 4.
16. 17.	8. 4.
19.	25. 4.
20.	26. 4. 27. 4.
31.	1 Cor. to 27. 4.
33.	31. 4.
Book XI.	Part. II. Theor. Sect.
Pr. 1.	1. 1.
2.	2. 1.
3.	3. 1.
4.	4. 1.
6.	1 Cor. to 5. 1.
8.	5. 1.

Euclid.	Geometry.
Book XI.	Part II. Theor. Sect.
9.	2 Cor. to 5. 1.
10.	10. 1.
13.	2 Cor. to 4. 1.
14.	6. 1.
15.	10. 1.
16.	7. 1.
17.	15. 1.
18.	12. 1.
19.	14. 1.
20.	16. 1.
21.	17. 1.
A.	18. 1.
24.	12. 2.
25.	9. 2.
28.	4. 2.
29.	5. 2.
30. 31.	6. 2.
32.	9. 2.
33.	12. 2.
Book XII.	Part II. Theor. Sect.
Pr. 1.	1. 6. of Part I.
2.	4. 6. of Part I.
7.	16. 2. of Part II.
10.	3. 3.

(W. W.)

ANALYTICAL GEOMETRY.

1. The branch of science which has obtained the name of analytical geometry owes its origin to Descartes. It consists in the application of algebra to geometry, not merely by using algebraic symbols as the representatives of magnitude, but by employing these in such a manner that the position of a point is indicated by referring it to fixed lines or planes, just as the position of a point on the earth's surface is defined by referring it to the equator and the first meridian. For example, if we suppose the positions of two lines at right angles to one another to be fixed and known, then the position of any point in the same plane is sufficiently determined by its distances from these two lines, just as the position of a place on a given map is denoted by its latitude and longitude.

This science, like that of ordinary geometry, is divided into two parts, plane and solid, or *analytical geometry of two and of three dimensions.*

ANALYTICAL GEOMETRY OF TWO DIMENSIONS.

2. As every line or area is supposed to be situated in one plane, we may, whenever it is convenient to do so, imagine that plane to be the paper before us, which, for convenience of phraseology, we may further suppose to be standing

upright, so that any one line of print is horizontal, whilst the successive lines lie vertically under each other. The simplest way, under these circumstances, in which the position of a point can be indicated, will be by its distances from two lines at right angles to each other, the one horizontal, the other vertical. If we know the positions of these lines, then we know the position of every point in this plane whose distances from these two lines have been given us. But it is frequently necessary to adopt lines of reference inclined to one another. In this case, the position of a point is determined by its two distances from these lines respectively, each measured in a direction parallel to the other. The lines of reference are called the *co-ordinate axes;* their point of intersection is called the *origin;* the distances of any other point from the lines, measured in the way stated above are called the *co-ordinates of that point;* of these one is called the *abscissa*, the other the *ordinate*, the former being usually the designation of the *horizontal* distance.

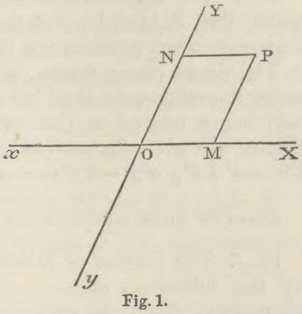


Fig. 1.

In this figure, OX, OY, at right angles or not, are called the co-ordinate axes; O the origin; PM, PN (or its equal OM), drawn parallel to OY and OX, the co-ordinates of the point P; OM the abscissa, PM the ordinate. The line OM is usually written by the letter x, and MP by y. We may thus form some idea of the meaning of the symbols by considering the letter x as the abbreviation for the general *word* longitude, and the letter y as that for latitude. Thus when the latitude and longitude are both specified, the point referred to is determined. If, on the other hand, there is stated merely a relation between them, such, for example, as that the latitude is equal to the longitude, it is clear that no one point is determined thereby, since the same property is applicable to an innumerable series of points. A little consideration will show that some line, straight or crooked, will pass through all such points. The relation, therefore, is said to determine this line, and when expressed in algebraic symbols, is called *the equation to the line.* Thus, for example, the relation, "that the abscissa is equal to the ordinate," or the longitude equal to the latitude, understood as above, indicates a straight line; and the corresponding equation, $x=y$, is the equation to a straight line.

3. The requirements of analysis demand that attention should be paid to the *sign* as well as to the *magnitude* of the algebraic symbol which expresses an abscissa or an ordinate. We lay it down as a rule, deduced at once from the algebraic definitions of the symbols $+$ and $-$, that if one of them denotes a line measured in one direction, the other will denote a line measured in the opposite direction. Thus if $x = +a$ be an abscissa measured to the right of O, $x = -a$ will be an equal abscissa measured to the left; if $y = +b$ be an ordinate measured above O, $y = -b$ will be an equal ordinate measured below it; and these are the directions which we shall usually assign to the positive and negative abscissas and ordinates.

4. Besides the method of representation which we have described, there is another very unlike it in form, but equally important in the solution of mechanical and astronomical problems. In this system, the position of a point is determined by its distance from a given point, and the direction in which the line measuring that distance lies with respect to a given line. This system is called the system of *polar co-ordinates.* The given point to which all others are referred is called the *pole*, and the distance from that point the *radius vector.*

5. The subject before us naturally divides itself into three distinct branches,—1°, the determination of the equations to curves from the knowledge of their properties; 2°, the determination of the forms and properties of curves from their equations; and, 3°, the deduction of one property of a curve from another, or from several others. The third branch being the combination and extension of the other two, we propose briefly to illustrate the first and second, and then to include under the third a discussion of some of the more important properties of the Conic Sections in the form in which the requirements of science demand their exhibition.

SECTION I.—THE DETERMINATION OF THE EQUATIONS TO CURVES FROM THE KNOWLEDGE OF THEIR PROPERTIES.

6. *a. The Straight Line.*—The property of the straight line which we shall employ is this—that if two series of parallel lines be drawn from any points in it so as to form with the given line a series of triangles, the sides of these triangles will be proportionals.

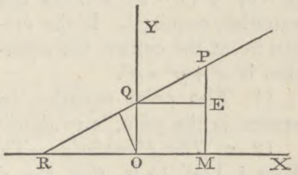


Fig. 2.

Let PQR be the straight line; OX, OY the co-ordinate axes; PM parallel to OY, and QE parallel to OX: the triangles PQE, QRO are similar, $\therefore$ PE : EQ :: QO : OR.

Let OM be called x, or OM $= x$, MP $= y$, OQ $= b$; and let the ratio QO : OR be $a : 1$.

then $y - b : x :: a : 1$;

or $y = ax + b$ is the equation to the line PR.

Hence it is clear that any simple equation between y and x will represent a straight line. If the axes of co-ordinates are at right angles to each other—in which case they are called rectangular axes—a is the trigonometrical tangent of the angle PRO, in which the given line cuts the axis of x.

7. The equation to a straight line may be written in a different form, which is frequently convenient, thus:

Let the perpendicular from O on the line PR be called p, the angle PRM α; then it is evident that

$$y \cos \alpha - x \sin \alpha - p = 0,$$

which is the equation to the line.

This equation is abbreviated by writing for it simply $\alpha = 0$; or, when multiplied by a constant a, by $u = 0$; where u is a function of x, y, α, p, and a constant which is arbitrary. We shall give an instance of the use of this form of the equation in the sequel.

If the axes of co-ordinates are not at right angles, the equation becomes slightly changed in form.

Let the line make the angles θ and ϕ with the axes of x and y respectively; then

$$\text{QO} : \text{OR} :: \sin\theta : \sin\phi;$$

$$\therefore y = \frac{\sin\theta}{\sin\phi}x + b \text{ is the equation;}$$

$$\text{or} \quad y \sin\phi - x\sin\theta = b\sin\phi;$$

consequently all lines which are parallel to the given line, or for which θ and ϕ are the same, have the relative magnitudes of the co-efficients of x and y the same, and *vice versâ.*

8. Cor. 1.—If the line pass through a given point of which the co-ordinates are x', y', we shall have $y = ax + b$ generally,

and $y' = ax' + b$ for the given point;

$\therefore y - y' = a(x - x')$,

or b is determined.

Cor. 2.—If the line pass through a second given point whose co-ordinates are y'', x'', we shall have $y' - y'' = a(x' - x'')$, or a is determined,

$$\text{and} \therefore \; y - y' = \frac{y' - y''}{x' - x''}(x - x') \text{ is the equation.}$$

Analytical Geometry.

9. To express the polar equation to the straight line.

Let O be the pole, OY perpendicular to PR; and suppose OP joined. Let OP $= r$, OY $= p$, $\angle$ POR $= \theta$, $\angle$ YOR $= \alpha$; then OP cos POY $=$ OY, or $r \cos(\theta - \alpha) = p$ is the equation required.

10. *b.* *The Circle.*—The property of the circle is, that the lines drawn from the centre to the circumference are equal.

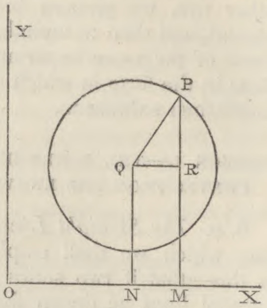


Fig. 3.

Let us suppose the axes to be rectangular, Q the centre, QP the radius $= a$; OM $= x$, PM $= y$, the co-ordinates of P; ON $= b$, NQ $= c$, the co-ordinates of the centre; then PR^2 + QR^2 = PQ^2; or $(y - c)^2 + (x - b)^2 = a^2$ is the equation required. If the origin be at the centre, the equation is $x^2 + y^2 = a^2$.

11. The polar equation in its simplest form, when the centre is the pole, is evidently $r = a$.

12. *c.* *The Parabola.*—The property (Conic Sections, Part 1, Def. 1) is, that the distance of any point from the focus is equal to its distance from the directrix.

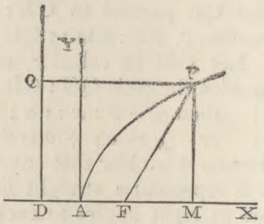


Fig. 4.

Let F be the focus, DQ the directrix, then FP = PQ. Suppose the vertex A to be the origin, and AFX the *axis* of the parabola to be the axis of x.

Let AM $= x$, MP $= y$, AF $=$ AD $= a$, then PM^2 + MF^2 = PF^2 = PQ^2 = MD^2; or $y^2 + (x - a)^2 = (x + a)^2$, which gives $y^2 = 4ax$, the equation required.

13. To find the polar equation, the focus being the pole.

Let FP $= r$, DFP $= \theta$;

$$\text{then FP} \cos \text{PFM} = \text{FM} = \text{DM} - \text{DF} = \text{PQ} - \text{DF}$$
$$= \text{FP} - \text{DF} = r - 2a$$

$$\therefore r = \frac{2a}{1 - \cos \text{PFM}} = \frac{a}{\sin^2 \dfrac{\text{PFM}}{2}} = \frac{a}{\cos^2 \dfrac{\theta}{2}} \text{ is the equation}$$

required.

14. *d.* *The Ellipse.*—The property (Conic Sections, Part 2, Def. 1) is, that the sum of the two lines drawn from any point to the two foci is constant.

Let the centre C be the origin: CA which passes through the focus S, called the semi-axis major, or the semi-transverse axis, the axis of x; CB perpendicular to CA, the semi-axis minor, or the semi-conjugate axis, the axis of y; CM $= x$, MP $= y$, CA $= a$, CB $= b$; then it is evident that CF^2 = CS$^2 = a^2 - b^2$; and the condition FP + SP $= 2a$ gives

$$\text{FP}^2 = (2a - \text{SP})^2 = 4a^2 - 4a \,.\, \text{SP} + \text{SP}^2,$$
$$\text{or} \quad (\text{FC} + x)^2 + y^2 = 4a^2 - 4a \,.\, \text{SP} + (\text{CS} - x)^2 + y^2;$$
$$\text{whence} \quad 2\text{FC} \,.\, x = 4a^2 - 4a \,.\, \text{SP} - 2\text{CS} \,.\, x,$$
$$\text{or } a \,.\, \text{SP} = a^2 - \text{CS} \,.\, x;$$
$$\text{that is, } a^2(\text{SM}^2 + \text{MP}^2) = a^4 - 2a^2 \,.\, \text{CS} \,.\, x + \text{CS}^2 \,.\, x^2,$$

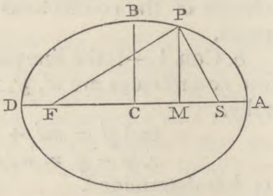


Fig. 5.

or $a^2(x - \text{CS})^2 + a^2 y^2$
$= a^4 - 2a^2 \,.\, \text{CS} \,.\, x + \text{CS}^2 \,.\, x^2$;
whence $a^2 x^2 + a^2 \,.\, \text{CS}^2 + a^2 y^2$
$= a^4 + \text{CS}^2 \,.\, x^2$,
or $a^2y^2 + b^2x^2 = a^2b^2$, the equation required.

15. Cor.—Since $a \,.\, \text{SP} = a^2 - \text{CS} \,.\, x$, if CS $= ae$, we shall have SP $= a - ex$; and since SP + FP $= 2a$, FP $= a + ex$. Also it is evident that $a^2e^2 = a^2 - b^2$, or $e^2 = 1 - \dfrac{b^2}{a^2}$.

e is called the *eccentricity*.

Analytical Geometry.

16. To find the polar equation to the ellipse, the focus being the pole.

Let SP $= r$, PSA $= \theta$, then PSD $= \pi - \theta$. But (Art. 15) SP $= a - ex$,

$$\text{where } x = \text{CM} = \text{CS} - \text{SM} = ae - r \cos \text{PSM};$$
$$\therefore \quad r = a - ae^2 + er \,.\, \cos \text{PSM};$$
$$r = \frac{a(1 - e^2)}{1 - e \cos \text{PSM}} = \frac{a(1 - e^2)}{1 + e \cos \theta}$$

is the equation required.

17. *e.* *The Hyperbola.*—The property is (Conic Sections, Part 3, Def. 1), that the difference of the two lines drawn from any point to the two foci is constant.

The figure being drawn, and the same letters retained as for the ellipse, we shall have FP − SP $= 2a$, which equation being treated as the corresponding equation for the ellipse, will give, first, $a \,.\, \text{SP} = \text{CS} \,.\, x - a^2$; and, finally (if CS$^2 = a^2 + b^2$), $a^2y^2 - b^2x^2 = -a^2b^2$ is the equation required.

18. The polar equation is $r = \dfrac{a(e^2 - 1)}{1 + e \cos \theta}$.

19. *f.* *The Cissoid of Diocles.*—This curve is generated by the following construction: AQB is a semi-circle, of which AB is the diameter; AQ is any chord; QN perpendicular to the diameter; PM is drawn parallel to QN at such a distance that AM = BN: the point P, in which the chord AQ and the line PM intersect one another, is a point in the cissoid APD: the cissoid is said to be the *locus* of the point P.

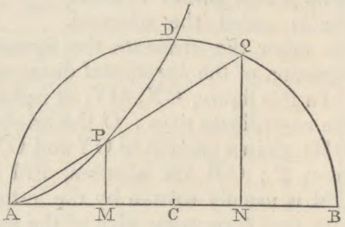


Fig. 6.

Let AB $= 2a$, AM $= x$, MP $= y$,

$$\text{then } y^2 : x^2 :: \text{QN}^2 : \text{AN}^2 :: \text{AN} \,.\, \text{NB} : \text{AN}^2$$
$$:: \text{NB} : \text{AN} :: x : 2a - x;$$

$$\therefore y^2 = \frac{x^3}{2a - x} \text{ is the equation required.}$$

20. To find the polar equation.

Join BQ; let AP $= r$, $\angle$ PAM $= \theta$; then because AQB is a right angle,

$$\text{AQ} = \text{AB} \cos \theta, \;\therefore\; \text{AN} = \text{AB} \cos^2 \theta,$$
$$\text{and AM} = r \cos \theta, \;\therefore\; r \cos \theta = \text{AB} - \text{AB} \cos^2 \theta = \text{AB} \sin^2 \theta,$$
$$\text{and } r = \frac{2a \sin^2 \theta}{\cos.\, \theta} \text{ is the equation required.}$$

21. *g.* *The Conchoid of Nicomedes.*—This curve is generated as follows:—

A line of indefinite length revolves on and also slides in a fixed pivot; whilst a constant portion of the line always projects beyond a given fixed straight line,—the extremity of the projecting line traces out a conchoid; or the conchoid is the locus of the extremity.

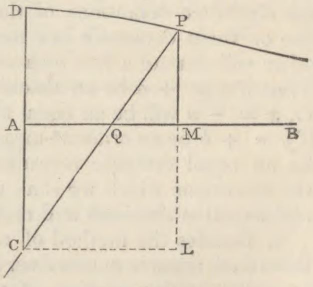


Fig. 7.

Let C be the pivot, AB the fixed line; PQ the constant portion of the revolving line which projects above it. Draw CA perpendicular to AB. Let PQ $= a$, CA $= b$, AM $= x$, MP $= y$.

By similar triangles,—

$$\text{PL}^2 : \text{LC}^2 :: \text{PM}^2 : \text{MQ}^2 :: \text{PM}^2 : \text{PQ}^2 - \text{PM}^2;$$
$$\text{or} \quad (y + b)^2 : x^2 :: y^2 : a^2 - y^2;$$
$$\text{or} \quad x^2y^2 = (y + b)^2\,(a^2 - y^2);$$ which is the equation required.

22. To find the polar equation. Let C be the pole,

$CP=r$, $\angle ACP=\theta$; then since $CQ\cos\theta=CA$, we get $(r-a)\cos\theta=b$, the polar equation.

23. *h. The Cycloid.*—This curve is described by a point in the circumference of a circle which rolls along a straight line.

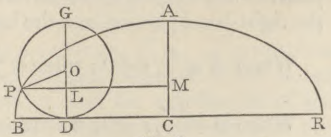


Fig. 8.

Let GPD be the circle which rolls along the straight line BR, the point P in the circumference of the circle will trace out a curve BAR, which is the cycloid.

Let A be the highest point of the curve; $GD=2a$ the diameter of the generating circle $=AC$; $AM=x$, $MP=y$; O the centre of the circle; $\angle POG=\theta$; then it is evident that the circumference of the circle coincides by succession with the straight line BR; therefore arc $PD=BD$, arc $GPD=BC$, and arc $GP=DC$; hence

$$x=GL=a\ \text{vers}\ \theta,$$
$$y=ML+LP=PG+PL=a\theta+a\sin\theta,$$

or $y=a\ \text{vers}^{-1}\frac{x}{a}+\sqrt{2ax-x^2}$ is the equation required.

24. *i. The Lemniscate.*—The property of this curve is that the product of the two lines drawn from any point of it to the two foci is always equal to the square of half the distance between the foci.

Let F and S be the foci, $FC=CS=a$, $CM=x$, $MP=y$; the property is that $FP\times SP=a^2$.

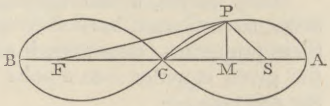


Fig. 9.

Hence $\sqrt{(a+x)^2+y^2}\times\sqrt{(a-x)^2+y^2}=a^2$;

or $(y^2+x^2+a^2+2ax)(y^2+x^2+a^2-2ax)=a^4$;

or $(y^2+x^2+a^2)^2-4a^2x^2=a^4$;

or $(y^2+x^2)^2+2a^2y^2-2a^2x^2=0$;

or $(y^2+x^2)^2=2a^2(x^2-y^2)$ is the equation required.

25. To find the polar equation. Let $CP=r$, $\angle PCS=\theta$;

then $FP^2=r^2+a^2+2ar\cos\theta$;

$SP^2=r^2+a^2-2ar\cos\theta$;

$FP^2\times SP^2$, or $a^4=(r^2+a^2)^2-4a^2r^2\cos^2\theta$;

whence $r^2=4a^2\cos^2\theta-2a^2$

$=2a^2(2\cos^2\theta-1)$

$=2a^2\cos 2\theta$ is the equation required.

26. Besides the cycloid there are other curves which are generated by a point in a rolling circle. The *trochoid* differs from the cycloid in having the generating point within the circle at a distance b from the centre. Its equations are

$$x=a-b\cos\theta$$
$$y=a\theta+b\sin\theta.$$

The *epicycloid* is traced out by a point in the circumference of a circle which rolls on the convex circumference of another circle.

The *hypocycloid* is traced out by a point in the circumference of a circle which rolls on the concave circumference of a larger circle.

If the describing point is not in the circumference of the rolling circle, the curves become the *epitrochoid* and *hypotrochoid* respectively.

SECTION II.—THE DETERMINATION OF THE FORMS AND PROPERTIES OF CURVES FROM THEIR EQUATIONS.

27. Since very few curves can be described by a continuous motion, it is evident that, with rare exceptions, the determination of the form of a curve must resolve itself either into the expression of the numerical values of all coordinates corresponding to given abscissas, or into a general investigation of the number and nature of the branches of the curve, their flexure and mutual intersections. It is under the latter aspect that we are about to regard this subject. With respect to those few curves which can be described by a continuous motion, the modes of description of some of the most important have been already given in the treatise on CONIC SECTIONS, whilst others, such as the cycloid, involve a mechanical process so obvious that it is quite superfluous to waste words in attempting to make it plain. We proceed then at once to describe the general features of a few curves from their equations. This description we shall designate as TRACING THE CURVE.

28. *a.* The *cubical parabola* of which the equation is $a^2y=x^3$.

When $x=0$, $y=0$, which shows that the curve passes through the origin. When x is positive, y is positive, which shows that to the right the curve lies *above* the axis of x. When x is negative, y is negative, which shows that to the left the curve lies *below* the axis of x.

Since $a^2\frac{dy}{dx}=3x^2$, it follows that at the origin the axis of x is a tangent to the curve (FLUXIONS, Art. 65, Equation 3). The form of the curve is therefore as in the figure.

29. *b.* The *semi-cubical parabola*, of which the equation is $ay^2=x^3$.

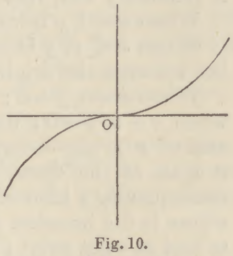


Fig. 10.

When $x=0$, $y=0$. When x is positive y^2 is positive, or y has two equal values, one + the other −; which shows that there are two similar branches of the curve to the right of the origin, the one above and the other below the axis of x. When x is negative y^2 is negative, and y is impossible; or there is no portion of the curve to the left of the axis of x. The figure is like the outline of the head of a spear, or is a cusp.

30. *c.* The curve whose equation is $y=\frac{x^3}{x^2+1}$. It is evident that its general form will be something like that of the cubical parabola already traced. But the equation may be thrown under the form $y=x-\frac{1}{x}+$ &c.; which shows that as x increases the value of y tends continually to be equal to it; which is equivalent to the fact that the curve constantly approaches a straight line whose equation is $y=x$. This straight line is called an *asymptote* to the curve. An example of a similar line has already been given in the article CONIC SECTIONS (iii. 15) in the case of the hyperbola. A more instructive example will be seen in the conchoid already described, where, from the nature of the case, it is at once evident that the curve continually approaches the straight line AB, without ever reaching it.

To ascertain whether a curve has an asymptote or not, it is sufficient to expand its equation in a descending series of powers of x.

If the portion which remains, after excluding that which becomes 0 on x becoming infinite, be in the form of a simple equation, that equation represents the asymptote. In addition to this there may be an asymptote parallel to the axis of y, which can be ascertained by y becoming infinite for some finite value of x.

31. *d.* There is another circumstance to be noted respecting the curve we have been discussing. Near the origin where the axis of x is a tangent, it is evidently convex to that axis; but from the nature of the case it is clear that at a considerable distance from the origin it must be convex towards its asymptote, and consequently concave towards the axis of x. The point at which it changes from convex to concave is called a *point of inflexion* or a *point of contrary flexure*. To ascertain the position of this point, it is necessary to find the value of x which shall render $\frac{d^2y}{dx^2}=0$.

On solving this equation we shall obtain $x = \pm\sqrt{3}$, which gives the point of inflexion. The curve is therefore as follows (fig. 11), OB being the asymptote, and P the point of inflexion.

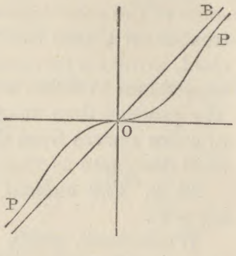


Fig. 11.

32. *e.* To trace the curve of which the equation is

$$xy^2 = (x-a)(x-b)(x-c).$$

Suppose a the least, and c the greatest of the three magnitudes. We have

$$y = \sqrt{\frac{(x-a)(x-b)(x-c)}{x}};$$

from which it is clear that in all cases there are two values of y equal and with opposite signs; or, in other words, there is symmetry with respect to the axis of x.

When $x=0$, y is infinite, or the axis of y is an asymptote.

When $x < a$, y is impossible, or no branch of the curve lies between the origin and the distance a to the right.

When $x=a$, $y=0$; when $x > a < b$, y is possible; and when $x=b$, $y=0$; the curve accordingly starts from the axis of x at the distance a from the origin, and returns to it again at the distance b. This branch of the curve is consequently a kind of oval. If it be required to ascertain where is the broadest part of the oval, it will be necessary to find at what point y is a *maximum* by the method given in FLUXIONS, art. 60. The result is obtained by the solution of a cubic equation.

When $x > b < c$, y is impossible.

When $x=c$, $y=0$; when $x > c$, y is possible; and when x is infinite, y is infinite—the branch beyond the distance c consequently starts from the axis of x, and extends to infinity, somewhat in the form of a parabola. When x is negative, y is always possible; and it is infinite both when x is 0 and when x is infinite—diminishing from the first point and then increasing to the second. At some point it must attain a *minimum* value, which can be ascertained as the *maximum* above. The branch to the left of the origin accordingly bears some faint resemblance to an hyperbola. The whole curve is as in the figure where O is the origin—$OA=a$, $OB=b$, $OC=c$.

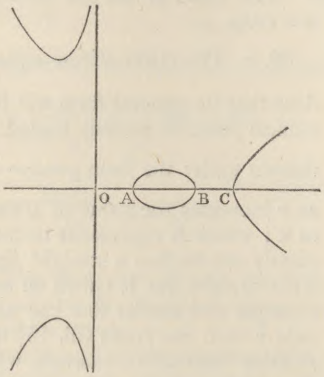


Fig. 12.

33. *f.* In the last example we assumed that a, b, and c are all different from each other. If we suppose $a=b$, we have the equation $y=(x-a)\sqrt{\frac{x-c}{x}}$. The peculiarity in this equation is this—that when $x=a$, $y=0$, which gives a *possible* point A; but when x is a little greater or less than a, y is impossible, so that no branch of the curve lies near the point. This point, an isolated point where co-ordinates satisfy the equation, but which does not belong to any branch of the curve, is called a *conjugate* point. By comparing this example with the last, of which it is a particular case, we shall be able to trace the origin of such a point in the oval AB, which has collapsed.

We will now give an example or two of the use of polar co-ordinates.

34. *g.* The *Lemniscate*, of which the equation (i) is $r^2 = 2a^2 \cos 2\theta$.

When $\theta=0$, $r^2=2a^2$, $r=\pm a\sqrt{2}$; or r has two equal values, CA and CB in the figure of Art. 24.

When $\theta < \frac{\pi}{4}$, r is possible, having two equal values, positive and negative, the former giving the upper half of the right-hand portion, and the latter the lower half of the left.

When $\theta = \frac{\pi}{4}$, $r=0$; when $\theta > \frac{\pi}{4} < \frac{3\pi}{4}$, r is impossible.

When $\theta = \frac{3\pi}{4}$, $r=0$; when $\theta=\pi$, $r=\pm a\sqrt{2}$, thus giving the upper portion of the left-hand figure, and the lower portion of the right.

35. *h.* The *Cardioide*, of which the equation is

$$r = a\cos^2\frac{\theta}{2}.$$

When $\theta=0$, $r=a$; when θ is $< \pi$, r is positive; when $\theta=\pi$, $r=0$; and the same is true in a reverse order between π and 2π. The curve, therefore, starts at its greatest distance from the origin, and returns to the origin by having positive radii throughout a whole circumference—a portion of it accordingly lies to the left of the axis of y. The curve is in the shape of a heart, thus: O being the origin; $OA=a$.

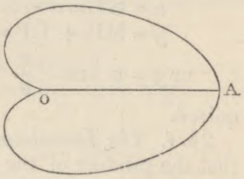


Fig. 13.

Many curves, whose equations are presented between linear co-ordinates, have their general form, and some of their properties, determined most readily by converting the given equation into a polar equation, as in the following example:—

36. *i.*— $$x^4 - ax^2y + ay^3 = 0.$$

Let $x=r\cos\theta$, $y=r\sin\theta$; then the equation gives $r=a\frac{\sin\theta}{\cos^4\theta}(\cos^2\theta-\sin^2\theta)$.

When $\theta=0$, $r-0$; when $\theta < \frac{\pi}{4}$, r is positive; when $\theta=\frac{\pi}{4}$, $r=0$: hence there is an oval in the first octant, having its extremity at the origin.

When $\theta > \frac{\pi}{4} < \frac{\pi}{2}$, r is negative; when $\theta = \frac{\pi}{2}$, r is infinite; hence there is no branch of the curve in the second octant, but one extending back from the origin to infinity in the sixth octant.

When $\theta > \frac{\pi}{2} < \frac{3\pi}{4}$, r is negative; when $\theta = \frac{3\pi}{4}$, $r=0$; hence there is no branch of the curve in the third octant, but a branch returning from infinity to the origin in the seventh.

When $\theta > \frac{3\pi}{4} < \pi$, r is positive; when $\theta=\pi$, $r=0$; hence there is an oval in the fourth octant, having its extremity at the origin. The *maximum* radius vector occurs at about 30. The curve is therefore in the annexed form.

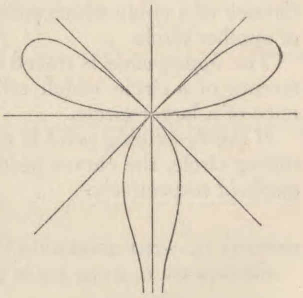


Fig. 14.

37. These examples will suffice to illustrate the general determination of the FORM of a curve from its equation. We have next to discuss the determination of the PROPERTIES of curves from their equations. This we shall do very briefly, confining ourselves to curves of the second degree. As a preliminary it will be requisite to point out the method employed to transfer our reference from one system of co-ordinates to another. This method is called

Transformation of Co-ordinates.

38. It is supposed that the equation to a curve referred to a certain system of co-ordinates x, y, is given; and it is required to determine what its equation becomes when referred to another system of co-ordinates x', y'. The problem obviously resolves itself into the determination of the values of x and y in terms of x' and y', and the substitution of the latter in place of the former. The formulæ are thus obtained.

39. 1°. If the new axes are parallel to the old, the origin alone being changed—it is evident that nothing is required but to write $x' + a$ in place of x, and $y' + b$ in place of y; where a and b are the co-ordinates of the new origin referred to the old.

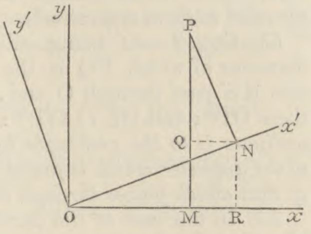


Fig. 15.

40. 2°. Suppose the origin unchanged, and both the old and new axes rectangular, the axis of x' being inclined to that of x by the angle θ. Let $OM=x$, $MP=y$, $ON=x'$, $NP=y'$. Draw NR, NQ parallel to Oy and Ox respectively;

then
$$x=OR-QN=x'\cos\theta-y'\sin\theta.$$
$$y=NR+PQ=x'\sin\theta+y'\cos\theta.$$

41. 3°. Suppose the origin to be unchanged; and neither the old nor the new axes to be necessarily rectangular.

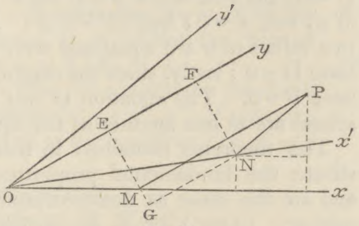


Fig. 16.

Let $OM=x$, $MP=y$, $ON=x'$, $NP=y'$. Draw ME, NF perpendicular to Oy, and let NG be parallel to Oy and meet EM produced in G; then $ME=NF-GM$,

or $$x\sin xOy = x'\sin x'Oy - y'\sin y'Oy.$$

Similarly, by drawing perpendiculars from P and N on Ox, we get
$$y\sin yOx = x'\sin x'Ox + y'\sin y'Ox.$$

42. 4°. When both the origin and the direction of the axes are to be changed, we have only to unite the processes of No. 1 and Nos. 2 and 3 to effect the transformation.

43. 5°. To obtain a polar equation, let $OP=r$;

then
$$x=r\frac{\sin OPM}{\sin PMx}=r\frac{\sin POy}{\sin xOy}$$
$$y=r\frac{\sin POM}{\sin PMx}=r\frac{\sin POx}{\sin xOy}.$$

Properties of Curves of the Second Degree, as deduced from the general equation.

The general equation of the second degree is
$$Ay^2+2\,Bxy+Cx^2+2\,Dy+2\,Ex+F=0.$$

44. Prop. I.—No straight line can cut a curve of the second degree in more than two points.

Let $y=mx+n$ be the equation to a straight line, then by substituting this value of y in the given equation, we have a quadratic for the determination of the values of x at the points where the co-ordinates are common to it and to the straight line. A similar process gives a quadratic equation in y. Consequently there are but two solutions, and therefore but two points of intersection.

By referring to the equations to the conic sections given above, it will be seen that they are curves of the second degree

45. Prop. II.—Admitting that the above equation represents a conic section, it is required to determine the particular one.

If we solve the equation with respect to y, we obtain
$$Ay=-(Bx+D)\pm\sqrt{(B^2-AC)x^2+2\,(BD-AE)x+D^2-AF}.$$

Now, I. If B^2-AC be *negative*, this value of y is impossible when x is infinite; which shows that the curve does not extend to an infinite distance. It is therefore a *circle* or an *ellipse*, according as C is equal to A or not. The ellipse, however, may be simply a point, and the equation may be impossible.

II. If B^2-AC be *positive*, y has two real roots when x is infinite, whether x be positive or negative. The curve has consequently four infinite branches as in the *hyperbola* or in *two intersecting straight lines.*

III. If $B^2-AC=0$; then if $BD-AE$ is positive, y will be possible when x is positive and infinite, but impossible when x is negative, and *vice versâ.* The curve is consequently a *parabola.* If $BD-AE=0$, the equation represents two straight lines or one, or is impossible.

IV. If the quantity under the radical is a complete square, *i. e.*, if $(B^2-AC)\,(D^2-AF)=(BD-AE)^2$ the equation represents two straight lines; for it is the product of two simple equations.

46. Prop. III.—To find the centre of the curve.

The *centre* is that point which bisects every chord which can be drawn through it. Let a, b be the co-ordinates of the centre; x', y', the co-ordinates when the centre is the origin; then (Art. 39) we have $x=x'+a$, $y=y'+b$; whence $A(y'+b)^2+2B(x'+a)\,(y+b)+C(x'+a)^2+2D(y'+b)+2E\,(x'+a)+F=0.$

Now when $y'=0$, this equation must give two values of x', equal and with opposite signs, because the chord of x' is bisected at the centre. Hence their sum is equal to 0;

or $$Bb+Ca+E=0;$$
similarly, $$Ab+Ba+D=0;$$
whence $$a=-\frac{BD-AE}{B^2-AC},\ b=-\frac{BE-CD}{B^2-AC},$$

which are the co-ordinates of the centre.

In the case of the parabola these co-ordinates are infinite, for (Art. 45) $B^2-AC=0$: hence we may say that the parabola has no centre. In analysis, however, it is desirable to regard the centre as existing at an infinite distance.

47. Prop. IV.—To find the locus of the middle points of parallel chords.

Let a, b be the co-ordinates of one of those middle points, and let the origin be transferred to that point by writing $x'+a$, $y'+b$ for x and y. Let also $y'=m\,x'$ be the equation to this chord; then the points in which it intersects the curve will be those for which x' and y' are the same in the equation to the curve and to the chord. Hence
$$A\,(mx'+b)^2+2B\,(x'+a)\,(mx'+b)+C\,(x'+a)^2$$
$$+2D\,(m\,x'+b)+2E\,(x'+a)+F=0$$
is the equation for determining the values of x' at the points of section; but since these are by hypothesis equal and with opposite signs, the co-efficient of x' must be equal to 0;

therefore $$Amb+Bb+Bma+Ca+Dm+E=0.$$

Now m remains the same for all chords which are parallel. This equation is therefore a simple equation between a and b; consequently if a and b be considered as the co-ordinates of middle points generally, the equation which connects them is the equation to a straight line. *The locus of the middle points of all parallel chords is therefore a straight line.*

48. Every straight line which bisects a system of parallel chords is called a *diameter*, and the chords themselves are called *ordinates* to that diameter.

49. Cor.—From the definition of a centre it is evident that every diameter passes through it.

In the case of the parabola, which has no finitely situated centre, we observe that $B^2 = AC$. Now the equation to the diameter (Art. 47) is

$$Bb + Ca + m\,(Ab + Ba) + E + mD = 0;$$

$$\text{or}\qquad Bb + Ca + m\left(\frac{B^2}{C}b + Ba\right) + E + mD = 0;$$

$$\text{or}\qquad \left(1 + \frac{mB}{C}\right)(Bb + Ca) + E + mD = 0;$$

$$\textit{i.e.}\qquad Bb + Ca + \frac{C}{1 + mB}(E + mD) = 0;$$

in which the co-efficients of the co-ordinates a and b are independent of m, which shows (Art. 8) that *all diameters of the parabola are parallel to one another.*

50. Prop. V.—If two diameters of a curve of the second degree be such that one of them bisects all chords parallel to the other, then the latter also will bisect all chords parallel to the former.

By Art. 47 the equation to the line which bisects all chords parallel to the line whose equation is $y = mx$, is

$$(Am + B)\,b + (Bm + C)\,a + Dm + E = 0,$$

$$\text{or}\qquad y + \frac{Bm + C}{Am + B}\,x + \frac{Dm + E}{Am + B} = 0,$$

by writing y and x for the symbols which stand for the *general* phrases latitude and longitude of a point in the line. Let this be abbreviated by $y = m'x +$ &c.,

$$\text{where}\qquad m' = -\frac{Bm + C}{Am + B}.$$

In the same manner the diameter which bisects all chords parallel to $y = m'x$ is $y = m''x$;

$$\text{where } m'' = -\frac{Bm' + C}{Am' + B}$$

$$= -\frac{-\dfrac{B^2m + BC}{Am + B} + C}{-\dfrac{ABm + AC}{Am + B} + B}$$

$$= m$$

i.e. (Art 8), this diameter is parallel to the original chord; hence the truth of the proposition. Diameters so related to each other are called *conjugate diameters.*

51. Prop. VI.—If through any point O two chords be drawn, meeting the curve in the points P, Q, and R, S, respectively; then, the ratio of the rectangle OP . OQ, to the rectangle OR . OS, is a ratio which is the same whatever be the point O, provided the direction of the chords remain unchanged.

Let the co-ordinates of O be a and b; the polar radius through O $= r$; then (Art. 43) we have

$$x = r\frac{\sin POy}{\sin xOy} + a, \qquad y = r\frac{\sin POx}{\sin xOy} + b$$

$$= mr + a \text{ suppose} \qquad = nr + b,$$

where m and n depend on the direction of the radius or chord.

The general equation becomes, by substitution,

$$A\,(nr + b)^2 + 2B\,(mr + a)\,(nr + b) + C\,(mr + a)^2$$
$$+ 2D\,(nr + b) + 2E\,(mr + a) + F = 0;$$

which gives two values of r, viz. OP, OQ. Their product is the last term of the equation, viz.

$$\frac{Ab^2 + 2Bab + Ca^2 + 2Db + 2Ea + F}{An^2 + 2Bmn + Cm^2}$$

similarly the product OR, OS is

$$\frac{Ab^2 + 2Bab + Ca^2 + 2Db + 2Ea + F}{An'^2 + 2Bm'n' + Cm'^2}.$$

Consequently $OP.OQ : OR.OS :: An'^2 + 2\,Bm'n' + Cm'^2 : An^2 + 2\,Bmn + Cm^2$;

a ratio which is independent of a and b, and therefore of the position of the point O. If O′ be any other point, and O′P′ be parallel to OP, O′R′ to OR, &c.; then

$$OP.OQ : OR.OS :: O'P'.O'Q' : O'R'.O'S'.$$

52. Cor. 1.—If O′ be the centre; $O'P' = O'Q'$, $O'R' = O'S'$; then $OP.OQ : OR.OS :: O'P'^2 : O'R'^2$. That is, if *two chords intersect one another, the rectangles by their segments are to one another as the squares of the diameters parallel to them respectively.*

53. Cor. 2.—O′ being still the centre, let O′O be the diameter of which PQ is the ordinate; and let RS and also R′S′ pass through O′ and ∴ coincide with one another; then $OP^2 : OR.OS :: O'P'^2 : O'R'^2$; or *the square of the ordinate is to the rectangle by the abscissas, as the square of the diameter which is parallel to the former to the square of that which passes through the latter.*

54. In the case of the parabola this proposition is inapplicable; for the diameter and the chord parallel to it are both infinite. To determine the corresponding ratio for this case, let the axes be transformed to x', y' such that the axis of x' is parallel to the diameter, and the axis of y' to a bisected chord. Let also the origin be on the curve—the equation will then assume the form $A'y'^2 + 2\,Ex' = 0$; for $C' = 0$; because when $y = '0$ there must be only one value of x', viz., $x' = 0$; but $B'^2 = 4\,A'C'$ ∴ $B' = 0$: and sincc the two values of y are equal and with opposite signs we must have $D = 0$: lastly, since the origin is on the curve we must have $F = 0$. The equation in this form shows that the abscissas are to one another as the squares of the ordinates.

The theorems contained in this second corollary constitute the fundamental properties of the conic sections, and are the same as demonstrated in the treatise on that subject. (Arts. i. 12, ii. 13, iii. 12.)

55. Prop. VII.—To find the equation to the tangent.

The *tangent* is that line to which a line cutting the curve in two points continually approaches as its limit, as the points of section approach to each other.

The equation to a line which meets the curve in the two points $x'y'$, $x''y''$ is

$$y - y' = \frac{y' - y''}{x' - x''}(x - x') \qquad \text{(Art. 8, Cor. 2.)}$$

Now $Ay'^2 + 2\,Bx'y' + Cx'^2 + 2\,Dy' + 2\,Ex' + F = 0$.........(1)

and $Ay''^2 + 2\,Bx''y'' + Cx''^2 + 2\,Dy'' + 2\,Ex'' + F = 0$;

∴ by subtraction,

$$A(y'^2 - y''^2) + B\{x'(y' - y'') + y'(x' - x'') + x''(y' - y'')$$
$$+ y''(x' - x'')\} + C(x'^2 - x''^2) + 2\,D(y' - y'')$$
$$+ 2\,E(x' - x'') = 0;$$

$$\text{whence}\ \frac{y' - y''}{x' - x''} = -\frac{B\,(y' + y'') + C\,(x' + x'') + 2\,E}{A\,(y' + y'') + B\,(x' + x'') + 2\,D};$$

and the equation to the cutting line is

$$y - y' = -\frac{B\,(y' + y'') + C\,(x' + x'') + 2\,E}{A\,(y' + y'') + B\,(x' + x'') + 2\,D}(x - x').$$

The equation to the tangent is derived from this by writing y' for y'' and x' for x''. It is therefore

$$y - y' = -\frac{By' + Cx' + E}{Ay' + Bx' + D}(x - x')\text{............(2)}$$

Those who are familiar with the differential calculus will obtain this result at once from the equation

$$y - y' = \frac{dy'}{dx'}(x - x').$$

If we multiply out equation (2), and substitute for $Ay'^2 +$

$2\,\mathrm{B}x'y' + \mathrm{C}x'^2 + \mathrm{D}y' + \mathrm{E}x'$ its value $-\mathrm{D}y' - \mathrm{E}x' - \mathrm{F}$ from equation (1), we shall have

$$\mathrm{A}yy' + \mathrm{B}\,(xy' + x'y) + \mathrm{C}xx' + \mathrm{D}\,(y+y') + \mathrm{E}\,(x+x') + \mathrm{F} = 0$$

as the equation to the tangent. The equation to the tangent is therefore to be got from the equation to the curve by writing xx' for x^2, yy' for y^2, $x+x'$ for $2\,x$, $y+y'$ for $2\,y$, and $x'y+xy'$ for $2\,xy$; or by changing one of the x's into x', and one of the y's into y'.

56. Cor.—Since the equation to the tangent is symmetrical in x and x', y and y', if we abbreviate it by $\varphi\,(x, y, x', y')$, we shall have the equation $\varphi(x, y, x', y') = \varphi(x', y', x, y)$; x and y being interchangeable with x' and y'.

57. Prop. VIII.—To find the equation to the straight line which joins the points of contact of two tangents, real or imaginary.

Abbreviate the equation to the curve by $f(x, y) = 0$, and to the tangent by $\varphi(x, y, x', y') = 0$.

Let X, Y be the co-ordinates of the point of intersection of two tangents; then the equations $f(x', y') = 0$, $\varphi(x', y', \mathrm{X}, \mathrm{Y}) = 0$ give the values of x', y', the co-ordinates of the point of contact of the one tangent.

Also the equations $f(x'', y'') = 0$, $\phi(x'', y'', \mathrm{X}, \mathrm{Y}) = 0$, give the co-ordinates x'', y'' of the point of contact of the other tangent which passes through the point X, Y.

Now, of the equations constituting these respective pairs, one is a simple equation, and the other a quadratic. Each pair will therefore give *two* values of the variables. But each pair is the same as the other; therefore the *two* roots of the one are the roots of both; or x', y', x'', y'' are the roots of the equations $f\,(x, y) = 0$, $\varphi(x, y, \mathrm{X}, \mathrm{Y}) = 0$.

Again, let $\psi\,(x, y, \mathrm{X}, \mathrm{Y}) = 0$ be the equation to the chord which passes through the points $(x', y';\ x'', y'')$ of contact; then will x', y', x'', y'' be the roots of the equations $f\,(x, y) = 0$, $\psi(x, y, \mathrm{X}, \mathrm{Y}) = 0$.

But it has been already proved that

$$f\,(x, y) = 0, \quad \phi\,(x, y, \mathrm{X}, \mathrm{Y}) = 0$$

have the same roots. Moreover, one of the equations, $f\,(x, y) = 0$, is common to both pairs; therefore the other two equations must be identical; or $\psi\,(x, y, \mathrm{X}, \mathrm{Y}) = 0$ is the same as $\phi\,(x, y, \mathrm{X}, \mathrm{Y}) = 0$; *i.e., the equation to the line which joins the points of contact of two tangents is of the same form as the equation to the tangent;* or if the equation to the tangent at the point x', y' *in* the curve is $\phi\,(x, y, x', y') = 0$; the equation to the line which joins the points of contact of two tangents which meet in a point x', y', *out* of the curve is $\phi\,(x, y, x', y') = 0$.

58. The line which joins the points of contact of two tangents is called the *polar* of their point of intersection; and that point accordingly is called the *pole* of the line.

59. Prop. IX.—If the point B is in the polar of A, then is A also in the polar of B.

Let x', y' be the co-ordinates of A,
x'', y'', ... B.

The equation to the polar of A is $\phi\,(x, y, x', y') = 0$; but by hypothesis B (x'', y'') is a point in this line; therefore $\varphi\,(x'', y'', x', y') = 0$. Hence also (Art. 56) $\varphi\,(x', y', x'', y'') = 0$. But $\phi\,(x, y, x'', y'') = 0$ is the equation to the polar of B; the equation $\varphi\,(x', y', x'', y'') = 0$ consequently shows that x', y' are the co-ordinates of a point in that line; *i.e.*, A *is a point in the polar of* B.

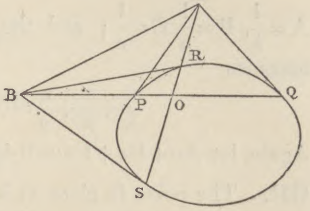


Fig. 17.

60. Cor. 1.—If *any number* of points be taken in the polar of A, their polars will all pass through A; *i.e., the polars of every point in a straight line all pass through the pole of that line.*

61. Cor. 2.—If A and B are the poles of two lines PQ and RS which meet in O, the line AB is the polar of the point O.

For the polar of O passes through A (by the Proposition) and through B; it is therefore the straight line AB.

62. Prop. X.—To find the condition that the straight line whose equation is $m\,y + n\,x + p = 0$ may touch a given conic section.

The equation to the conic section may, by properly selecting the co-ordinates, be thrown into one or other of the two forms,

$$\frac{x^2}{a} + \frac{y^2}{b} = 1 \quad \text{or} \quad \frac{2x}{a} + \frac{y^2}{b} = 1.$$

The tangents to these have for their respective equations (Art. 55),

$$\frac{x\,x'}{a} + \frac{y\,y'}{b} = 1, \text{ and } \frac{x+x'}{a} + \frac{y\,y'}{b} = 1.$$

In order that the former of these may coincide with the equation $m\,y + n\,x + p = 0$, we must have

$$-\frac{n}{p} = \frac{x'}{a}, \qquad -\frac{m}{p} = \frac{y'}{b}.$$

But $\dfrac{x'^2}{a} + \dfrac{y'^2}{b} = 1$; whence $a\,n^2 + b\,m^2 = p^2$..............(1)

is the resulting condition.

In order that the latter of the above equations may coincide with the equation $m\,y + n\,x + p = 0$, we must have

$$-\frac{n}{p} = \frac{\frac{1}{a}}{1 - \frac{x'}{a}} \text{ and } -\frac{m}{p} = \frac{\frac{y'}{b}}{1 - \frac{x'}{a}}$$

$$\therefore \quad \frac{x'}{a} = 1 + \frac{p}{an}, \qquad \frac{y}{b} = \frac{m}{an}:$$

which being substituted in the equation

$$\frac{2\,x'}{a} + \frac{y'^2}{b} = 1, \text{ there results}$$

$$a^2\,n^2 + 2\,a\,n\,p + b\,m^2 = 0 \text{.................(2)}$$

as the condition required.

63. Prop. XI.—Given that chords to a curve of the second degree always touch a conic section, it is required to prove that the locus of their poles is a conic section.

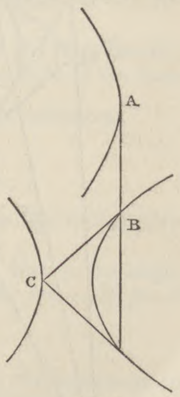


Fig. 18.

Let A be the conic section to which the chords are always tangents; B the curve of the second degree (a conic section) to which the chords are drawn; C the curve which is the locus of the poles of the chords to B.

Let x', y' be the co-ordinates of a point in C, the equation to the polar of this point is

$$\phi\,(x, y, x', y') = 0 \text{ (Art. 57) or}$$

$$(\mathrm{A}y' + \mathrm{B}x' + \mathrm{D})\,y + (\mathrm{B}y' + \mathrm{C}x' + \mathrm{E})\,x + \mathrm{D}y' + \mathrm{E}x' + \mathrm{F} = 0 \text{ (Art. 55).}$$

In order that this line may be a tangent to the conic section A, whose equation we shall suppose to be either

$$\frac{x^2}{a} + \frac{y^2}{b} = 1 \quad \text{or} \quad \frac{2x}{a} + \frac{y^2}{b} = 1,$$

we have to satisfy one or other of the two conditions obtained in the last proposition, viz.

Analytical Geometry.

$$a(\mathrm{B}y' + \mathrm{C}x' + \mathrm{E})^2 + b(\mathrm{A}y' + \mathrm{B}x' + \mathrm{D})^2 = (\mathrm{D}y' + \mathrm{E}x' + \mathrm{F})^2 \quad (1)$$

or

$$a^2(\mathrm{B}y' + \mathrm{C}x' + \mathrm{E})^2 + 2a(\mathrm{B}y' + \mathrm{C}x' + \mathrm{E})(\mathrm{D}y' + \mathrm{E}x' + \mathrm{F}) + b(\mathrm{A}y' + \mathrm{B}x' + \mathrm{D})^2 = 0 \;\ldots\ldots\ldots\ldots (2)$$

as necessary to be fulfilled.

If the requisite one of these relations between x' and y' hold true, the polar to every point in C will touch A. But these conditions are both expressed in the form of a quadratic equation between x' and y'. Hence the curve C is a curve of the second degree or a conic section.

64. PROP. XII.—Given that C is generated by A through the intervention of B, as in the last proposition, to prove that A would be generated by C through the intervention of the same curve B.

Let two tangents be drawn to A, forming chords to B, and let the poles of those chords be C and C′ in the curve C: then (Art. 61) the point of intersection of those tangents is the pole of CC′ (a chord in C). But as the tangents become indefinitely near each other, their point of intersection tends to become the point A in the curve A; and the points C, C′ also tend to become indefinitely near each other, or the chord CC′ tends to become a tangent. Hence the point A on the curve A is the pole of the tangent to a point C on the curve C.

65. The curves A and C are therefore reciprocal, and the process which employs this method of demonstration is termed *the method of reciprocal polars*. We shall confine ourselves to a single application of this method, that of connecting two theorems relative to the conic sections which are known as PASCAL's and BRIANCHON's theorem respectively.

Pascal's Theorem.

66. PROP. XIII.—If any hexagon be inscribed in a conic section, and the opposite sides be produced to meet in three points, those points are in a straight line.

Let ABCDEF be a hexagon inscribed in a conic section, and let the opposite sides produced meet in the points G, H, and K; viz., AB and ED in G: BC and EF in H; CD and AF in K: then the points G, H, and K are in a straight line. Let $u=0$, $v=0$, $w=0$, be three simple equations between x and y, each multiplied by an arbitrary constant, as in Art. 7; and let $u=0$ (1) be the equation to the line AB, $v=0$ (2) to the line CD, and $w=0$ (3) to the line EF.

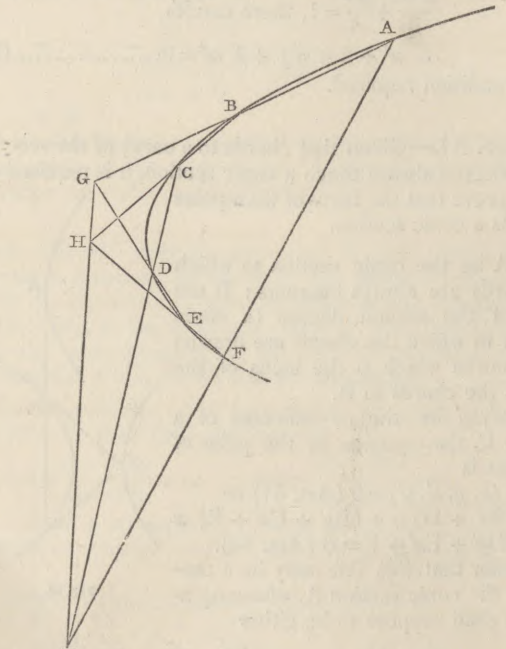


Fig. 19.

Analytical Geometry.

Now since u, v, w, involve x and y, u^2, v^2, w^2, &c., will involve x^2, y^2, &c., consequently

$$u^2 + v^2 + w^2 - (\lambda + \frac{1}{\lambda})vw - (\mu + \frac{1}{\mu})uw - (\nu + \frac{1}{\nu})uv = 0 \ldots\ldots (4)$$

is an equation between x, y, x^2, y^2 &c., containing six arbitrary constants; and is therefore the general equation of the second degree which represents any conic section.

At the points A and B, where the straight line represented by equation (1) intersects the conic section represented by (4), the same values of x and y render both equations identical, or u is the same in fact as well as in form in both equations:

We must have, therefore,

$$v^2 + w^2 - (\lambda + \frac{1}{\lambda})vw = 0,$$

$$\text{or } v = \lambda w \text{ and } v = \frac{1}{\lambda}w$$

at those points respectively. Similarly at the points D and C we must have $u = \mu w$, $u = \frac{1}{\mu}w$ respectively, and at the points E and F, $u = \nu v$ and $u = \frac{1}{\nu}v$. Hence the points are thus determined, viz.:

A by the equations $u = 0,\ v = \lambda w$ ....(5)

B ... ... $u = 0,\ v = \frac{1}{\lambda}w$ ....(6)

C ... ... $v = 0,\ u = \frac{1}{\mu}w$ ....(7)

D ... ... $v = 0,\ u = \mu w$ ....(8)

E ... ... $w = 0,\ u = \nu v$ ....(9)

F ... ... $w = 0,\ u = \frac{1}{\nu}$ ....(10)

Let $u = \mathrm{A}v + \mathrm{B}w$ be the equation to the line which passes through the points B and C; then, by (6) we must have $0 = \frac{\mathrm{A}}{\lambda} + \mathrm{B}$; and by (7) $\frac{1}{\mu} = \mathrm{B}$: consequently

$$u = \frac{1}{\mu}(-\lambda v + w) \ldots\ldots\ldots (11)$$

is the equation to the line BC. Similarly $u = \nu v + \mu w$ (12) is the equation to the line DE, and $u = \frac{1}{\nu}(v - \lambda w)$ (13) is the equation to the line FA.

Let $\mathrm{A}u + \mathrm{B}v + \mathrm{C}w = 0$ be the equation to GK.

This equation and the equations to AB and ED must be simultaneously satisfied at the point G. Combining then (1) and (12) with this equation we get $\frac{\mu}{\mathrm{C}} = \frac{\nu}{\mathrm{B}}$.

In like manner the equation must be satisfied simultaneously with those to AF and CD, at the point K. The equations (2) and (13) combined with it give $\frac{\nu}{\mathrm{A}} = \frac{\lambda}{\mathrm{C}}$, whence $\mathrm{A} = \frac{1}{\lambda}$, $\mathrm{B} = \frac{1}{\mu}$, $\mathrm{C} = \frac{1}{\nu}$; and the equation to the line GK becomes

$$\frac{u}{\lambda} + \frac{v}{\mu} + \frac{w}{\nu} = 0 \;\ldots\ldots\ldots (14).$$

Again, let $\mathrm{A}u + \mathrm{B}v + \mathrm{C}w = 0$ be the equation to the line GH. The point G gives as before $\frac{\mu}{\mathrm{C}} = \frac{\nu}{\mathrm{B}}$: at the point H the equation must be satisfied simultaneously with the equations to BC and EF. Combining (3) and (11) with it, we get $\frac{\mu}{A}=\frac{\lambda}{B}$: whence we obtain $A=\frac{1}{\lambda}$, $B=\frac{1}{\mu}$, $C=\frac{1}{\nu}$; and the equation to GH is $\frac{u}{\lambda}+\frac{v}{\mu}+\frac{w}{\nu}=0$, the same as the equation to GK. Hence GH and GK are in the same straight line.

67. Cor.—It is evident that the demonstration does not require any order of position amongst the points, or, in other words, that the points are interchangeable. Consequently, if for *hexagon* we read *six points*, and admit every variety of modes of joining them, we shall obtain a great number (sixty) of different straight lines in which three points of intersection of joining lines lie.

Brianchon's Theorem.

68. Prop. XIV.—If any hexagon be described about a conic section, the three diagonals which join opposite angles meet in a point.

Let two tangents be drawn to a conic section A as in Art. 63, meeting in the point P, and let their poles in the conic section C be *a*, *b*; then (Art. 61) P is the pole of the line *ab*. The same is true of any other pair of tangents; consequently, if six tangents be drawn to A forming a hexagon about it, their points of intersection will be the poles of a hexagon in C.

Let us designate the angles of the hexagon described about A by P, Q, R, S, T, U; and the sides of the hexagon described in C to which they are respectively poles by *p*, *q*, *r*, *s*, *t*, *u*.

Let *p* and *s* meet in G; *q* and *t* in H, and *r* and *u* in K; then, by the last proposition, G, H, and K are in a straight line.

Now (Art. 61) G is the pole of PS, H of QT, and K of RU; and since G, H, and K are in a straight line, their polars PS, QT, RU pass through the pole of that line (Art. 60); or meet in a point.

SECTION III.—DEDUCTION OF PROPERTIES OF CURVES FROM THEIR EQUATIONS AND KNOWN PROPERTIES.

We propose in this section to deduce some of the more important properties of the conic sections from their equations, combined with their known geometrical figures. The axes of co-ordinates will be supposed rectangular unless otherwise expressed.

1. *The Straight Line.*

69. Prop. I.—To find the equation to a straight line which shall be perpendicular to a given straight line.

Let $y=ax+b$ be the equation to the given straight line.
$y=px+q$ that of the required line.

If θ, φ be the angles in which those lines respectively cut the axis of x; it is evident that the condition imposed requires that

$$\varphi=\frac{\pi}{2}+\theta;$$

$$\therefore \tan\varphi=-\cot\theta=-\frac{1}{\tan\theta};$$

$$\text{or } p=-\frac{1}{a}\text{ (Art. 6)};$$

hence $y=-\frac{1}{a}x+q$ is the equation required.

70. Prop. II.—To find the length of the perpendicular from a given point on a given line.

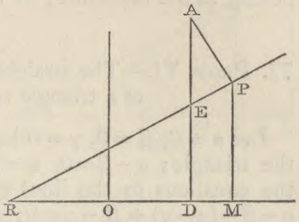


Fig. 20.

Let x', y' be the co-ordinates of the given point A;
$y=ax+b$ the equation to the given line PR.

Draw AP perpendicular to the given line, and let y' cut RP in E;

$$\text{then } AE=AD-ED$$
$$=y'-(ax'+b)$$
$$\text{and } AP=AE\sin AEP=AE\cos PRM$$
$$=\frac{AE}{\sqrt{1+\tan^2 PRM}}=\frac{y'-(ax'+b)}{\sqrt{1+a^2}}$$

71. We may exhibit this result in a very different form by adopting the equation to a straight line given in Art. 7.

Let AP = P; then the equation to a line through A parallel to RP is $y\cos\alpha-x\sin\alpha-(p+P)=0$; and since A is a point in this line,

$$y'\cos\alpha-x'\sin\alpha-(p+P)=0;$$
$$\text{or } P=y'\cos\alpha-x'\sin\alpha-p;$$
$$=\alpha\text{ (Art. 7) when } x', y' \text{ are written for } x \text{ and } y.$$

72. Prop. III.—If $\alpha=0$, $\beta=0$ be the equations to two straight lines, agreeably to the abbreviated notation of Art. 7; then $l\alpha+m\beta=0$, or $\alpha-k\beta=0$ will represent a line which passes through their point of intersection.

For the co-ordinates which render both $\alpha=0$ and $\beta=0$ render $l\alpha+m\beta=0$, or $\alpha-k\beta=0$; and are therefore co-ordinates of a point in the last line as in the other two.

73. Prop. IV.—If $\alpha=0$ be the equation to the line QA, $\beta=0$ to the line QB, and $\alpha-k\beta=0$ to the line QC;

$$\text{then } k=\frac{\sin AQC}{\sin BQC}.$$

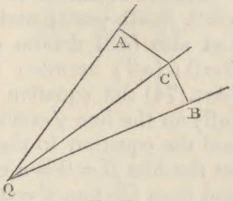


Fig. 21.

Let x', y' be the co-ordinates of C.

Draw CA, CB perpendicular to QA, QB; then (Art. 71)

$$CA=y'\cos\alpha-x'\sin\alpha-p.$$
$=\alpha$, when x', y' are written in place of the co-ordinates.

$CB=\beta$, when x', y' are written for the co-ordinates.

But since x', y' is a point in the line $\alpha-k\beta=0$, we have $k=\frac{\alpha}{\beta}$ when x', y' are written for the co-ordinates,

$$=\frac{CA}{CB}=\frac{QC\sin AQC}{QC\sin BQC}=\frac{\sin AQC}{\sin BQC}.$$

74. Cor. 1.—The equation to the line QC is therefore $\alpha\sin BQC-\beta\sin AQC=0$.

75. Cor. 2.—The straight line which bisects the angle between two straight lines whose equations are $\alpha=0$, $\beta=0$ is $\alpha-\beta=0$.

76. Prop. V.—If $\alpha=0$, $\beta=0$, $\gamma=0$ be the equations to three straight lines, and it be possible to find three numerical quantities, l, m, and n, such that $l\alpha+m\beta+n\gamma$ shall be equal to 0; the three straight lines shall meet in one point.

At the point where two of them whose equations are $\alpha=0$, $\beta=0$ intersect, the co-ordinates render $l\alpha+m\beta=0$. But, by hypothesis, $l\alpha+m\beta+n\gamma=0$ for all co-ordinates;

Analytical Geometry.

$\therefore n\gamma = 0$ for the co-ordinates of the point where the first and second lines meet; consequently the same co-ordinates belong to the third line; or the three meet in that point.

77. Prop. VI.—The straight lines which bisect the angles of a triangle meet in a point.

Let $\alpha = 0$, $\beta = 0$, $\gamma = 0$ be the equations to the sides of the triangle; $\alpha - \beta = 0$, $\alpha - \gamma = 0$, $\beta - \gamma = 0$ (Art. 75) are the equations to the lines which bisect the angles. But $\alpha - \beta - (\alpha - \gamma) + \beta - \gamma = 0$; consequently (Art. 76) these lines meet in a point.

78. Prop. VII.—The perpendiculars from the angles of a triangle on the opposite sides meet in a point.

Let the angle between the lines whose equations are $\alpha = 0$, $\beta = 0$ be denoted by $(\alpha\beta)$, &c.; then (Art. 74) the equation to the perpendicular from the angle in which these two meet is

$$u = \alpha \cos(\beta\gamma) - \beta \cos(\alpha\gamma) = 0.$$

Similarly the equations to the other two perpendiculars are

$$v = \gamma \cos(\alpha\beta) - \alpha \cos(\gamma\beta) = 0,$$

$$w = \beta \cos(\gamma\alpha) - \gamma \cos(\beta\alpha) = 0.$$

Hence we have $u + v + w = 0$, therefore (Art. 76) the three lines meet in a point.

79. Prop. VIII.—If there be two triangles such that the perpendiculars from the angles of the one on the sides of the other meet in a point, then the perpendiculars from the angles of the latter on the sides of the former will also meet in a point.

Let the equations to the sides of the former triangle be $\alpha = 0$, $\beta = 0$, $\gamma = 0$; and of the latter $\alpha' = 0$, $\beta' = 0$, $\gamma' = 0$. Let also $(\alpha\beta)$ denote the angle between the lines $\alpha = 0$, $\beta = 0$; $(\alpha\beta')$ between the lines $\alpha = 0$, $\beta' = 0$, &c. Then (Art. 74) the equation to the perpendicular from the point $(\alpha\beta)$ on the line $\gamma' = 0$ is $\alpha \cos(\beta\gamma') - \beta \cos(\alpha\gamma') = 0$.....(1) and the equation to the perpendicular from the point $(\alpha\gamma)$ on the line $\beta' = 0$ is $\alpha \cos(\gamma\beta') - \gamma \cos(\alpha\beta') = 0$; ....(2) and from $(\beta\gamma)$ on $\alpha' = 0$, $\beta \cos(\gamma\alpha') - \gamma \cos(\beta\alpha') = 0$.....(3) Now at the point where these three lines meet, α is the same in (1) and (2), β in (1) and (3), and γ in (2) and (3). Hence by elimination between (1) and (3), we get

$$\alpha \cos(\beta\gamma') \cos(\gamma\alpha') - \gamma \cos(\beta\alpha') \cos(\alpha\gamma') = 0;$$

which, when combined with (2), gives

$$\cos(\beta\gamma') \cos(\gamma\alpha') \cos(\alpha\beta') = \cos(\beta\alpha') \cos(\alpha\gamma') \cos(\gamma\beta') \text{......} (4)$$

Now, if we change α into α', β into β', γ into γ', and conversely, we obtain the equations to the perpendiculars from the angles of the latter triangle on the sides of the former. At the point where the first and third of these lines intersect, we shall have, as before,

$$\alpha' \cos(\beta'\gamma) \cos(\gamma'\alpha) - \gamma' \cos(\beta'\alpha) \cos(\alpha'\gamma) = 0;$$

and the equation to the second line is

$$\alpha' \cos(\gamma'\beta) - \gamma' \cos(\alpha'\beta) = 0.$$

But because, by equation (4),

$$\cos(\beta'\gamma) \cos \gamma'\alpha) \cos(\alpha'\beta) = \cos(\beta'\alpha) \cos(\alpha'\gamma) \cos(\gamma'\beta),$$

the same values of α' and γ' satisfy both these equations. Hence the three lines meet in one point.

2. *The Circle.*

We shall confine ourselves to two properties only of the circle, both because of their more simple geometric deduction, and because they are included in the properties of the ellipse.

80. Prop. I.—If TPQ be a tangent to a circle; CT, BQ perpendiculars to the diameter from its extremities; then the rectangle PT.PQ = rad².

When the centre is the origin, the equation to the circle is $x^2 + y^2 = a^2$ (Art. 10), and that of the tangent is $xx' + yy' = a^2$ (Art. 55).

$$\begin{aligned} \text{Hence}\quad & ax' + \text{BQ}.y' = a^2 \\ & -ax' + \text{CT}.y' = a^2 \\ & \therefore \text{CT.BQ}.y'^2 = a^2(a^2 - x'^2) \\ & \qquad\qquad = a^2y'^2 \\ \text{or}\quad & \text{CT.BQ} = a^2 \end{aligned}$$

but CT = PT, BQ = PQ, $\therefore$ PT. PQ = a^2.

81. Prop. II.—If through a fixed point chords are drawn to a circle, and tangents are drawn at the extremities of those chords, the locus of the points of intersection of the tangents is a straight line.

Let b, c be the co-ordinates of the fixed point, x', y' the co-ordinates of a point in which two tangents to the circle intersect one another; then (Art. 57) the equation to the chord which joins the points of contact is $xx' + yy' = a^2$. But, by hypothesis, b, c are co-ordinates of a point in this line, $\therefore bx' + cy' = a^2$. Now this is a simple equation between x' and y'. Hence the truth of the proposition.

3. *The Parabola.*

82. Prop. I.—To find the latus rectum of the parabola.

The *latus rectum* is the ordinate to the axis drawn through the focus.

By Art. 12 the equation to the parabola is $y^2 = 4ax$. Now, when $x = a$, y is half the chord through the focus; $\therefore$ that half-chord² $= 4a^2$, or the *latus rectum* $= 4a$.

83. Prop. II.—To find the subtangent of the parabola.

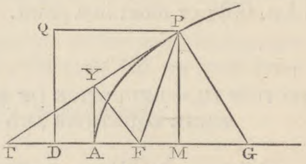


Fig. 22.

The *subtangent* is the portion of the diameter included between the ordinate and the tangent.

Let PT be the tangent meeting the axis in T; MT is the subtangent.

The equation to the tangent PT is (Art. 55) $yy' = 2a(x + x')$.

Now, at the point T, $y = 0$, $\therefore x = -x'$, or AT = AM; hence *the subtangent is double the abscissa.*

84. Cor.—Since AT = AM and AF = AD; by addition, FT = DM = PQ = FP; $\therefore \angle$ FPT $= \angle$ FTP $= \angle$ QPT, or *the tangent bisects the angle between two lines drawn from the point of contact, the one to the focus, the other perpendicular to the directrix.*

This is the property of the tangent employed in the treatise on Conic Sections, to which the reader is referred for the geometrical properties to which it leads.

85. Prop. III.—To find the equation to the normal of the parabola.

The *normal* is the straight line which is perpendicular to the tangent at the point of contact.

Let PT be the tangent at the point P, PG perpendicular to PT is the normal.

The equation to PT is

$$yy' = 2a(x + x'), \text{ or } y = \frac{2a}{y'}x + \frac{2ax'}{y'};$$

and the equation to a line perpendicular to this is (Art. 69)

$$y = -\frac{y'}{2a}x + q.$$

Now the point P, whose co-ordinates are x', y', is a point in this line; therefore

$$y' = -\frac{y'}{2a}x' + q,$$

and by subtraction $y - y' = -\frac{y'}{2a}(x - x')$,

which is the equation to the normal.

86.—Cor. At the point G, $y = 0$, $x = AG$. Hence $AG = x' + 2a = AM + 2a$; $\therefore MG = 2a$.

The line MG is called the *subnormal;* and it follows that the subnormal is equal to half the latus rectum.

87. Prop. IV.—The perpendicular from the focus on the tangent intersects the tangent in the axis of y.

The equation to the tangent is

$$yy' = 2a(x + x')$$
$$= 2ax + \frac{y'^2}{2}$$

or $$y'\left(y - \frac{y'}{2}\right) = 2ax; \ldots\ldots\ldots\ldots(1)$$

and the equation to the perpendicular from F on the tangent is

$$y = -\frac{y'}{2a}(x - a)$$
$$= -\frac{y'x}{2a} + \frac{y'}{2}$$
$$\text{or } y - \frac{y'}{2} = -\frac{y'x}{2a}. \ldots\ldots\ldots\ldots(2)$$

At their point of section x and y are the same in both. Now if x be not 0, $y - \frac{y'}{2}$ is positive in equation (1) and negative in equation (2), or *vice versâ*, which is impossible; $\therefore x = 0$, or the point of intersection is in the axis of y.

88. Cor.—FP : FY : : FY : FA,

or $$FP = \frac{FY^2}{FA} = \frac{FY^2}{FA^2}FA = \frac{FA}{\sin^2 T}.$$

89. Prop. V.—To find the locus of the intersection of the tangent with the perpendicular on it from the vertex.

The equation to the tangent is $yy' = 2a(x + x')$,......(1) and the equation to the perpendicular on it from the vertex is $y = -\frac{y'}{2a}x$; ....(2)

Also the equation to the parabola is $y'^2 = 4ax'$............(3)

From equation (2), $y' = -2a\frac{y}{x}$, and hence, from equation (1) $2ax' = -\frac{2ay^2}{x} - 2ax$. Substituting these values in (3), there is obtained

$$\frac{4a^2y^2}{x^2} = -\frac{4ay^2}{x} - 4ax$$

or $$y^2 = -\frac{x^3}{a + x};$$

which shows (Art. 19) that the locus is a cissoid, the diameter of whose generating circle is AD.

90. Prop. VI.—To find the equation to the parabola when the axes are any diameter and the tangent at its extremity.

Let PN be the diameter parallel to AM; QN the ordinate parallel to the tangent at P; x', y' the co-ordinates of P; x, y of Q referred to the axis; x'', y'' the co-ordinates PN, NQ referred to the diameter PN and the tangent tP. Hence, $x = x' + x'' + y'' \cos T$,

$$y = y' + y'' \sin T;$$

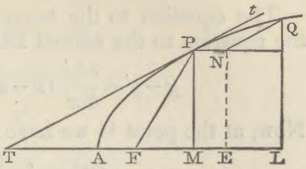


Fig. 23.

therefore the equation $y^2 = 4ax$ becomes

$$(y' + y''\sin T)^2 = 4a(x' + x'' + y''\cos T),$$

or $y'^2 + 2y'y''\sin T + y''^2\sin^2 T = 4ax' + 4ax'' + 4ay''\cos T$.

Now $\tan T = \frac{2a}{y'}$ (Art. 6); $\therefore 2y'y''\sin T = 4ay''\cos T$; and $y'^2 = 4ax'$; hence the equation is reduced to $y''^2\sin^2 T = 4ax''$.

But $\frac{4a}{\sin^2 T} = 4\,FP$ (Art. 88); hence $y''^2 = 4\,FPx''$ is the equation required.

The equation when the curve is referred to any diameter and its bisected chords is consequently of the same form as the equation when the curve is referred to the axis. The conclusions arrived at in the one case are very easily adapted to the other.

91. Prop. VII.—The semi-latus-rectum is an harmonic mean between the segments of any chord drawn through the focus.

Let PFR be a chord through the focus; then (Art. 13),

$$\frac{1}{FP} = \frac{1}{2a}(1 - \cos PFM);$$

similarly $$\frac{1}{FR} = \frac{1}{2a}(1 - \cos RFM).$$

Now, $\cos PFM + \cos RFM = 0$; $\therefore \frac{1}{FP} + \frac{1}{FR} = \frac{2}{2a}$, which proves the proposition.

4. *The Ellipse.*

92. Prop. I.—If a circle be described about the axis major, then ordinates to the ellipse and the circle to the same abscissa, have to one another the proportion of the axis minor to the axis major.

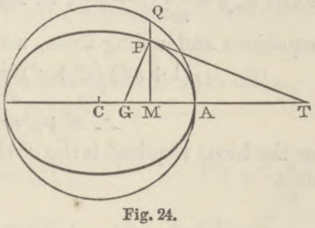


Fig. 24.

Let MPQ be an ordinate to the abscissa CM; then

$$MP^2 = \frac{b^2}{a^2}(a^2 - x^2) \text{ (Art 14)},$$

and $MQ^2 = a^2 - x^2$ (Art. 10);

$\therefore$ $MP^2 : MQ^2 :: b^2 : a^2$,

or $MP : MQ :: b : a$.

93. Prop. II.—To find the subtangent of the ellipse.

The equation to the tangent PT is $a^2yy' + b^2xx' = a^2b^2$.

At the point T, $y = 0$; $\therefore xx' = a^2$, or $CT.CM = CA^2$; whence the subtangent

$$MT = CT - CM = \frac{CA^2}{CM} - CM = \frac{CA^2 - CM^2}{CM}.$$

94. Cor.—If a tangent be drawn to the circle at Q, it will cut the axis in the same point T, for CT is independent of b.

95. Prop. III.—To find the value of the subnormal.

The equation to the tangent being $a^2yy' + b^2xx' = a^2b^2$, the equation to the normal PG will be

$$y - y' = \frac{a^2y'}{b^2x'}(x - x') \text{ (Art. 69).}$$

Now, at the point G we have $y = 0$;

$$\therefore \text{CG} = x' - \frac{b^2x'}{a^2} = e^2x' = e^2\text{CM}.$$

96. Prop. IV.—The normal bisects the angle between the two focal distances.

For, retaining the letters placed at the foci in Art. 14, we have

$\text{FG} = \text{FC} + \text{CG} = ae + e^2x'$;
and $\text{SG} = \text{SC} - \text{CG} = ae - e^2x'$.
Also $\text{SP} = a - ex'$ (Art. 15), and therefore
$\text{FP} = a + ex'$; whence
$\text{FG} : \text{SG} :: \text{FP} : \text{SP}$,

and (Euc. vi. 3) the angle FPS is bisected by the line PG.

97. Cor.—Hence also the tangent bisects the angle between one of the focal distances and the other produced.

98. Prop. V.—To find the locus of the intersection of the tangent with the perpendicular on it from the focus.

If we write $m = \frac{b^2x'}{a^2y'}$, we shall have as the equation to the tangent, $y + mx = \frac{b^2}{y'}$.

Now
$$\left(\frac{b^2}{y'}\right)^2 = m^2\left(\frac{a^2}{x'}\right)^2 = \frac{m^2a^2}{1 - \frac{y'^2}{b^2}};$$

hence $\left(\frac{b^2}{y'}\right)^2 - b^2 = m^2a^2$, and $y + mx = \sqrt{b^2 + m^2a^2}$ is the equation to the tangent.

Also the equation to the perpendicular on it from the focus is, $y = \frac{1}{m}(x - ae)$; or $my - x = -ae$. Squaring the equations and adding them, we get

$$(1 + m^2)(x^2 + y^2) = b^2 + m^2a^2 + a^2e^2,$$
$$= (1 + m^2)\, a^2;$$
$$\therefore x^2 + y^2 = a^2;$$

or the locus required is the circle described about the major axis.

99. Prop. VI.—The rectangle by the two perpendiculars from the foci on the tangent is equal to the square of the semi-axis minor.

The length of the perpendicular from a point whose co-ordinates are x_1, y_1, on a straight line whose equation is $y = -mx + c$ is (Art. 70) $\frac{y_1 + mx_1 - c}{\sqrt{1 + m^2}}$;

Now, the co-ordinates of S are $x_1 = ae$, $y_1 = 0$; hence the perpendicular from S on the tangent is equal to

$$\frac{mae - c}{\sqrt{1 + m^2}}, \text{ where } c = \sqrt{b^2 + m^2a^2}.$$

In the same way the length of the perpendicular from F on the tangent is $\frac{-mae - c}{\sqrt{1 + m^2}}$; consequently their rectangle is $\frac{c^2 - m^2a^2e^2}{1 + m^2} = b^2$.

100. Prop. VII.—To find the equation to the ellipse when referred to two diameters as axes, of which the one is parallel to a tangent at the extremity of the other.

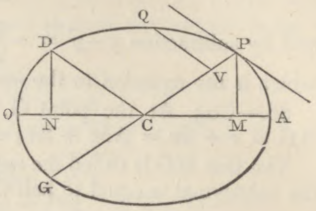


Fig. 25.

Let CP be one diameter, and CD parallel to the tangent at P the extremity of the other.

Let the co-ordinates of P, referred to the axes as before, be x', y'; of Q, x_1, y_1, and let the co-ordinates of Q referred to CP and CD be x and y, or $\text{CV} = x$, $\text{QV} = y$; also let the angle $\text{PCA} = \theta$, $\text{DCO} = \varphi$; then $\tan\varphi = \frac{b^2x'}{a^2y'}$, and $\tan\theta = \frac{y'}{x'}$;

$$\therefore \tan\theta\tan\varphi = \frac{b^2}{a^2}; \text{ i. e., } a^2\sin\theta\sin\varphi = b^2\cos\theta\cos\varphi.$$

And (Art. 41) $\quad x_1 = x\cos\theta - y\cos\varphi$,
$\quad y_1 = x\sin\theta + y\sin\varphi$.

Substituting these values in the equation $a^2y_1{}^2 + b^2x_1{}^2 = a^2b^2$, there results

$$a^2(x\sin\theta + y\sin\varphi)^2 + b^2(x\cos\theta - y\cos\varphi)^2 = a^2b^2,$$

or $a^2(x^2\sin^2\theta + y^2\sin^2\varphi) + b^2(x^2\cos^2\theta + y^2\cos^2\varphi) = a^2b$.
or $a'^2y^2 + b'^2x^2 = a'^2b'^2$, where

$$a'^2 = \frac{a^2b^2}{a^2\sin^2\theta + b^2\cos^2\theta}, \quad b'^2 = \frac{a^2b^2}{a^2\sin^2\varphi + b^2\cos^2\varphi}.$$

101. Cor. 1.—Since only the squares of x and y appear in the equation, the line CP bisects all chords parallel to CD, or (Art. 50) *the diameters* CP, CD *are conjugate diameters*, and CP is parallel to the tangent at D.

102. Cor. 2.—By making successively $x = 0$ and $y = 0$, we obtain $\text{CP} = a'$, $\text{CD} = b'$. Hence the equation is exactly the same as when referred to the principal axes; and the results obtained in that case are easily adapted to the present.

103. Cor. 3.—We have

$$a'^2\sin^2\theta : b'^2\cos^2\varphi :: a^2\tan^2\varphi + b^2 : a^2 + b^2\cot^2\theta,$$
$$:: \frac{b^4x'^2}{a^4y'^2} + b^2 : a^2 + \frac{b^2 + {}'^2}{y'^2},$$
$$:: b^2 \quad : a^2,$$

$\therefore \quad \text{PM} : \text{CN} :: b \quad : a.$
Similarly $\quad \text{DN} : \text{CM} :: b \quad : a,$
$\therefore \quad \text{PM} : \text{CN} :: \text{DN} : \text{CM}.$

104. Cor. 4.—$\text{CP}^2 + \text{CD}^2 = \text{CM}^2 + \text{MP}^2 + \text{CN}^2 + \text{ND}^2$

$$= \text{CM}^2 + \text{MP}^2 + \frac{a^2}{b^2}\text{MP}^2 + \frac{b^2}{a^2}\text{CM}^2$$
$$= (a^2 + b^2)\left(\frac{\text{CM}^2}{a^2} + \frac{\text{MP}^2}{b^2}\right)$$
$$= a^2 + b^2;$$

or *the sum of the squares of any two conjugate axes is the same as the sum of the squares of the principal axes.*

105. Cor. 5.—$\text{CD}^2 = \frac{a^2}{b^2}y'^2 + \frac{b^2}{a^2}x'^2$,

$$= a^2\left(1 - \frac{x'^2}{a^2}\right) + \frac{b^2}{a^2}x'^2$$
$$= a^2 - e^2x'^2$$
$$= \text{FP} \,.\, \text{SP (Art. 15).}$$

106. Prop. VIII.—All parallelograms circumscribing the ellipse are equal.

If tangents be drawn at the extremities of conjugate diameters, they will form a parallelogram of which the area is $4\,a'b'\sin(\theta+\phi)$

$$=4\,a'b'\sin\theta\cos\phi+4\,a'b'\cos\theta\sin\phi$$
$$=4\,\mathrm{PM}\,.\,\mathrm{CN}+4\,\mathrm{CM}\,.\,\mathrm{DN}$$
$$=4\frac{a}{b}\mathrm{PM}^2+4\frac{b}{a}\mathrm{CM}^2\ \text{(Art. 103)}$$
$$=4\,ab\left(\frac{\mathrm{PM}^2}{b^2}+\frac{\mathrm{CM}^2}{a^2}\right)=4\,ab.$$

107. Prop. IX.—The ellipse is the curve generated by a point whose distance from the focus is to its distance from the directrix as $e:1$.

Let EQ be the directrix at a distance from the centre $\mathrm{CE}=\frac{a}{e}$; then

$$\mathrm{PQ}=\mathrm{ME}=\mathrm{CE}-\mathrm{CM}$$
$$=\frac{a}{e}-x=\frac{a-ex}{e}=\frac{\mathrm{FP}}{e}$$

(Art. 15); $\therefore\ \mathrm{FP}:\mathrm{PQ}::e:1$.

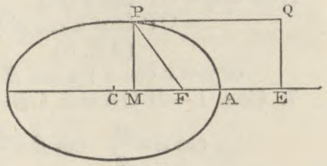


Fig. 26.

5. *The Hyperbola.*

The equation to the hyperbola differs from that to the ellipse only in having $-b^2$ in place of b^2. With this limitation, the properties given above and their demonstrations are common to both curves, and it would be superfluous to repeat them. We shall, accordingly, confine ourselves to that property of the hyperbola which has no parallel in the ellipse—the asymptote and its consequences.

108. Prop. I.—To find the equation to the asymptote of the hyperbola.

We have already (Art. 30) shown that if the values of y be expressed in a descending series of powers of x, the equation to the asymptote may be obtained from it by omitting all negative powers.

Now in the hyperbola (Art. 17)—

$$y^2=\frac{b^2}{a^2}(x^2-a^2)$$
$$=\frac{b^2}{a^2}x^2\left(1-\frac{a^2}{x^2}\right)$$
$$\therefore\ y=\pm\frac{b\,x}{a}\left(1-\frac{1}{2}\frac{a^2}{x^2}+\ \&\text{c.}\right)$$

Hence the straight line whose equation is $y=\pm\frac{bx}{a}$ is an asymptote to the curve.

If the curve be referred to conjugate diameters, the same reasoning will show that the equation to the asymptotes is $y=\pm\frac{b'}{a'}x$.

It is evident that the asymptotes are the diagonals of a parallelogram of which the conjugate diameters are the lines joining the points of bisection of opposite sides.

109. Prop. II.—If any chord of the hyperbola be terminated by the asymptotes, the rectangle by its segments is equal to the square of the semi-axis parallel to that chord.

Let RPQH (fig. 27) be a chord terminated by the asymptotes; then $\mathrm{RP}\,.\,\mathrm{PH}=b'^2$.

Let the curve be referred to conjugate diameters, of which one is parallel to RH; its equation is

$$y^2=\frac{b'^2}{a'^2}(x^2-a'^2);$$

and the equation to the asymptote

$$y'^2=\frac{b'^2}{a'^2}x^2.$$
$$\therefore\ y'^2-y^2=\frac{b'^2}{a'^2}a'^2=b'^2;$$
$$\text{i.e.}\qquad \mathrm{MR}^2-\mathrm{MP}^2=b'^2.$$

Now $\mathrm{MP}=\mathrm{MQ}$ being respectively $\pm\frac{b'}{a'}\sqrt{x^2-a'^2}$, and

$\mathrm{MR}=\mathrm{MH}$ being respectively $\pm\frac{b'}{a'}x$;

$\therefore$ the above equation gives $\mathrm{RP}\,.\,\mathrm{PH}=b'^2$.

110. Prop. III.—To find the equation to the curve when referred to the asymptotes as axes.

Draw NP parallel to CR, and let $\mathrm{CN}=x'$, $\mathrm{NP}=y'$. Suppose CM in the direction of the transverse* axis $=x$, MP perpendicular to it $=y$, the angle $\mathrm{RCM}=\theta$; then $x=x'\cos\theta+y'\cos\theta$,

$$y=y'\sin\theta-x'\sin\theta;$$
$$\therefore\ a^2(y'-x')^2\sin^2\theta-b^2(x'+y')^2\cos^2\theta=-a^2b^2.$$

Now $\tan\theta=\frac{b}{a}$;

$$\therefore\qquad \sin^2\theta=\frac{b^2}{a^2+b^2},$$
$$\cos^2\theta=\frac{a^2}{a^2+b^2};$$

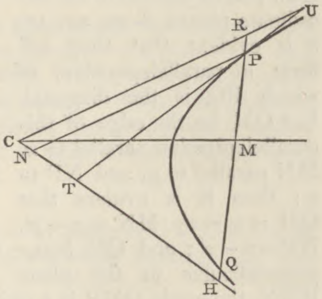


Fig. 27.

hence $$\frac{a^2b^2}{a^2+b^2}\left\{(y'-x')^2-(x'+y')^2\right\}=-a^2b^2;$$

or $$x'y'=\frac{a^2+b^2}{4},\ \text{the equation required.}$$

111. Prop. IV.—If any tangent be produced to meet the two asymptotes, the area of the triangle contained by the tangent and the two asymptotes is always the same.

Let UPT be the tangent; its equation (Art. 55);

$$xy'+yx'=\frac{a^2+b^2}{2}.$$

Now, when $y=0$, $x=\mathrm{CT}$; $\therefore\ \mathrm{CT}=\frac{a^2+b^2}{2y'}$;

and when $x=0$, $y=\mathrm{CU}$; $\therefore\ \mathrm{CU}=\frac{a^2+b^2}{2x'}$.

Hence $$\mathrm{CT}\,.\,\mathrm{CU}=\frac{(a^2+b^2)^2}{4\,x'y'}=a^2+b^2;$$

and as the angle TCU is constant, the area TCU is always the same, whatever be the point P.

We cannot close this portion of our subject without acknowledging our obligations to Mr Salmon, whose masterly treatise can hardly be too highly recommended.

ANALYTICAL GEOMETRY OF THREE DIMENSIONS; OR SOLID CO-ORDINATE GEOMETRY.

1. As in plane co-ordinate geometry, the position of a point in a plane is denoted by its distances from two given lines, so in solid geometry the position of a point in space

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* The terms transverse and conjugate are more appropriate than major and minor in the case of the hyperbola.

is denoted by its distances from three given planes. The direction in which the distance from any one plane is measured is parallel to the line of intersection of the other two. The planes of reference are called the *co-ordinate planes*, and their lines of intersection the *co-ordinate axes;* the point in which the three intersect one another being the *origin*.

SECTION I.—PROPERTIES OF THE PLANE AND STRAIGHT LINE.

We shall at present confine ourselves to rectangular axes.

2. PROP. I.—To find the distance between two points in terms of their co-ordinates.

Let Ox, Oy, Oz be the axes of co-ordinates; P, Q the two points; x, y, z the co-ordinates of P; x', y', z' the co-ordinates of Q. Through P, Q draw planes parallel to the co-ordinate planes of xy, xz, yz; it is evident that they will form a parallelepipedon, of which PQ is the diagonal. Let QM be the edge of this parallelepipedon parallel to x, MN parallel to y, and NP to z: then it is evident that $\text{QM} = x - x'$, $\text{MN} = y - y'$, $\text{NP} = z - z'$: and QM being perpendicular to the plane PMN, the angle QMP is a right angle.

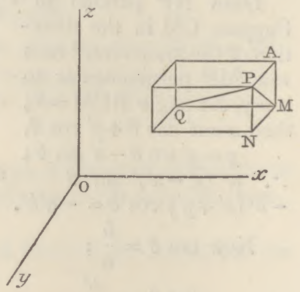

Fig. 28.

$$\therefore\ \text{PQ}^2 = \text{QM}^2 + \text{MP}^2 = \text{QM}^2 + \text{MN}^2 + \text{NP}^2$$
$$= (x - x')^2 + (y - y')^2 + (z - z')^2.$$

3. COR. 1.—If α, β, γ be the angles which PQ makes with the axes of x, y, z, we shall have

$$x - x' = \text{QM} = \text{PQ} \cos \text{PQM} = \text{PQ} \cos \alpha,$$
$$y - y' = \text{PQ} \cos \beta,$$
$$z - z' = \text{PQ} \cos \gamma;$$
$$\therefore\quad \text{PQ}^2 = \text{PQ}^2 \cos^2 \alpha + \text{PQ}^2 \cos^2 \beta + \text{PQ}^2 \cos^2 \gamma,$$
$$\text{and}\quad \cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma = 1;$$

consequently the angles which a straight line makes with the axes are not all three arbitrary, but where two are given, the third is determined by the above equation.

4. COR. 2.—If we take the three equations,

$$x - x' = \text{PQ} \cos \alpha, \quad y - y' = \text{PQ} \cos \beta, \quad z - z' = \text{PQ} \cos \gamma,$$

and multiply the first by $x - x'$, the second by $y - y'$, and the third by $z - z'$, and add the results, we shall get

$$(x - x') \cos \alpha + (y - y') \cos \beta + (z - z') \cos \gamma = \text{PQ}.$$

5. PROP. II.—To find the angle between two straight lines in terms of the angles which the lines make with the axes.

Draw through the origin two lines OP, OQ parallel to the given lines, and let OP make with the axes the angles α, β, γ, and OQ the angles α', β', γ'.

Take $\text{OP} = 1$, $\text{OQ} = 1$, and let the angle POQ be θ; then $x = \text{OP} \cos \alpha = \cos \alpha$, $y = \cos \beta$, &c.

$$\text{Now } \text{PQ}^2 = \text{OP}^2 + \text{OQ}^2 - 2\ \text{OP} \cdot \text{OQ} \cos \theta,$$
$$= 2 - 2 \cos \theta.$$
$$\text{But } \text{PQ}^2 = (x - x')^2 + (y - y')^2 + (z - z')^2$$
$$= (\cos \alpha - \cos \alpha')^2 + (\cos \beta - \cos \beta')^2$$
$$+ (\cos \gamma - \cos \gamma')^2$$
$$= \cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma + \cos^2 \alpha' + \cos^2 \beta' + \cos^2 \gamma'$$
$$- (2 \cos \alpha \cos \alpha' + \cos \beta \cos \beta' + \cos \gamma \cos \gamma')$$
$$= 2 - 2 (\cos \alpha \cos \alpha' + \cos \beta \cos \beta' + \cos \gamma \cos \gamma');$$
$$\therefore\ \cos \theta = \cos \alpha \cos \alpha' + \cos \beta \cos \beta' + \cos \gamma \cos \gamma'.$$

6. PROP. III.—To find the equation to a plane.

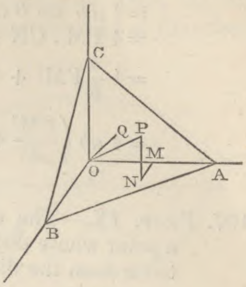

Fig. 29.

Let ABC be the plane, P any point in it, of which the co-ordinates are x, y, z; OQ perpendicular to the plane $= p$, making with the axes of x, y, and z the angles α, β, and γ.

Let also OP make with the axes the angles α', β', γ': then, as in Art. 3, we have $x = \text{OP} \cos \alpha'$, $y = \text{OP} \cos \beta'$, $z = \text{OP} \cos \gamma'$.

$$\text{Now OQ} = \text{OP} \cos \text{POQ}$$
$$= \text{OP} (\cos \alpha \cos \alpha' + \cos \beta \cos \beta' + \cos \gamma \cos \gamma)$$
$$(\text{Art. } 5),$$
$$\text{or } p = x \cos \alpha + y \cos \beta + z \cos \gamma.$$

7. COR. 1.—If $\text{OA} = a$, $\text{OB} = b$, $\text{OC} = c$, we have

$$\cos \alpha = \frac{p}{a}, \quad \cos \beta = \frac{p}{b}, \quad \cos \gamma = \frac{p}{c};$$
$$\therefore\ x \cos \alpha + y \cos \beta + z \cos \gamma = \frac{xp}{a} + \frac{yp}{b} + \frac{zp}{c};$$

hence $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$, is another form of the equation.

8. COR. 2.—Any simple equation in x, y, z of which the general form is $\text{A}x + \text{B}y + \text{C}z = \text{D}$ will represent a plane.

9. COR. 3.—If the equation be written in the form exhibited in the last corollary, we must have

$$\frac{\cos \alpha}{p} = \frac{\text{A}}{\text{D}}, \quad \frac{\cos \beta}{p} = \frac{\text{B}}{\text{D}}, \quad \frac{\cos \gamma}{p} = \frac{\text{C}}{\text{D}};$$
$$\therefore\ (\text{Art. } 3) \quad \frac{1}{p^2} = \frac{\text{A}^2 + \text{B}^2 + \text{C}^2}{\text{D}^2},$$
$$\text{or } p = \frac{\text{D}}{\sqrt{\text{A}^2 + \text{B}^2 + \text{C}^2}},$$
$$\cos \alpha = \frac{\text{A}}{\sqrt{\text{A}^2 + \text{B}^2 + \text{C}^2}}, \qquad \cos \beta = \frac{\text{B}}{\sqrt{\text{A}^2 + \text{B}^2 + \text{C}^2}},$$
$$\cos \gamma = \frac{\text{C}}{\sqrt{\text{A}^2 + \text{B}^2 + \text{C}^2}}.$$

10. COR. 4.—If $z = 0$ in Cor. 1, we get $\frac{x}{a} + \frac{y}{b} = 1$, which is obviously the equation to the line AB. This line is called the *trace* of the plane on the plane of xy. In like manner, AC, BC are the traces of the plane or the planes of xz and yz.

11. COR. 5.—If the plane be parallel to the axis of z or perpendicular to the plane of xy, the line OQ is in the place of xy; $\therefore\ \gamma = \frac{\pi}{2}$ and $\cos \gamma = 0$; hence the equation to the plane becomes $x \cos \alpha + y \cos \beta = p$, or the equation to the plane is the same as the equation to its trace on the plane of xy.

12. PROP. IV.—To find the equations to a straight line.

A straight line is the intersection of two planes, consequently the equations to those planes will be satisfied simultaneously for the line. These are therefore the equations to the line.

If the two equations be $\text{A}x + \text{B}y + \text{C}z = \text{D}$ and $\text{A}'x + \text{B}'y + \text{C}'z = \text{D}'$, we may obtain by elimination

$$x = az + p, \quad y = bz + q$$

as the form of the equations required.

13. The equations are sometimes obtained in the following manner:—

Let planes pass through the line respectively perpendicular to the planes of xz and yz. Their equations will have the form (Art. 11) $x=az+p$, $y=bz+q$, which are the equations to the line.

14. Cor. 1.—It is evident that if perpendiculars be drawn from every point in the given line to the plane of xz, they will intersect that plane in the line whose equation is $x=az+p$. This latter line is called the *projection* of the given line on the plane of xz. Consequently, the equations to a line are the equations to its projections on two of the co-ordinate planes.

15. Prop. V.—To express the angles which a straight line makes with the co-ordinate axes in terms of a and b.

Let PQ, fig. of Art. 2, be the line, $x=az+p$, $y=bz+q$ its equations; then because the point Q, of which the co-ordinates are x', y', z', is a point in the line, we have

$$x-x'=a\,(z-z'),\quad y-y'=b\,(z-z'),$$

and
$$\cos\alpha=\frac{x-x'}{\mathrm{PQ}},\quad \cos\beta=\frac{y-y'}{\mathrm{PQ}},\quad \cos\gamma=\frac{z-z'}{\mathrm{PQ}};$$

i.e.
$$\cos\alpha=\frac{x-x'}{\sqrt{(x-x')^2+(y-y')^2+(z-z')^2}}=\frac{a}{\sqrt{a^2+b^2+1}};$$

$$\cos\beta=\frac{b}{\sqrt{a^2+b^2+1}},\quad \cos\gamma=\frac{1}{\sqrt{a^2+b^2+1}}.$$

16. Cor. 1.—$a=\dfrac{\cos\alpha}{\cos\gamma}$, $b=\dfrac{\cos\beta}{\cos\gamma}$.

17. Cor. 2.—$\dfrac{x-x'}{a}=\dfrac{y-y'}{b}=z-z'$;

$$\text{or}\quad \frac{x-x'}{\cos\alpha}=\frac{z-z}{\cos\gamma}\quad\text{and}\quad\frac{y-y'}{\cos\beta}=\frac{z-z'}{\cos\gamma};$$

which are the equations to a straight line in terms of the angles which it makes with the co-ordinate axes.

18. Cor. 3.—If $x=a'z+p'$, $y=b'z+q'$ be the equations to another straight line; then, if θ be the angle between them, we shall have

$$\cos\theta=\cos\alpha\cos\alpha'+\cos\beta\cos\beta'+\cos\gamma\cos\gamma'\ \text{(Art. 5)}$$
$$=\frac{aa'+bb'+1}{\sqrt{a^2+b^2+1}\,\sqrt{a'^2+b'^2+1}}.$$

19. Cor. 4.—In order that the two straight lines may be at right angles to one another, we must have $\cos\theta=0$, or $aa'+bb'+1=0$.

20. Prop. VI.—To find the conditions that a straight line may be at right angles to a plane.

It is evident that the angles determined in Art. 9, which the perpendicular to the plane makes with the axes, must be equal to those determined in Art. 15, which the straight line makes with them; or

$$\frac{\mathrm{A}}{\sqrt{\mathrm{A}^2+\mathrm{B}^2+\mathrm{C}^2}}=\frac{a}{\sqrt{a^2+b^2+1}},\quad\frac{\mathrm{B}}{\sqrt{\mathrm{A}^2+\mathrm{B}^3+\mathrm{C}^2}}=\frac{b}{\sqrt{a^2+b^2+1}}$$
$$\frac{\mathrm{C}}{\sqrt{\mathrm{A}^2+\mathrm{B}^2+\mathrm{C}^2}}=\frac{1}{\sqrt{a^2+b^2+1}};$$

$\therefore$ $\mathrm{A}=a\mathrm{C}$, $\mathrm{B}=b\mathrm{C}$ are the conditions required.

21. Prop. VII.—To find the conditions that a straight line may coincide with a plane.

Let $x=az+p$, $y=bz+q$ be the equations to the line; $\mathrm{A}x+\mathrm{B}y+\mathrm{C}z=\mathrm{D}$ the equation to the plane; then, since they coincide, we must have $\mathrm{A}\,(az+p)+\mathrm{B}(bz+q)+\mathrm{C}z=\mathrm{D}$, whatever be z; hence $\mathrm{A}a+\mathrm{B}b+\mathrm{C}=0$ and $\mathrm{A}p+\mathrm{B}q=\mathrm{D}$ are the conditions required.

22. Cor.—The condition that the straight line may be parallel to the plane is $\mathrm{A}a+\mathrm{B}b+\mathrm{C}=0$; being the condition that a line and plane parallel to these through the origin shall coincide.

23. Prop. VIII.—To find the length of the perpendicular from a given point on a given plane.

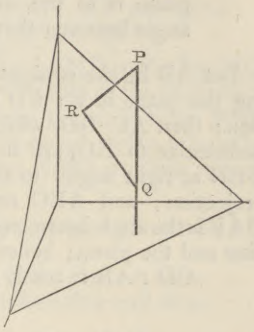

Fig. 30.

Let P be the point of which the co-ordinates are x', y', z'; PR perpendicular to the plane whose equation is $\mathrm{A}x+\mathrm{B}y+\mathrm{C}z=\mathrm{D}$.

Draw PQ parallel to the axis of z, meeting the plane in Q: then

$$\mathrm{PR}=\mathrm{PQ}\cos\mathrm{QPR}$$
$$=\mathrm{PQ}\frac{\mathrm{C}}{\sqrt{\mathrm{A}^2+\mathrm{B}^2+\mathrm{C}^2}}\ \text{(Art. 9)};$$

$$\text{But }\mathrm{PQ}=z'-\frac{\mathrm{D}-\mathrm{A}x'-\mathrm{B}y'}{\mathrm{C}},$$

$$\therefore\ \mathrm{PR}=\frac{\mathrm{A}x'+\mathrm{B}y'+\mathrm{C}z'-\mathrm{D}}{\sqrt{\mathrm{A}^2+\mathrm{B}^2+\mathrm{C}^2}}.$$

24. If from every point in the boundary of a given surface, straight lines be drawn parallel to a given line and meeting a fixed plane, they form the boundary of the *projection* of the surface on that plane. When the lines are drawn perpendicular to the plane, the projection is called an *orthogonal projection.* It is with this class alone that we are concerned here.

Prop. IX.—The projection of a plane area is to the area itself, as the cosine of the angle between the two planes is to unity.

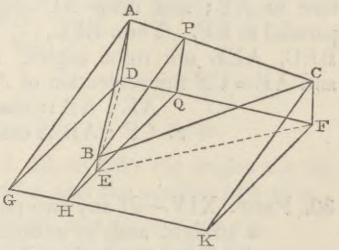

Fig. 31.

Suppose the area divided into triangles, indefinitely small if necessary. Let ABC be one of these triangles, DEF its projection; and let the line of intersection of the planes of ABC, DEF be GK. Through A, B, C draw planes at right angles to GK, and therefore passing through D, E, and F; each of the angles AGD, PHQ, CKF is equal to the angles between the planes.

Now the triangles ABP, DEQ have BP, EQ as their bases, and GH as their common altitude;

$$\therefore\ \mathrm{DEQ}:\mathrm{ABP}::\mathrm{EQ}:\mathrm{BP}$$
$$::\cos\mathrm{PHQ}:1.$$

Similarly of the other triangles. Hence the truth of the proposition.

25. Prop. X.—The square of any plane area is equal to the sum of the squares of its projections on the three co-ordinate planes.

Let A_x, A_y, A_z represent the projections of A on the planes of yz, xz, and xy; α, β, γ, the angles which the perpendicular on A makes with the axes of x, y, and z; then α is the angle which the area makes with the plane of yz. $\therefore$ $\mathrm{A}_x=\mathrm{A}_y\cos\alpha$. Similarly $\mathrm{A}_y=\mathrm{A}\cos\beta$, $\mathrm{A}_z=\mathrm{A}\cos\gamma$. Now $\cos^2\alpha+\cos^2\beta+\cos^2\gamma=1$; $\therefore$ $\mathrm{A}_x^2+\mathrm{A}_y^2+\mathrm{A}_z^2=\mathrm{A}^2$.

26. Prop. XI.—To find the equation to a plane in terms of the area and its projections on the co-ordinate planes.

As in the last proposition $\mathrm{A}=\mathrm{A}_x\cos\alpha$, &c.

$$\therefore\ \cos\alpha=\frac{\mathrm{A}_x}{\mathrm{A}},\quad\cos\beta=\frac{\mathrm{A}_y}{\mathrm{A}},\quad\cos\gamma=\frac{\mathrm{A}_z}{\mathrm{A}}$$

Now (Art. 6) the equation to the plane is

$$x\cos\alpha+y\cos\beta+z\cos\gamma=p;$$

hence it becomes $$x\text{A}_x+y\text{A}_y+z\text{A}_z=p\text{A}.$$

28. Prop. XII.—The projection of a straight line on a plane is to the straight line, as the cosine of the angle between them is to unity.

Let AB be the straight line meeting the plane in E; CD the projection; then AC, BD, which are perpendicular to ED, are in the plane BED at right angles to the plane of projection; and AEC or its equal BAF is the angle between the straight line and the plane; hence

CD : AB :: cos E : 1.

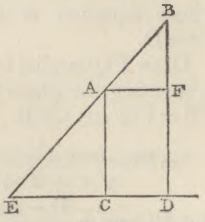

Fig. 32.

29. Prop. XIII.—The projection of a straight line on another straight line is to the straight line itself, as the cosine of their angle of inclination is to unity.

When two lines are not in the same plane, their angle of inclination is the angle which one of them makes with a straight line drawn through it parallel to the other.

Let AB be the line to be projected; CD the line on which it is to be projected. Draw AE parallel to CD; then BAE is the angle of inclination of the lines. Through B draw the plane BFE perpendicular to CD, and therefore to AE; and draw AC parallel to EF. Then EFC, BFC, AEB are right angles, ∴ AF is a parallelogram and AE = CF the projection of AB on CD. But

AE : AB :: cos BAE : 1;

∴ CF : AB :: cos BAE : 1.

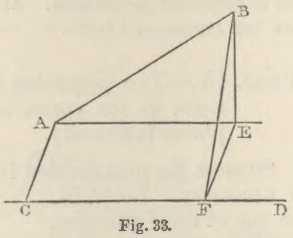

Fig. 33.

30. Prop. XIV.—If any two points be connected both by a straight and by a broken line, the projection of the former on a given line is equal to the sum of the projections of every part of the latter.

The projection of PQ on the line AB is equal to the sum of the projections of PM, MN, NR, RQ. Through P, M, N, R, Q draw planes perpendicular to AB; the intercepted portions of AB are the projections of PM, MN, &c.; hence the proposition is evidently true provided none of the intercepted portions lap over each other or are negative, as would be the case with the projection of MN in the following figure. But the cosines employed will rectify this, provided we attend to the directions of the lines as indicated in the figure by the arrows. For the projection of MN will be negative, because the angle is greater than a right angle, whilst all the others will be positive, including that of RQ, for which the angle is negative, but its cosine positive.

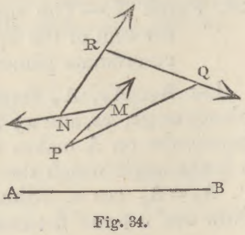

Fig. 34.

31. By a similar process, and retaining the same restriction as to direction, we may show that if an area be connected with any number of areas, having common edges with the former area and with each other, the projection of the former on any plane is equal to the sum of the projections of all the others.

SECTION II.—EQUATIONS TO SURFACES OF THE SECOND DEGREE DEDUCED FROM THEIR PROPERTIES.

32. *a.—The Sphere.*

The characteristic property is that every point is equally distant from the centre.

Let a, b, c, be the co-ordinates of the centre, and r the radius. The equation is evidently

$$(x-a)^2+(y-b)^2+(z-c)^2=r^2.$$

33. *b.—Oblique Cylinder on a Circular Base.*

We shall give the simplest form of the equation, by supposing the circular base to be in the plane of xy with its centre at the origin, so that its equation is $x^2+y^2=r^2$. This circle is called the *directrix.* A straight line moves parallel to itself in such a way as always to pass through the circumference of this circle. This line is called the *generatrix.* Let $x=az+p$, $y=bz+q$ be its equation. Then a, b, r are known constants. Now p, q are the values of x and y when $z=0$; they are therefore the co-ordinates of a point in the circumference of the directrix, or $p^2+q^2=r^2$, *i. e.* $(x-az)^2+(y-bz)^2=r^2$, which is the equation required.

34. Cor.—A similar process will determine the equation to the cylinder whatever be the equation to the directrix.

35. *c.—Oblique Cone on a Circular Base.*

We shall suppose the circle to be the same as in Art. 33. The generatrix is now required to pass through a fixed point called the vertex of the cone. Let a, b, c be the co-ordinates of this point; $x=\text{A}z+p$, $y=\text{B}z+q$, the equations to the generatrix: then we must have $a=\text{A}c+p$, $b=\text{B}c+q$, from which equations we obtain

$$p=\frac{az-cx}{z-c}, \qquad q=\frac{bz-cy}{z-c},$$

and, since $p^2+q^2=r^2$, the equation required is

$$(az-cx)^2+(bz-cy)^2=r^2\,(z-c)^2.$$

36. *d.—The Ellipsoid.*

The directrices are two ellipses at right angles to each other, having a common axis. We shall suppose their planes to be those of xy and xz. The generatrix is a variable ellipse, such that its semi-axes are the ordinates of the directrices.

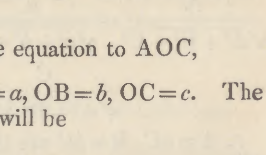

Fig. 35.

Let $\frac{x^2}{a^2}+\frac{\text{MQ}^2}{b^2}=1$ (1) be the equation to AOB,

$\frac{x^2}{a^2}+\frac{\text{MR}^2}{c^2}=1$ (2) the equation to AOC,

the two directrices; so that OA $=a$, OB $=b$, OC $=c$. The equation to the generatrix RPQ will be

$$\frac{y^2}{\text{MQ}^2}+\frac{z^2}{\text{MR}^2}=1\text{.........................}(3)$$

But by equations (1) and (2) $\text{MQ}^2=b^2\left(1-\frac{x^2}{a^2}\right)$, $\text{MR}^2=c^2\left(1-\frac{x^2}{a^2}\right)$. Hence (3) becomes

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1.$$

37. Cor.—If $b=c$, the ellipsoid becomes a spheroid, prolate or oblate according as b is less or greater than a.

38. *e.—Paraboloid of Revolution.*

The directrix is a parabola, which we shall suppose to be in the plane of xz, the axis of x being its axis, so that its equation is $z^2=4ax$. The generatrix is a variable circle in the plane of yz, such that its radius is always the ordinate of the parabola. The equation to the generatrix is $y^2+z^2=\text{radius}^2$, $\therefore\ y^2+z^2=4ax$ is the equation required.

39. *f.—Hyperboloid of One Sheet.*

This surface differs from the ellipsoid only in having the directrices two hyperbolas, with a common conjugate axis. Hence a^2 is negative, and the equation is therefore

$$\frac{y^2}{b^2}+\frac{z^2}{c^2}-\frac{x^2}{a^2}=1.$$

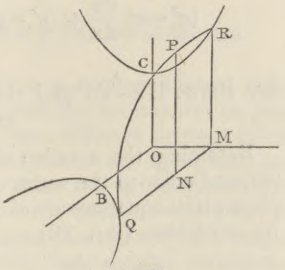

Fig. 36.

40. *h.—Hyperboloid of Two Sheets.*

This surface differs from the ellipsoid only in having the directrices hyperbolas with their transverse axis common. Hence b^2 and c^2 are negative, and the equation is therefore

$$\frac{x^2}{a^2}-\frac{y^2}{b^2}-\frac{z^2}{c^2}=1.$$

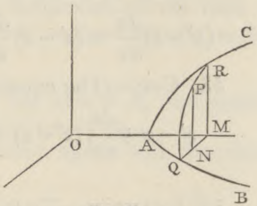

Fig. 37.

41. *h.—Elliptic Paraboloid.*

The directrices are here two parabolas placed as the two ellipses were in the case of the ellipsoid. The generatrix is a variable ellipse as before.

In the figure of last Article, if we suppose AB, AC to be two parabolas whose equations are $\text{MQ}^2=4ax$, $\text{MR}^2=4bx$, the origin being at A, we shall have as the equation to the ellipse RPQ

$$\frac{y^2}{\text{MQ}^2}+\frac{z^2}{\text{MR}^2}=1.$$

$$\frac{y^2}{4a}+\frac{z^2}{4b}=x \text{ is the equation required.}$$

42. *i.—Hyperbolic Paraboloid.*

The directrices are the same as in the last Article, but the generatrix is a variable hyperbola, whose semi-axes are the ordinates of the two parabolas. The equation to the hyperbola is therefore

$$\frac{y^2}{\text{MQ}^2}-\frac{z^2}{\text{MR}^2}=1.$$

Hence the equation to the surface is

$$\frac{y^2}{4a}-\frac{z^2}{4b}=x.$$

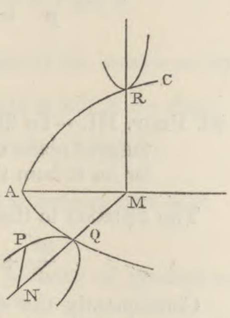

Fig. 38.

SECTION III.—TRANSFORMATION OF CO-ORDINATES.

Hitherto we have supposed the system of co-ordinates to be rectangular. This is indeed the fundamental system; but for the solution of certain problems it is necessary to pass to an oblique system. The investigation of the requisite formulæ will constitute the subject of the present section.

43. Prop. I.—To find the distance between two points in terms of their oblique co-ordinates.

Retaining the figure of Art. 2, and supposing the axes not to be at right angles, we have

$$\begin{aligned}\text{PQ}^2&=\text{QM}^2+\text{MP}^2-2\,\text{QM}\,.\,\text{MP}\cos\text{QMP}\\&=\text{QM}^2+\text{MN}^2+\text{NP}^2-2\,\text{MN}\,.\,\text{NP}\cos\text{MNP}\\&\qquad-2\,\text{QM}\,.\,\text{MP}\cos\text{QMP}.\end{aligned}$$

Now MP cos QMP is the projection of MP on the line MQ, and is therefore (Art. 29) equal to the sum of the projections of MN and NP on the same line, *i.e.*, to MN cos NMQ + NP cos AMQ. But if α, β, γ be the angles yOz, xOz, xOy, it is evident that MNP, AMQ, and NMQ are their respective supplements; hence

$$\begin{aligned}\text{PQ}^2&=\text{QM}^2+\text{MN}^2+\text{NP}^2+2\,\text{MN}\,.\,\text{NP}\cos\alpha+2\,\text{QM}\,.\,\text{NP}\cos\beta\\&\qquad+2\,\text{QM}\,.\,\text{MN}\cos\gamma\\&=(x-x')^2+(y-y')^2+(z-z')^2+2(y-y')(z-z')\cos\alpha\\&\qquad+2(x-x')(z-z')\cos\beta+2(x-x')(y-y')\cos\gamma.\end{aligned}$$

44. Prop. II.—To change the origin without altering the directions of the axes.

It is evident that this is effected by writing $x'+a$, $y'+b$, $z'+c$ for x, y, z.

45. Prop. III.—To pass from a rectangular system to any other, the origin remaining unchanged.

Let $\text{OM}=x$, $\text{MN}=y$, $\text{NP}=z$; $\text{OM}'=x'$, $\text{M}'\text{N}'=y'$, $\text{N}'\text{P}=z$. If the line OP be projected on the line Ox, the projection is OM or x; and if the broken line OM′, M′N′, N′P be projected on Ox, the projection is equal to

$$x'\cos x'x+y'\cos y'x+z'\cos z'x,$$

$$\therefore\ x=x'\cos x'x+y'\cos y'x+z'\cos z'x,$$

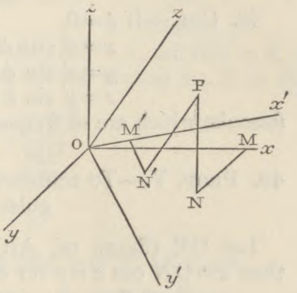

Fig. 39.

care being taken, as in Art. 30, to take the angles $x'x$, &c. between the *positive* axis of x' and the *positive* axis of x.

Similarly
$$\begin{aligned}y&=x'\cos x'y+y'\cos y'y+z'\cos z'y,\\z&=x'\cos x'z+y'\cos y'z+z'\cos z'z.\end{aligned}$$

Of the nine angles $x'x$, $y'x$, &c. employed above, six only are independent of one another; since by Art. 3 we have the three following relations between them, as conditions to be satisfied, viz.:—

$$\begin{aligned}&\cos^2 x'x+\cos^2 x'y+\cos^2 x'z=1,\\&\cos^2 y'x+\cos^2 y'y+\cos^2 y'z=1,\\&\cos^2 z'x+\cos^2 z'y+\cos^2 z'z=1.\end{aligned}$$

46. Cor.—If the new axes are rectangular as well as the old, we have three other equations of condition amongst the angles, to be satisfied, viz.:—$\cos x'y'=0$, $\cos x'z'=0$, $\cos y'z'=0$, which give (Art. 5)

$$\begin{aligned}&\cos x'x\cos y'x+\cos x'y\cos y'y+\cos x'z\cos y'z=0,\\&\cos x'x\cos z'x+\cos x'y\cos z'y+\cos x'z\cos z'z=0,\\&\cos y'x\cos z'x+\cos y'y\cos z'y+\cos y'z\cos z'z=0.\end{aligned}$$

These make up the six equations of condition.

47. Prop. IV.—To pass from one rectangular system to another in a form which shall involve only three angles.

To avoid the six equations of condition exhibited above, Euler devised the following beautiful method of transformation, which is of frequent use in the solution of *Mechanical Problems.*

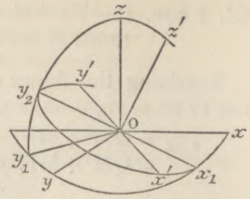

Fig. 40.

Let the angle between the planes of xy and $x'y'$ be called θ: let also these two planes intersect in the line Ox_1, which makes with the axis of x the angle $xOx_1=\phi$, and with the axis of x' the angle $x'Ox_1=\psi$.

(1.) Transform the co-ordinates to x_1y_1 in the plane of xy, the axis of z remaining unchanged; there results (PLANE GEOMETRY, Art. 40)

$$x=x_1 \cos\phi - y_1 \sin\phi,$$
$$y=x_1 \sin\phi + y_1 \cos\phi.$$

2.) Transform the co-ordinates to y_2z' in the plane y_1z, the axis of x_1 remaining unchanged; there results

$$y_1=y_2 \cos\theta - z' \sin\theta,$$
$$z=y_2 \sin\theta + z' \cos\theta.$$

(3.) Transform the co-ordinates to $x'y'$ in the plane x_1y_2, the axis of z' remaining unchanged; there results

$$x_1=x' \cos\psi - y' \sin\psi,$$
$$y_2=x' \sin\psi + y' \cos\psi.$$

By substitution, we obtain

$$x=(x'\cos\psi - y'\sin\psi)\cos\phi - (x'\sin\psi + y'\cos\psi)\sin\phi\cos\theta + z'\sin\phi\sin\theta,$$
$$y=(x'\cos\psi - y'\sin\psi)\sin\phi + (x'\sin\psi + y'\cos\psi)\cos\phi\cos\theta + z'\cos\phi\sin\theta,$$
$$z=(x'\sin\psi + y'\cos\psi)\sin\theta + z'\cos\theta,$$ the requisite formulæ.

48. COR.—If $\psi=0$,

$$x=x'\cos\phi - (y'\cos\theta - z'\sin\theta)\sin\phi,$$
$$y=x'\sin\phi + (y'\cos\theta - z'\sin\theta)\cos\phi,$$
$$z=y'\sin\theta + z'\cos\theta,$$

formulæ which are of frequent use.

49. PROP. V.—To transform the co-ordinates from rectangular to polar.

Let OP (figure of Art. 45)$=r$, $POz=\theta$, $NOx=\varphi$; then $x=ON\cos\varphi=r\sin\theta\cos\varphi$, $y=r\sin\theta\sin\varphi$, and $z=r\cos\theta$ are the requisite formulæ.

SECTION IV.—TANGENT PLANES AND NORMALS TO SURFACES.

50. PROP. 1.—To find the equation to the tangent plane to a surface.

If such a plane exists, it must have the property that if a section of it and of the surface be made by a plane parallel to any of the co-ordinate planes, the section of the plane will be a tangent line to the section of the surface.

Let x, y, z be the co-ordinates of the point of contact, x', y', z' those of any point in the tangent plane; and let the equation to that plane be

$$z'-z=p(x'-x)+q(y'-y).$$

Put $y'=y$ in the plane and in the surface; then, since the resulting line is a tangent to the resulting curve, we have

$$z'-z=\frac{dz}{dx}(x'-x),$$ y being constant;

$$\therefore p=\frac{dz}{dx}$$ the partial differential co-efficient.

Similarly $q=\dfrac{dz}{dy}$.

51. COR.—If the equation to the surface be written under the form $u=0$; and $\dfrac{du}{dx}, \dfrac{du}{dy}, \dfrac{du}{dz}$ represent the partial differential co-efficients of u with respect to x, y, and z respectively; since the total differential co-efficient of u with respect to x, when y is constant, must $=0$, we shall have

$$\frac{du}{dx}+\frac{du}{dz}\cdot\frac{dz}{dx}=0.$$ Similarly $$\frac{du}{dy}+\frac{du}{dz}\cdot\frac{dz}{dy}=0.$$

Hence $$\frac{dz}{dx}=-\frac{\dfrac{du}{dx}}{\dfrac{du}{dz}}, \qquad \frac{dz}{dy}=-\frac{\dfrac{du}{dy}}{\dfrac{du}{dz}},$$

and the equation to the tangent plane becomes

$$(x'-x)\frac{du}{dx}+(y'-y)\frac{du}{dy}+(z'-z)\frac{du}{dz}=0.$$

52. PROP. II.—To find the equation to the normal to a surface.

Retaining the notation of Art. 51; since the normal is perpendicular to the surface, and therefore to the tangent plane; if its equations are $x'-x=a(z'-z)$, $y'-y=b(z'-z)$, we must have (Art. 20)

$$\frac{du}{dx}-a\frac{du}{dz}=0, \qquad \frac{du}{dy}-b\frac{du}{dz}=0:$$

whence the equations to the normal are,

$$(x'-x)\frac{du}{dz}=(z'-z)\frac{du}{dx}, \quad (y'-y)\frac{du}{dz}=(z'-z)\frac{du}{dy}.$$

53. COR.—The equations may also be written

$$x'-x+\frac{dz}{dx}(z'-z)=0, \qquad y'-y+\frac{dz}{dx}(z'-z)=0.$$

54. EXAMPLE.—To find the equation to the tangent plane to the ellipsoid.

We have $$\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}-1;$$

$$\therefore \quad \frac{dz}{dx}=-\frac{c^2x}{a^2z}, \quad \frac{dz}{dy}=-\frac{c^2y}{a^2z},$$

and the equation to the tangent plane becomes

$$z'-z+\frac{c^2x}{a^2z}(x'-x)+\frac{c^2y}{a^2z}(y'-y)=0;$$

$$\text{or } \frac{zz'}{c^2}+\frac{yy'}{b^2}+\frac{xx'}{a^2}=\frac{z^2}{c^2}+\frac{y^2}{b^2}+\frac{x^2}{a^2}=1.$$

55. If p be the perpendicular from the centre on the tangent; we have (Art. 23)

$$p=\frac{1}{\sqrt{\dfrac{x^2}{a^4}+\dfrac{y^2}{b^4}+\dfrac{z^2}{c^4}}}.$$

56. PROP. III.—To find the locus of the intersection of the tangent plane of the ellipsoid with the perpendicular on it from the centre.

The equation to the tangent plane is

$$\frac{xx'}{a^2}+\frac{yy'}{b^2}+\frac{zz'}{c^2}=1 \text{.......................}(1)$$

Consequently the equations to the perpendicular on it from the centre are (Art. 20)

$$x'=\frac{c^2x}{a^2z}z', \quad y'=\frac{c^2y}{b^2z}z'; \text{ ....}(2)$$

also $$\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1 \text{.....................}(3)$$

From equations (2), $\dfrac{x}{a^2}=\dfrac{z}{c^2z'}x'$ and $\dfrac{y}{b^2}=\dfrac{z}{c^2z'}y'$;

$$\therefore \quad \frac{xx'}{a^2}+\frac{yy'}{b^2}+\frac{zz'}{c^2}=\frac{z}{c^2z'}(x'^2+y'^2+z'^2),$$

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which, by equation (1), gives

$$z = \frac{c^2z'}{x'^2 + y'^2 + z'^2}. \quad \text{Similarly } y = \frac{b^2y'}{x'^2 + y'^2 + z'^2};$$

$$x = \frac{a^2x'}{x'^2 + y'^2 + z'^2}$$: and these values being substituted in equation (3), there results $a^2x'^2 + b^2y'^2 + c^2z'^2 = (x'^2 + y'^2 + z'^2)^2$, an equation which occurs in the *undulatory theory of light.*

SECTION V.—ON THE CURVATURE OF SURFACES.

57. If through the normal to a surface different planes be drawn, their intersections with the surface will be plane curves, which will generally have different degrees of curvature depending on the direction of the tangent line; and, further, if other sections than those through the normal are drawn, they will determine curves which have different degrees of curvature for the same direction of the tangent line. We proceed to determine the radius of curvature of any such section.

58. Prop. I.—The sum of the reciprocals of the radii of curvature of any two normal sections at right angles to each other is constant.

Let the normal be taken as the axis of z, and consequently the tangent plane as the plane of xy.

Let also the angle which a section makes with the plane of xz be θ.

It is evident that $\frac{dz}{dx}=0$, $\frac{dz}{dy}=0$. Put r for $\frac{d^2z}{dx^2}$, s for $\frac{d^2z}{dxdy}$, t for $\frac{d^2z}{dy^2}$; and let OM $= k$, MN $=$ K; then if R be the radius of curvature of this section,

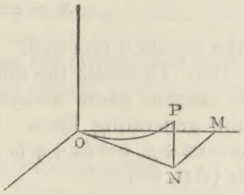

Fig. 41.

$$\text{R} = \frac{1}{2} \text{ limit of } \frac{\text{ON}^2}{\text{PN}} = \frac{1}{2} \text{ limit of } \frac{k^2 + \text{K}^2}{\frac{rk^2}{2} + sk\text{K} + t\frac{\text{K}^2}{2} + \&\text{c.}}$$

$$= \frac{1 + \tan^2\theta}{r + 2s\tan\theta + t\tan^2\theta},$$

and $\frac{1}{\text{R}} = r\cos^2\theta + 2s\sin\theta\cos\theta + t\sin^2\theta.$

Let $\frac{1}{\text{R}'}$ be the radius of curvature of the section at right angles to this, or for which the angle is $90° + \theta$; then

$$\frac{1}{\text{R}'} = r\sin^2\theta - 2s\sin\theta\cos\theta + t\cos^2\theta;$$

$$\therefore \quad \frac{1}{\text{R}} + \frac{1}{\text{R}'} = r + t, \text{ which is independent of } \theta.$$

59. Prop. II.—To determine the sections of greatest and least curvature.

Retaining the notation of the last article, we have

$$\frac{1}{\text{R}} = r\cos^2\theta + 2s\sin\theta\cos\theta + t\sin^2\theta,$$

which will be a *maximum* or a *minimum*, when

$$-r\sin\theta\cos\theta + s(\cos^2\theta - \sin^2\theta) + t\sin\theta\cos\theta = 0,$$

or $\tan 2\theta = \frac{2s}{r-t}$; an equation which gives two values of θ, viz., $\theta = \alpha$, $\theta = 90° + \alpha$, or the maximum and minimum sections are at right angles to each other. These are called the *principal sections.*

60. Prop. III.—The curvature of any normal section (measured by the reciprocal of the radius of curvature) is equal to the sum of the products of the curvatures of the two principal sections by the cosines of the angles which they respectively make with it.

Let one of the principal sections be the plane of xz, or let the two values of θ be $\theta=0$, $\theta=90°$. Let also ρ, ρ' be the two principal radii of curvature;

$$\text{then when } \theta = 0, \text{ we have } \frac{1}{\rho} = r,$$

$$\text{and when } \theta = 90°, \quad \frac{1}{\rho'} = t.$$

Also, since $\tan 2\theta = 0$, we have $s = 0$,

$$\therefore \quad \frac{1}{\text{R}} = \frac{1}{\rho}\cos^2\theta + \frac{1}{\rho'}\sin^2\theta.$$

61. Prop. IV.—If through a given tangent line at any point, both a normal and an oblique section be made, the radius of curvature of the oblique section is equal to the projection on its plane of the radius of curvature of the normal section.

Let the axis of x be the given tangent, the plane of xz the normal section, that of xz' the oblique section.

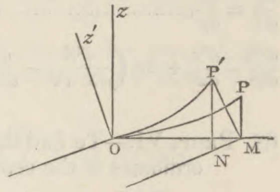

Fig. 42.

Let OM $= h$, MP $= z$, MN $= k'$, NP$' = z'$, $\angle zOz' = \theta$, R the radius of curvature in the normal section zx, R$'$ in the oblique section $z'Ox$.

$$\text{Then R} : \text{R}' :: \text{limit of } \frac{\text{OM}^2}{\text{MP}} : \frac{\text{OM}^2}{\text{MP}'}$$

$$:: \text{limit of MP}' : \text{MP}$$

$$:: \text{limit of } \frac{z'}{\cos\theta} : z$$

$$:: \text{limit of } (rh^2 + 2shk' + tk'^2) : rh^2\cos\theta$$

$$:: 1 : \cos\theta, \text{ because the limit of } \frac{k'}{h} = 0;$$

therefore $\quad \text{R}' = \text{R}\cos\theta.$

This is called Meunier's Theorem, and it establishes the fact, that if the diameter of a circle in the plane of yz be that of the circle of curvature of the normal section, the chord of the same circle in the direction of the oblique section will be the diameter of the circle of curvature of that section; and consequently if the diameter of a sphere be the diameter of curvature of any normal section, the chord of the same sphere made by an oblique section through the same tangent line will be the diameter of the circle of curvature of that section; or the sections of the sphere by planes through the same tangent line will all be circles of curvature of the corresponding sections of the surface; and conversely.

62. Prop. V.—To find the conditions that a section of a surface may have a contact of the second order with a circle.

We shall suppose the touching circle to be determined by the section of a sphere, the cutting plane which is common to it and the given surface being supposed to pass through their ordinate z, so as to have for its equation $y' - y = m(x' - x)$; or if $x + h$, $y + k$ are the co-ordinates of a point in the section of either surface near their point of contact, the increments are connected by the equation $k = mh$.

Let $f(x, y, z) = 0$ be the equation to the given surface; $(\text{X} - \alpha)^2 + (\text{Y} - \beta)^2 + (\text{Z} - \gamma)^2 = \text{R}^2$ the equation to the sphere of which the section has a contact of the second order with

Analytical Geometry.

the given surface at the point whose co-ordinates are x, y, z. Let z_1, Z_1 be the ordinates of points in the common section of the two surfaccs near their point of contact; then at the point in the *curve* of which the co-ordinates are $x+h$, $y+k$, we have

$$z_1 = z + \frac{dz}{dx}h + \frac{dz}{dy}k + \frac{1}{2}\left(\frac{d^2z}{dx^2}h^2 + 2\frac{d^2z}{dx\,dy}hk + \frac{d^2z}{dy^2}k^2\right) + \&c.$$

$$= z + \frac{dz}{dx}h + \frac{dz}{dy}k + \frac{h^2}{2}\left(\frac{d^2z}{dx^2} + 2m\frac{d^2z}{dx\,dy} + m^2\frac{d^2z}{dy^2}\right) + \&c.;$$

and at the corresponding point in the *circle*,

$$Z_1 = Z + \frac{dZ}{dX}h + \frac{dZ}{dy}k + \frac{h^2}{2}\left(\frac{d^2Z}{dX^2} + 2m\frac{d^2Z}{dX\,dY} + m^2\frac{d^2Z}{dY^2}\right) + \&c.$$

But the requirement for a contact of the second order is, that to the extent of h^2 these two expressions shall be coincident.

The conditions to be fulfilled are, therefore,

$$\frac{dZ}{dx} = \frac{dz}{dx}, \ldots\ldots (1)$$

$$\frac{dZ}{dY} = \frac{dz}{dy}, \ldots\ldots (2)$$

$$\frac{d^2Z}{dx^2} - \frac{d^2z}{dx^2} + 2m\left(\frac{d^2Z}{dX\,dY} - \frac{d^2z}{dx\,dy}\right) + m^2\left(\frac{d^2Z}{dY^2} - \frac{d^2z}{dy^2}\right) = 0 \ldots\ldots (3)$$

63. Prop. VI.—To find the radius of curvature and the co-ordinates of the centre of a normal section.

By differentiation, we obtain from the equation to the sphere of which the section of the normal plane is the circle of curvature

$$(X-\alpha)^2 + (Y-\beta)^2 + (Z-\gamma)^2 = R^2 \ldots\ldots (1)$$

$$X - \alpha + (Z - \gamma)\frac{dZ}{dX} = 0 \ldots\ldots (2)$$

$$Y - \beta + (Z - \gamma)\frac{dZ}{dY} = 0 \ldots\ldots (3)$$

$$1 + \left(\frac{dZ}{dX}\right)^2 + (Z - \gamma)\frac{d^2Z}{dX^2} = 0 \ldots\ldots (4)$$

$$\frac{dZ}{dX}\frac{dZ}{dY} + (Z-\gamma)\frac{d^2Z}{dX\,dY} = 0 \ldots\ldots (5)$$

$$1 + \left(\frac{dZ}{dY}\right)^2 + (Z - \gamma)\frac{d^2Z}{dY^2} = 0 \ldots\ldots (6)$$

Now the conclusion arrived at in Art. 61 enables us to apply the conditions of the last Article; for if the section of the sphere by one plane is a section of curvature, every section is so. Hence if we write $\frac{dz}{dx} = p$, $\frac{dz}{dy} = q$, $\frac{d^2z}{dx^2} = r$, $\frac{d^2z}{dx\,dy} = s$, $\frac{d^2z}{dy^2} = t$, we shall have, by equations (1) and (2) of the last Article compared with (4), (5), and (6) of the present,

$$\frac{d^2Z}{dX^2} = -\frac{1+p^2}{Z-\gamma}, \quad \frac{d^2Z}{dX\,dY} = -\frac{pq}{Z-\gamma}, \quad \frac{d^2Z}{dY^2} = -\frac{1+q^2}{Z-\gamma},$$

and consequently equation (3) of the last Article gives

$$\left(\frac{1+p^2}{Z-\gamma} + r\right) + 2m\left(\frac{pq}{Z-\gamma} + s\right) + m^2\left(\frac{1+q^2}{Z-\gamma} + t\right) = 0.$$

Whence $Z - \gamma = -\dfrac{1 + p^2 + 2m\,pq + m^2(1 + q^2)}{r + 2m\,s + m^2 t} \ldots\ldots (7)$

Also by equations (2) and (3) we have

$$(X - \alpha)^2 = p^2(Z - \gamma)^2 \ldots\ldots (8)$$

$$(Y - \beta)^2 = q^2(Z - \gamma)^2 \ldots\ldots (9)$$

and hence by equation (1)

$$R^2 = (1 + p^2 + q^2)(Z - \gamma)^2$$

$$R = \sqrt{1 + p^2 + q^2}\,\frac{1 + p^2 + 2m\,pq + m^2(1 + q^2)}{r^2 + 2m\,s + m^2 t} \ldots (10)$$

Equations (7), (8), and (9) determine the co-ordinates of the centre; and equation (10) gives the value of the radius of curvature of the section.

SECTION VI.—THE GENERATION OF SURFACES BY THE MOTION OF LINES.

We propose in the present section to determine the ordinary and differential equations to cylindrical, conical, and conoidal surfaces, and to surfaces of revolution.

Cylindrical Surfaces.

64. To determine the ordinary equation, we adopt the definition, that cylindrical surfaces are generated by the motion of a straight line which always moves parallel to itself.

Let $x = az + p$, $y = bz + q$ be the equations to the generating line, where a and b are the same for all the lines; and let $x = F(z)$, $y = \varphi(z)$ be the equations to the directing curve: then at the points where the straight line meets the curve we have

$$x' = az' + p, \quad y' = bz' + q, \quad x' = F(z'), \quad y' = \varphi(z');$$

from which equations we may eliminate x', y', and z', and obtain a relation between p and q and the constants a and b. Let this relation be $p = f(q)$; *i.e.*

$$x - az = f(y - bz),$$

the equation required.

65. To obtain the differential equation, we observe that a tangent plane always touches the curve along one of the generating lines. Hence the line whose equation is $x = az + p$, $y = bz + q$ is parallel to the plane whose equation is (Art. 50)

$$z' - z = \frac{dz}{dx}(x' - x) + \frac{dz}{dy}(y' - y).$$

The condition is (Art. 22) $a\frac{dz}{dx} + b\frac{dz}{dy} = 1$, which is the differential equation required.

Conical Surfaces.

66. A conical surface is generated by a straight line which passes through a given point, and always meets a given curve.

Let a, b, c be the co-ordinates of the given point; $x = F(z)$, $y = \varphi(z)$, the equations to the given curve, the directrix; the equations to the generatrix are $x - a = m(z - c)$, $y - b = n(z - c)$; also at the point where the line meets the directrix we shall have $x' - a = m(z' - c)$, $y' - b = n(z' - c)$, $y' = F(z')$, $y' = \varphi(z')$, from which equations x', y', z' may be eliminated, and there will remain

$$m = f(n), \quad \text{or} \quad \frac{x-a}{z-c} = f\left(\frac{y-b}{z-c}\right),$$

the equation required.

67. To find the differential equation, it is only necessary to observe, that the tangent plane passes through the given point; hence $z - c = \frac{dz}{dx}(x - a) + \frac{dz}{dy}(y - b)$ is the differential equation required.

Geometric Progression || George of Cappadocia.

Cross of St George || Knights of St George.

Right Conoidal Surfaces.

68. A right conoidal surface is generated by a straight line which passes through a given curve, and is at right angles to a fixed axis.

We shall suppose the fixed axis to be that of z, so that the equations to the generatrix are $z=p$, $y=mx$. Let the equations to the directrix be $x=\mathrm{F}(z)$, $y=\varphi(z)$; then at the point where the line meets the directrix we must have $z'=p$, $y'=mx'$, $x'=\mathrm{F}(z')$, $y'=\varphi(z')$, from which if x', y', z' be eliminated, there will remain

$p=f(m)$, or $z=f\left(\frac{y}{x}\right)$ is the equation required.

69. To find the differential equation, we observe that the tangent plane always contains the generating line. Retaining the same notation, the equation to the tangent plane is

$$z'-z=\frac{dz}{dx}(x'-x)+\frac{dz}{dy}(y'-y).$$

Now when $x'=0$, $y'=0$, we must have $z'=z$,

$\therefore\ x\frac{dz}{dx}+y\frac{dz}{dx}=0$ is the requisite condition, or the equation required.

Surfaces of Revolution.

70. A surface of revolution is generated by a variable circle whose plane is always perpendicular to a given fixed line through its centre; and whose circumference passes through a given curve.

Let $\mathrm{A}x+\mathrm{B}y+\mathrm{C}z=\mathrm{D}$ be the equation to the plane in which the circle lies: where $\frac{\mathrm{A}}{\mathrm{C}}$ and $\frac{\mathrm{B}}{\mathrm{C}}$ are known (Art. 20); α, β, γ the co-ordinates of any known point in the axis in which the centre of the generating circle lies; the equation to a sphere whose centre is in this line will be $(x-\alpha)^2+(y-\beta)^2+(z-\gamma)^2=\mathrm{R}^2$, and the intersection of the plane $\mathrm{A}x+\mathrm{B}y+\mathrm{C}z=\mathrm{D}$ with this sphere will give the generating circle, provided D and R be properly selected. Let also the equations to the directrix be $x=\mathrm{F}(z)$, $y=\varphi(z)$; then at the point of junction of the generatrix and directrix we must have

$$\begin{gathered}\mathrm{A}x'+\mathrm{B}y'+\mathrm{C}z'=\mathrm{D}\\(x-\alpha)^2+(y'-\beta)^2+(z'-\gamma)^2=\mathrm{R}^2\\x'=\mathrm{F}(z')\\y'=\varphi(z);\end{gathered}$$

whence by eliminating x', y', z', we obtain the relation

$$\mathrm{R}^2=f(\mathrm{D})$$

or $(x-\alpha)^2+(y-\beta)^2+(z-\gamma)^2=f(\mathrm{A}x+\mathrm{B}y+\mathrm{C}z)$, the equation required.

71. To find the differential equation, we observe that the normal always passes through the axis of revolution.

Let $x'-a=m(z'-c)=0$, $y'-b=n(z'-c)=0$ be the equation to the axis of revolution;

$$x'-x+\frac{dz}{dx}(z'-z)=0,\quad y'-y+\frac{dz}{dy}(z'-z)=0,$$

(Art. 53), the equations to the normal; then since x', y', z are the same in all the four equations; we have, by elimination,

$$y-b+nc-nz=\left(\frac{dz}{dy}+n\right)(z'-z),$$

$$x-a+mc-mz=\left(\frac{dz}{dy}+m\right)(z'-z);$$

and therefore

$$\left(\frac{dz}{dy}+m\right)(y-b+nc-nz)=\left(\frac{dz}{dy}+n\right)(x-a+mc-mz),$$

the equation required.

For further details, the reader is referred to Hymers's *Analytical Geometry of Three Dimensions*, Gregory's *Solid Geometry*, or Leroy's *Géométrie des Trois Dimensions*.

GEOMETRIC PROGRESSION. See PROGRESSION.

GEORGE I., II., III., and IV., kings of Great Britain. See BRITAIN.

GEORGE, ST, one of the Bermudas, and also a town there. See BERMUDA.

GEORGE of Cappadocia, or ST GEORGE, the patron saint of England, was born about the beginning of the fourth century—according to some accounts, at Epiphania, in Cilicia; according to others, in Cappadocia. His father was a fuller; and the future saint himself had long a severe struggle to maintain against the disadvantages of his humble birth. According to Gregory of Nazianzen, George distinguished himself in his early career as a parasite of so mean a type that he would sell himself for a cake. By these arts he obtained the contract for supplying bacon to the troops; but he fulfilled its terms so ill, that he with difficulty escaped death at the hands of the indignant soldiers. He then fled to Alexandria, where he entered the public service, embraced Christianity, and finally became bishop of the city. Arianism was at that time rampant, and George became an Arian. Indeed, he owed his episcopate to the pliancy of his conscience, and the readiness with which he lent himself to further the political views of the court. On taking possession of his see, he found a fierce persecution going on against the Trinitarians. Instead of mitigating this evil, he carried it to such an extreme as at length to raise a rebellion against him. He fled for his life; but being soon after re-instated by the court, he returned to Egypt and signalized himself by redoubled cruelties. As might have been expected, his conduct raised up numerous enemies against him, even among his own partizans. His downfall could not be long delayed. A tyrannical act which he perpetrated towards the heathens in his diocese, shortly after the accession of Julian, irritated the people so keenly that they rose up *en masse*, dragged him out of the prison to which he had retired for safety, paraded him through the streets on the back of a camel, and after tearing him to pieces, burnt his remains. It is a mystery how this George was ever admitted into the calendar at all. Some writers, such as Papebroche and Heylyn, deny altogether that the patron saint of England is the same person as the bishop of Alexandria. Other stories, however, give a version of George's history which explain to a certain extent the honour in which he is now held. One of these makes him a soldier in the service of Diocletian, in whose reign he suffered martyrdom along with many other thousands of Christians. Among the Greeks St George became known as the Victorious; and in England his renown gradually increased after the era of the Crusades to such an extent, that by the time of Edward III. he had become the patron saint of the kingdom. (*Acta Sanctorum;* Heylyn, *History of St George;* Gibbon, *Decline and Fall*, chap. xxi., &c.)

Cross of ST GEORGE, a red cross in a field argent, forming part of the British standard. See HERALDRY.

Knights of ST GEORGE. See GARTER. There have been various other orders of this denomination, most of which are now extinct. Among these may be noticed one founded by the Emperor Frederick III., in 1470, to guard the frontiers of Bohemia and Hungary against the Turks; that of St George of Alfama, founded by the kings of

Aragon; and another in Austria and Carinthia. (See Ashmole *On the Garter, &c.*)

Religious Orders of ST GEORGE. Of these there were different orders and congregations, particularly canons regular of St George in Alga, at Venice, established by authority of Pope Boniface IX. in 1404. The foundation of this order was laid by Bartolomeo Colonna, who preached in 1396 at Padua and some other places in the state of Venice. Pope Pius V., in 1570, gave these canons precedence over all other religious orders.

GEORGE LAKE, a beautiful mountain lake in the state of New York, 10 miles S. of Lake Champlain, into which it discharges its surplus waters. It is 36 miles in length, with a breadth varying from three-quarters of a mile to 4 miles. It is remarkable for the transparency of its water, and the surrounding scenery is of the most picturesque description. It is studded with numerous islands of various forms and sizes, amounting, with islets and rocks, to more than 300.

GEORGETOWN (formerly *Stabröek*), the capital of British Guiana, is situated on the E. bank of the Demerara, at its mouth, which is there about 3 miles wide, in N. Lat. 6. 49. 30.; W. Long. 58. 11. 30. The town itself is one of the prettiest in the West Indies; and its streets are wide and straight, intersecting each other at right angles. The houses are of wood, with open verandahs in front, and neatly painted in cool and quiet colours; they are shaded and almost hidden by trees and shrubs, and look more like a collection of villas than a town. The street along the river side—where all the stores and shops are situated, and where business is chiefly transacted—forms, however, an exception; there everything is plain, bare, and businesslike. The ships lie alongside the wharfs or at a short distance in the stream, which is also crowded with numerous smaller vessels engaged in the island trade, or in bringing produce from the more distant estates. The hall of the legislative council, courts of justice, custom-house, treasury, and all the other public offices, are in one building of considerable extent and architectural beauty, with shady porticoes and marble-paved galleries or verandahs supported on cast-iron columns. The chief of the other public edifices are the cathedral and churches, several liberally maintained hospitals, barracks, market-place, and ice-house. Below the town is the "Fort," as it is called, but which looks more like a green field, with a few guns pointing towards the sea, and a house or two for a single officer and a dozen artillerymen. Pop. (1851) 25,508.

GEORGETOWN, a city in the United States of North America, district of Columbia, on the left bank of the Potomac river, 2 miles W.N.W. of Washington city, from which it is separated by Rock Creek. It is beautifully situated on a range of hills rising above the river and undulating along its banks. The "heights" are lofty eminences overlooking the city, and occupied by splendid villas and extensive gardens in the highest state of cultivation. On the heights is Oak Hill cemetery, tastefully laid out and surrounded by a massive iron railing. Georgetown has a Roman Catholic university, with a library of 25,000 vols., an extensive philosophical apparatus, and a museum of natural history; a nunnery, with a female academy; botanic garden, and various other literary institutions. The aqueduct which conveys the Chesapeake and Ohio canal over the Potomac is a stupendous work, 1446 feet in length; the piers, nine in number, and 36 feet above high-water, are of granite, resting upon the solid rock 17 feet below the bottom of the river. The manufactures are considerable and flourishing. In 1850 there were 59 establishments in operation, among which were numerous flour-mills, a rolling-mill, and a cotton-factory. Georgetown carries on an extensive foreign and coasting trade. On 30th June 1852 its registered shipping amounted to 2955 tons, and its enrolled and licensed to 23,241 tons. Pop. (1850) 8366.

GEORGETOWN, the capital of a district of the same name in the State of South Carolina, North America, stands on the W. shore of Winyaw Bay, a little below the confluence of the Great Pedee, the Black, and the Waccamaw rivers, about 15 miles from the sea. The confluence of these three navigable rivers renders its position advantageous for trade, but the entrance to its harbour is obstructed by a bar. The shipping of the port on 30th June 1852 amounted to 1896 tons registered, and 2696 tons enrolled and licensed. It has a court-house, jail, several churches and seminaries, a bank, &c. Pop. (1850) 1628.

Extent and boundaries.

GEORGIA, one of the original states of the United States of North America, in the southern division of the union, lies between N. Lat., 30. 22. and 35., and between W. Long. 81. and 85. 53. from Greenwich. It is bounded on the N. by the States of Tennessee and North Carolina, N.E. by South Carolina, from which it is separated by the Savannah river, S.E. by the Atlantic Ocean, S. by Florida, and W. by Alabama. It is about 300 miles long from N. to S., and 256 broad, containing 58,000 square miles. The population in 1800 was 162,101, in 1850, 906,101; 521,488 whites, 2931 free coloured, 381,682 slaves. The state is divided into 97 counties.

Face of the country.

Islands.

The coast of Georgia, for four or five miles inland, is a salt marsh, mostly uninhabited. In front of this, towards the sea, there is a chain of islands of gray, rich soil, covered, in their natural state, with pine, hickory, and evergreen oak, and yielding, when cultivated, sea-island cotton. The principal of these islands are Tybee, Warsaw, Ossabaw, St Catherine's, Sapello, St Simon's, Jekyl, and Cumberland. The land bordering on the salt marsh is of nearly the same quality as that of the islands. In the rear of this margin commence the pine barrens. The rivers and creeks are bordered with swamps or marshes, which, at every tide, for 15 or 20 miles from the coast, are either wholly or partially overflowed. These constitute the rice plantations. The pine barrens extend from 60 to 90 miles from the sea, beyond which the country becomes uneven, diversified with hills and mountains, and possesses a strong rich soil. This section produces cotton, tobacco, Indian corn, wheat, and other kinds of grain. The north-western part of the state is mountainous, and abounds in sublime and picturesque scenery.

Historical sketch.

Georgia was the last settled of the original thirteen states of the American confederacy, the first colony having been planted by Oglethorpe at Yamacraw Bluff (now called Savannah) in 1733, more than 100 years after the settlement of most of the original colonies, and 63 years after that of South Carolina, her nearest neighbour. Three years afterwards some Germans founded Ebenezer-on-the-River, about 25 miles above Savannah. The settlement of Darien was commenced about the same time by some Scotch Highlanders. The infant colony was involved in some severe contests with the Spaniards of Florida, who claimed the country as far as the thirty-third degree of north latitude. In 1739 Oglethorpe invaded Florida, took Fort Diego, and besieged St Augustine, but was obliged to raise the siege and return. The Spanish in turn invaded Georgia in 1742, but being alarmed by a stratagem of Oglethorpe's, they retreated without coming to blows. Slaves were first admitted into the colony in 1749. The proprietors, harassed by the difficulties that surrounded them, gave up the province to the crown in 1752, when Dr Franklin was appointed its agent near the British government. In 1761 the Cherokee Indians were attacked by Colonel Montgomery, on which occasion the savages so bravely resisted, that, though Montgomery claimed the victory, he thought it advisable to retreat. The following year Colonel Grant burned their towns, laid waste their country, and reduced them to sue for peace. Georgia entered warmly into the revolution, and during parts of 1778, 1779, and 1780, was in the hands of the British troops. Savannah was captured by them

December 29, 1778; and the combined American and French armies were repulsed in an attempt to retake it in October 1779, with a loss to the allies of 1100 men. In 1838 the Cherokee Indians were removed from the state to the Indian territory, beyond the Mississippi, and Georgia came into the possession of the long coveted Indian reservation.

Rivers.

The rivers are the Savannah, 500 miles long, bounding the state on the N.E., navigable for ships 17 miles to Savannah, and for steamboats 250 miles to Augusta; the Altamaha, which is navigable for large vessels 12 miles to Darien, is formed by the junction of the Oconee and the Ocmulgee, which are navigable to Macon and Milledgeville for steamboats; the Ogeechu 200 miles long, and navigable for sloops 40 miles; Flint River, which rises in the N.W. part of the state, and after a course of about 300 miles, joins the Chattahoochee, forming the Appalachicola; the Chattahoochee, on the west border of the state, is navigable 300 miles by steamboat to Columbus; the St Mary River is in the S.E. part of the state. Savannah is the largest and chief commercial town. Pop. (1853) 20,000. Augusta is on the Savannah River, just below the falls, and is the enterpôt for the agricultural exports of the upper country. Pop. (1853) 12,000.

Chief towns.

Milledgeville, the seat of the state government, is situated near the centre of Georgia. Pop. (1850) 2216. The other principal towns are Athens, Atlanta, Columbus, and Griffin.

Minerals.

Previous to the discovery of the gold mines of California, Georgia was one of the El-Dorados of America; but though her mines are almost forgotten by the richer yields of the new state on the Pacific, a time may come again when slow and patient industry may be content to develop the golden treasures of this region. The tract containing the gold mines has its centre in Lumpkin county, in the northern part of the state; and at Dahlonega, in this county, a branch mint has been established, which coined in 1851 $351,592 in gold. Besides this precious metal, Georgia contains some silver, copper, iron, lead, manganese, titanium, graphite, antimony, and zinc; also granite, marble, gypsum, limestone, coal, syenite, marl, burrstone, soapstone, asbestos, slate, shale, tripoli, fluor-spar, barytes, tourmaline, arragonite, kaolin, epidote, porcelain clay, ruby, opal, augite, cyanite, emerald, prase, cornelians, chalcedony, agate, jasper, amethyst, precious garnets, schorl, zircon, rose quartz, beryl, and even diamonds. Fossils are found in abundance in the S.E. counties near the sea.

Climate, soil, and productions.

While the inhabitants of southern and middle Georgia are being parched with heat, frequently so intense as to prevent comfortable rest, even at night, the more northern climate among the mountains is such as to render necessary a blanket in order to comfortable repose. A more lovely heaven does not smile upon the classic land of Italy than upon the favoured inhabitants of Georgia. The diversity of soil is not less than that of climate, from the rich alluvions near the sea-coast and rivers, to the thinner soil of the pine barrens (not nearly so sterile as their name implies), and the rougher mountain regions. The good and bad lands of Georgia are so intermingled that it is difficult to describe them by districts. In the south, on the coast, are the islands with their light sandy soil, but fertile in sea-island cotton and on the mainland are the rich alluvions, but interspersed with swamps, which, however, yield rice in abundance. The bottom lands of the rivers are exceedingly fertile, and produce rice, cotton, Indian corn, and sugar.

Further west, about 60 miles from the coast, commence the pine barrens, at present mostly valuable for their timber and naval stores, but easily cultivated and productive, should occasion require. In the south-west the soil is light and sandy, but fertile and productive in cotton; the sugar cane is also sometimes cultivated successfully. The middle region consists of a red loamy soil, once productive, but owing to a bad system of culture, much impoverished. Its products are cotton, tobacco, and the various kinds of grain. The Cherokee country in the north, once in possession of the Indians of that name, and containing land among the most fertile in the state, particularly in its valleys, which, though worked by the Indians for ages past, are still capable of producing from 50 to 70 bushels of grain to the acre. Our summary of the natural resources and physical characteristics of this state, bring us to the conclusion that it is surpassed by no Atlantic or Gulf state, to say the least, in the elements of a rapid growth in agriculture, manufactures, and commerce. The prime articles of cultivation in Georgia are cotton, rice, sweet potatoes, and Indian corn; besides which large quantities of live stock, wheat, oats, tobacco, wool, peas, beans, Irish potatoes, fruits, market products, butter, cheese, hay, sugar, molasses, bees' wax and honey, and some rye, barley, buckwheat, wine, grass seeds, hops, flax and silk, are produced. In 1850 there were on this state 51,759 farms, containing 6,378,475 acres of improved land, averaging about 120 acres to a farm, and producing 1,088,534 bushels of wheat, 53,750 of rye, 30,080,099 of Indian corn, 3,820,044 of oats, 1,142,011 of peas and beans, 227,379 of Irish potatoes, 6,986,428 of sweet potatoes, 11,501 of barley, 38,950,691 pounds of rice, 432,924 of tobacco, 199,636,400 of cotton, 990,019 of wool, 4,640,559 of butter, 46,976 of cheese, 23,449 tons of hay, 1,644,000 pounds of cane sugar, 732,514 of honey and bees' wax, 216,150 gallons of molasses, live stock valued at $25,728,416, orchard products at $92,776, market goods at $76,500, and slaughtered animals at $6,339,762.

Manufactures.

There were in the state in 1850, 35 cotton factories, with a capital invested of $1,736,156, employing 873 males and 1399 females, and producing 7,209,292 yards of sheetings, and 4,198,351 lbs. of yarn, valued at $2,135,044; 3 woollen factories, with a capital of $68,000, employing 40 males and 38 females, manufacturing 340,660 yards of cloth, valued at $88,750; 3 establishments making pig-iron, with a capital of $26,000, employing 138 persons, producing 900 tons of pig-iron, &c., valued at $57,300; 4 establishments, with a capital of $35,000, employing 39 persons, and making 415 tons of castings, valued at $46,200; 3 establishments, with a capital of $9,200, employing 27 persons, and manufacturing 90 tons of wrought iron, valued at $15,384; 330 flouring and grist mills, 389 saw mills, 49 printing offices, 5 daily, 3 tri-weekly and semi-weekly, and 37 weekly newspapers, and 6 monthly publications. Capital invested in manufactures $5,363,490; value of manufactured articles $7,084,585.

Railroads.

On the first of January 1854, there were 15 railroads, 884 miles of which were completed and in operation, and 445 miles in course of construction.

Education, &c.

There are five colleges in Georgia—Franklin College at Athens, Oglethorpe College at Milledgeville, Emory College at Oxford, Mercer University at Penfield, and Wesleyan Female College at Macon, having an aggregate number of students in 1852 of 596. There is also a theological seminary at Penfield, and a medical school at Augusta. There were also 219 academies, 9059 pupils, 1254 schools, 32,705 scholars, 38 libraries, 31,788 volumes. There are also an institution for the blind, an asylum for the deaf and dumb, and the Georgia State Lunatic Asylum. There were in the state in January 1853, 17 banks, with an aggregate capital of $5,329,515.

Banks.

Religion.

There were in the state in 1850, 821 Baptist churches, 5 Christian, 1 Congregational, 19 Episcopal, 5 Free, 2 Friends, 8 Lutheran, 735 Methodist, 1 Moravian, 92 Presbyterian, 8 Roman Catholic, 16 Union, 3 Universalist, and 7 other sects, the whole having 1723 churches; total value of church property $1,269,159.

Government.

The governor is elected by the people for two years, and receives a salary of $3000 per annum. The Senate consists of 47 members, and the House of Representatives of 139, both elected for each session of the legislature, each member receiving $5 a-day. The legislature meets biennially on the first Monday of November (odd years), at Milledgeville. All the free white male inhabitants, 21 years old and upwards, who shall have resided within the county in which they vote six months preceding the election, and shall have paid taxes in the state for the year previous, have the right of suffrage. The state of Georgia is entitled to eight members in the national House of Representatives, and to ten electoral votes for the president of the United States.

The judges of the supreme court are elected for six years (one every two years) by the general assembly, and are removable upon address of two-thirds of each house. Judges of the superior court are elected for four years by the people of the district over which they preside, with jurisdiction exclusive in criminal cases and in land cases, and concurrent in all other civil cases. Justices of the inferior courts are elected by the people for four years; justices of the peace are elected by the people in districts. Each county elects an ordinary, who holds office for four years, and has the ordinary jurisdiction of a judge of probate, and is paid by fees.

In the year 1837 a branch of the United States mint was established at Dahlonega in Georgia; since which period the production of gold in that state has averaged about $300,000 per annum.

Georgia is one of the great cotton-producing states of the south. We annex the official returns of acres in cultivation, &c., in the year 1852:—

Number of bales of 400 lbs. each	740,000
Labourers employed	187,000
Acres in cultivation	1,500,000
Additional area suitable to cotton cultivation	3,000,000
Number of labourers needed	375,000
Gross additional bales of 400 lbs.	1,500,000

GEORGIA is a kingdom on the southern slopes of Mount Caucasus, remarkable not only for the excellence of its climate and the fertility of its valleys, but as having subsisted as a separate kingdom for more than 2000 years, notwithstanding the various invasions and spoliations to which it has been exposed. Georgia Proper is the Iberia of the ancients, but the territory of its kings was at one time extended over the whole Caucasian isthmus south of the chain of the Caucasus. The origin and date of its present appellation does not seem as yet to have been very satisfactorily ascertained. The Georgi mentioned by Pliny and Pomponius Mela were merely agricultural tribes, so designated in order to distinguish them from their nomadic neighbours on the other side of the river *Panticapes;* they were besides far to the N.W. of the Caucasus, near the Tauric Chersonese or Crimea. The true origin of the present name seems to be the designation given to this country in the 11th and 12th centuries by the Arabs and Persians, who called it Gurj, Gurj-i-stán, or Gurg-i-stan, *i.e.*, "Land of Wolves;" a name most appropriate to a region so thickly wooded. Wahl, however, in his *Vorder und Mittel Asien*, derives it from *Kur* or *Gur*, the Persian for the river called Cyrus (Κῦρος) by the Greeks. But that stream was never called *Gurj.* By the Georgians themselves, their country was called Khartli, but now Virk; by the Armenians it is named Vrastan; and by the Russians, Grusín, and the inhabitants Grus-ya; but the native historians preserve the name *Iveria*, *i. e.*, Iberia, which was introduced by the ecclesiastics whose profession led them to study Greek.

Georgia Proper.

Name.

Divisions, ancient and modern.

The whole territory was anciently divided into Upper and Lower Iberia,—the former comprehending Khartli, Khakheti, and part of Sa-atabago; the latter, the remainder of Sa-atabago with Imerethi, Ming-reli, and Guriel. Georgia, however, taken in its largest sense, may be said to be bounded on the N. by the snowy ridges of the Caucasus, on the E. and W. by the Caspian and the Euxine seas, and on the S by the rivers Choroki, Kur, and Eresn, anciently called respectively the *Bathys*, the *Cyrus*, and the *Araxes.* The area, anciently divided into Colchis, Iberia, and Albania, now embraces the following territories:—Lazheti, Guriel, Ming-reli, Imerethi, Khartli or Georgia Proper, Kacheti, Ganjah, Karabagh, Shekhí or Nukhá, Shirván, Mughán, and Tálish.

Area and population.

Georgia Proper has an area of about 26,000 square miles, with an estimated population (in 1855) of 600,000. The principal town is Tiflis, the ancient metropolis of Georgia, the chief seat of the commerce of the country, and at present the seat of government for all the Caucasian provinces of Russia. (See TIFLIS.) The physical features of Georgia will be found under the articles CAUCASUS and TRANS-CAUCASIA; and the trade and commerce under TIFLIS.

History.

Adopting the Armenian genealogies, the Georgians trace their origin to Thurgamos, a great-grandson of Noah. Considering this, however, as fabulous, or at least very improbable, we may safely conclude that they are the descendants of the aborigines of the mountains of Pambaki. Their earliest emigrants pushed northwards and occupied the fertile valleys which extend from this chain to the Caucasus. Georgian historians tell us that their country Khartli derives its name from Khartlos, one of their earliest chieftains, and that all their tribes are called Thargamossiani—names which they have adopted since the introduction of Christianity in order to give a biblical origin to their race. According to the Armenian traditions, Thargamos, the grandson of Japhet, had eight sons, of whom the second was Khartlos, who established himself on the southern declivities of the Caucasus, and was the founder of the Georgian nation. Stephen Orpetian, archbishop of Sioony, who lived in the third century, alleged that this son of the patriarch built at the foot of Mount Armaz a fortress to which he gave the name of Orpeth. This circumstance is worthy of being noted, as it will serve for a starting point in the history of the race of the Orpetians, veritable mayors of the palace of the kings of Georgia. Mtskethos, the eldest son of Khartlos, founded, near the confluence of the Aragvi and the Kur, a town to which he gave his own name, and which served as the capital to his successors down to the year 470 A.D. Some fragments of the chronology of the kings of Georgia are found scattered through the historians of Persia and Byzantium; but we shall not help to rescue their obscure names from the oblivion which cannot too soon shroud their useless lives. Only the most remarkable personages and events merit our notice as falling in with general authentic history.

The Georgian chronicles mention Farnavaz as the first chieftain who took the title of king in Georgia. He lived about 300 B.C. One of his successors, of the name of Aderki, divided his dominions into two states—Armazel and Mtsket, which, at his death, he bequeathed to his two sons; but in the sixth generation the king of Armazel united them again. A king named Mirvan built the fortress of Dariel, and threw up a rampart in order to protect Georgia against the invasions of the Alans and the Khazars. This, however, did not prevent the Alans, in the following century (B.C. 100), from twice crossing the Caucasus from N. to S. in order to overrun Armenia and Media. At the end of the third century A.D., King Aspagur abolished the custom of immolating children to the idols, and thus prepared the way for the reception of Christianity among his subjects. From 265 till 318 Mirian was king, when a female slave, whom the Armenian chronicles call Nina, came into Georgia, and brought with her the faith of Christ which she exemplified most attractively in her whole life. The king Mtsketha caused a chapel to be erected in a wood, where precious relics were deposited; and Mirdat, his son, replaced this edifice by a stone church. In A.D. 469, the king, Vakhtang Gurgastan, abandoned his capital of Mtsketha for a new city which he had raised on the site of an ancient village named Tphilissi or Tphiliskalaki, *i. e.*, the "warm town," on account of its *thermal* springs. This town still continues the capital of the kingdom, and now bears the abbreviated name Tiflis. During the seventh century Islamism was introduced among the Georgians as well as among the other surrounding nations; and in A.D. 684 the Kalif Valid sent into the Caucasus an army of 3000 men, under the command of his brother Muslimeh, who seized Derbend after a memorable battle in which the famous Mussulman hero Kriklar was slain. His mausoleum is yet to be seen near Derbend, and the Lesghians still perform their pilgrimage to it. From this time down to the end of the ninth century the Arabs continued their incursions into Georgia, Shirvan, and Daghistan, where they compelled those who fell into their power to embrace Mohammedanism. In the year 861 they seized Tiflis; but soon after this exploit their power and influence began to decline. They had, however, transferred several colonies into Caucasus; and even now there is an Arab people to the north of Derbend, whose location there dates back to this colonization. Passing over a long catalogue of petty sovereigns, concerning whom even their own historians are not agreed, we come to some events concerning the interesting race of the Orpetians. The Georgians long groaned under the yoke of the infidels. Their sovereigns, compelled to follow the dictates of a foreign despot, no longer retained the shadow of authority, nor dared to assume the title of king; they called themselves simply *patricks* (*i. e.*, patricians) or *mamasakhlisi* (*i. e.*, *patres-familias*). During these times of their subjection, a great revolution broke out in the eastern countries bordering on Tâtary, and extended even to the mountains of Caucasus. In consequence of this revolution one part of the reigning family emigrated, and passing from one country to another, arrived at the foot of the Caucasus. The chief of these illustrious travellers was a prince of noble mien, brave and courageous, who, becoming aware of the sad position of the Georgians, still more and more oppressed by the Persians, proffered them his services, and laid his plans for their immediate deliverance from their tyrants. Fortune seconding his courage, he soon accomplished his design for the deliverance of the Georgians, who, recognising the immense obligation which the illustrious strangers had conferred upon them, decreed great honours for them all, but especially for their noble chief. Among other domains the king granted him the fortress of Orpeth, whence was conferred upon him and his descendants the surname of Orpetian. This noble family has ever since rendered to Georgia the most signal services; it has furnished to the crown its firmest supporters, and to the people their bravest defenders. Converted to the Christian faith, the Orpetians have at all times nobly defended it against the attacks of the Mohammedans, and thus acquired so much renown that their power was sufficient alone to place upon the throne the weak kings who succeeded obscurely under their protection. In A.D. 1049, during the reign of the Georgian king David, the Seljook Turks made an irruption into Asia Minor and the Caucasian provinces. David in terror retired to the mountain fastnesses for safety; but the *sbalasar* or constable, Libarid Orpetian, bravely advanced to meet the host of the infidel, followed only by a handful of soldiers to whom were united some battalions of Armenians and Greeks. He gave battle to an army at least twenty times more numerous than his own, routed them completely, and bore away their standards as a trophy of total victory. This brilliant exploit excited violent jealousy among the Georgian nobles, who, with deep ingratitude, leagued against the deliverer of their country and assassinated him. This dastardly deed was not long unavenged. The army of the Turks was scattered but not destroyed; and when it returned to the charge, the Christians, deprived of the Orpetian, dared not to make head against it, and were mostly cut to pieces. Thus Georgia fell under the power of the Seljooks; Tiflis had a garrison thrown into it, and the shattered remains of the Georgian army took refuge in the mountains. Libarid, however, had left one son, Ivané I. This inheritor of paternal renown was recalled by king David "the Brave" (second of the name), and re-instated not only in possession of his patrimony, but besides received the fortress of Lorhi. In A.D. 1160, David III., who had governed with wisdom and moderation, died and left a son, still a youth, named Temna, whom he entrusted to the sbalasar, Ivané Orpetian III., leaving the regency to George his own brother. At the time of the prince attaining to his majority, the nobles, discontent with the administration of George, sought out Orpetian, and pressed him to cause the true king to be proclaimed. Ivané acceded to their wish; but the regent, not wishing to surrender his power to the heir, it was necessary to have recourse to arms. George retired into Tiflis, where Ivané besieged him; but, obliged to retreat, he retired with his ward into the fortress of Lorhi, and sent his brother Libarid and his two sons to ask succours from the Atabeks of Persia and Armenia. The regent immediately laid siege to Lorhi, which he reduced to the last extremity. The presence of the young prince alone still inspired the besieged to continue the desperate defence, when he, seized with a panic, deserted his own cause, and letting himself fall to the foot of the ramparts, ran to cast himself at the feet of his uncle, imploring his pity, and begging only life. The conqueror, whom we may now call George III., granted his request; but deprived him of his eyes, and so mutilated his person that all hope of his leaving offspring was taken away. The war was thus rendered unnecessary; and Orpetian therefore consented to surrender on condition that no evil was to come to him. George assented that it should be so; and yet as soon as he had him in his power he treated him in all respects as brutally as he had done his own nephew. Not even content with that, he drew forth the relations of Ivané and massacred them all, regarding neither age, sex, nor infancy. At last, wishing to annihilate, if possible, even the remembrance of the race of the Orpetians, he caused their names to be effaced from all the inscriptions in the churches, as well as from the chronicles and histories. Libarid, the brother of the unfortunate Ivané, quitted the country; his two nephews followed him into exile; and one took refuge with the Atabek Ildigooz, the other with the Emir of Kondsag. It was not long after, during the reign of Thamar, daughter and heir of George III., that one of them, named Libarid, consented to re-enter Georgia and the fortress of Orpeth was restored to him. He was the progenitor of the succeeding and still distinguished Orpetians. The reign of Thamar is the most glorious period in the history of Georgia. This princess, whom her grateful subjects called *Mep'hé*, a name only suitable to the sovereigns of the other sex, acquired great historic celebrity. She might rank with Semiramis of Babylon, Catherine of Russia, and Elizabeth of England. She called into her service the illustrious scions of the famous house of the Orpetians, expelled the Persians who had invaded her territories, conquered all the country lying between the Kur and the Araxes, rendered several neighbouring princes tributary to her, and extended her dominion from the Black to the Caspian Sea. Her son George IV., surnamed Lascha (thick-lipped), seconded by Ivané Orpetian, undertook several successful wars against the tribes lying beyond the southern boundary of Georgia, and compelled them to embrace Christianity. But in A.D. 1220, the Mongols, whom the generals of Zinghis-Khan conducted, entered Armenia, and crossed over the Caucasus, which they traversed completely, spreading devastation and death in every direction. The old age of George IV. was embroiled and embittered by a succession of sad misfortunes which present no historic interest. He left a son in his minority (who afterwards reigned under the name of David IV.), and entrusted his education to his sister Rusudan. This princess seized the crown in 1224. During her reign, the Mongols again entered the Caucasian isthmus and committed dreadful ravages. From this time up to the foundation of the new Persian kingdom (A.D. 1500), the history of Georgia is mixed up with that of the conquests of Zenghis-Khan and of Timoor-Lang (Tamerlane). Only now and then may be seen the flash of some heroic attempt to free the country from its oppressors, inspired rather by the despair of the oppressed than by any determined hopeful effort to regain their independence. Momentary successes left to the oppressed a time to breathe; but ever and anon the cruel conquerors returned with the destructive sweep of the tempest. Several heroic combats, from 1305 till 1346, obtained for George VI. the title of "Most Illustrious." Again, in 1388, Timoor ravaged Georgia and carried away the king Bagrat, who, during his captivity, feigned conversion to Islamism; and thus having gained the confidence of his conqueror, he requested an army in order to re-enter his own kingdom for the purpose of restoring the inhabitants to the faith of Mohammed. The Mongol warrior fell into the snare and granted the army. As soon as Timoor discovered the treachery, he became furious as a lion, and re-entered Georgia, where, in three successive expeditions, he devastated the towns, the cultivated lands, and the monasteries; slaughtered the inhabitants; destroyed not fewer than 700 villages; while George VII., son and successor of Bagrat, concealed himself in the most inaccessible fastnesses of the Caucasus. At last, in 1404, Timoor finally abandoned this unfortunate country, and George descended from his mountain terreat, taking in succession Tiflis and the principal fortresses occupied by the Persians, and had the pleasure of reigning a few years in tranquillity over his beloved but desolated country, still reeking with the blood of its slaughtered inhabitants. Ten years afterwards, Alexander, of the house of Bagrat, united under his dominion all the Georgian countries.

From 1500 to 1703, *i. e.*, to the reign of Vakhtang VI., the last king of the chief branch of the family of Bagrat, twelve princes reigned, of the name of David, Luarsab, Simon, or George, all tributaries to Persia, sometimes in a state of rebellion, but always the unhappy victims of intestine dissension. In 1618 Shah-Abbas carried captive 50,000 Georgians of both sexes, and dispersed them over all the Persian territories. The kingdoms of Khakheti, and of Khartli were formed from the fragments of Georgia, but have since been dismembered and again re-united. At this epoch the provinces were governed by khans. At length (1703) Vakhtang VI., who attached his name to a code long venerated, and one of the most warlike sovereigns of the Caucasus, broke from obscurity by displaying the most brilliant virtues, until he was conquered, and, having exhausted all his resources, he threw himself into the arms of Russia, and retired to Astrakhan to die in peace. For a long period the religious zeal of the Georgians, and the horror they have always manifested of Mohammedanism, led them secretly to court the alliance of Russia. This wary power had, since the reign of Ivan Vassilievitch, extended her dominions even to the foot of the Caucasus; and from the year A.D. 1555, several Cheerokeese tribes had recognised themselves as her vassals. In 1586 a king of the Khakheti put himself under the protection of the Czar Fodor; and three years afterwards a Georgian ambassador was sent to implore his aid against the Turks. Such solicitations being often repeated, the Russians soon coveted the possession of these Caucasian provinces, and in recent times have amply gratified their desires. In 1722 Peter the Great crossed the defile of Derbend and laid siege to Old Shamaki, where some of his subjects had been treacherously assassinated by the Persians. A treaty granted him the possession of the provinces bordering on the Caspian Sea; but some years after they were restored to Nadir-Shah. At last, Heraclius II. came to the throne of Georgia. He, wishing to rid himself of the domination of the Persians, constituted himself a vassal of Catherine II. of Russia by the treaty of Georgievsk (July 24, 1783). Twelve years afterwards a Persian army ravaged his estates in order to avenge his desertion; Aga-Mohammed Khan besieged Tiflis, gave it up to pillage, put all to fire and sword, and carried off 20,000 prisoners. From Russia, Heraclius received only an inefficient assistance; he soon sank, however, overwhelmed with grief, and died in 1798. His son George had a reign equally unhappy and turbulent, constantly engaged in fighting against the mountain tribe of the Lesghis and the Persians, until at length he implored the protection of Paul I., and then died with the sad certainty that he was the last king of Georgia. At first the queen Maria, his widow, wished to oppose the pretensions of Russia, and even stabbed the officer Tzitzianoff, who was sent to conduct her to Moscow, but she at length surrendered; and shortly afterwards her son David (A.D. 1800) gave up the entire kingdom, and with his mother retired to St Petersburg.

From this date Georgia merges into the history of the Russian empire. In 1810 the chief of Imeréthi made an abortive attempt to shake off the Russian yoke, but he was compelled to flee to Turkey, and his principality thence became a province of Russia. Under her all-grasping dominion fell several other petty states successively; and her conquests during her last wars with Persia and Turkey have been confirmed by the treaty of Turkmanchai in 1828 with Persia, and by that of Adrianople in 1829 with Turkey. Since these treaties were signed Russia has been engaged in endeavouring to subjugate the highland tribes in order to consolidate her power, and to assimilate the education, laws, and government to that of the rest of the empire. In this she was steadily working out her purpose when the war broke out which has already wrought many changes in this country, and is likely to work many more before the restoration of peace.

Villages. In almost all the large villages of Khakheti stand strong stone towers, which are said to have been built by the nobles of the country as a defence against the Lesghians. In the palmy days of Georgia, not only the mountains of Lesghistan, but those of Daghistan (Schamyl's country), were subject to it; but since the conquest by Timoor, Georgia has become more and more enfeebled, while the hardy mountaineers in their turn made continual attacks on their neighbours, especially the rich Khakhetians, whom they regarded with the same feelings of contempt and envy that Roderick Dhu may have felt for a thriving Lowland farmer on the banks of the Forth.

Natives. The natives of Georgia—forming about four-fifths of the entire population—belong to the pure Caucasian race, and have always been as much celebrated as the Circassians for the fine athletic frames of the men and the beauty of the women. For both sexes these qualities have created a large demand—the males to serve in the armies, and the females to become inmates of the harems of the Turks. From this horrid traffic the Georgian nobles long derived their chief revenue, valuing their serfs only for the money which they could obtain for them in the Turkish markets. Since the interference of the western powers of Britain and France in 1854 the traffic has been much checked. Large numbers of the celebrated Mamelukes were Georgians. Under the Russian dominion, the distinction which divided the whole population into the two classes, nobles and serfs (nearly the same as masters and slaves), though still subsisting, has been much modified. The power of life and death which the nobles claimed, and exercised without scruple, has been expressly abolished. The Georgians

Religion. belong nominally to the Greek Church; but both clergy and people are fearfully ignorant. The Bible was translated into their native tongue as early as the beginning of the fifth century; and the benefits, though as yet little perceptible, promise to become greatly extended by means of a good printing press which the Russians have established at Tiflis.

Language. The Georgians pretend that their language, so far as etymology is concerned, is a perfectly complete and independent idiom. Monsieur Brosset, however, shows that the Georgian tongue is one of the great Indo-Germanic family, and proves this by a careful comparison of the roots appearing in Georgian writings of different ages, especially those found in their most ancient books. Accordingly, this language may fairly be stated to hold a middle place between Sanscrit and Pehlvi or ancient Persian. But in its formation there has been a large implantation of Indian radicals on the ancient Median stock. In the present Georgian language there is a large intermixture of Armenian, but only as borrowed words from a foreign idiom. The accumulation of consonants in Georgian gives a rugged harshness to the pronunciation, which renders it an excellent language for public speaking. There are certain fixed laws for the formation of their compound words; and it is especially rich in grammatical inflexions. Its declensions are very simple, being the same for nouns, adjectives, and pronouns; but it employs some pronouns either isolated or inseparable, either in the nominative or accusative, which are subject to very complicated rules. The theme or root of the verb is found in the third person singular of the perfect tense, as in the Shemitic tongues, and consists of from one to five radical consonants, with one or two vowels having uniform sounds. Each person has its peculiar characteristic; and the tenses of the indicative mood are seven, of which three are past and three future; while certain particles serve to give the indicative a conditional or subjunctive meaning. In Georgia

Dialects. there are five principal dialects—the Khakhethi, the Imeréthi, the Ming-reli, the Guri, and the Khartli. The purest, say the native scholars, is spoken by the Phchavs and the Khvsovs, who dwell north of the Khakhethi, on whom they depend. The knowledge of Turkish and Persian is so general in Georgia, that writers often use the synonymous terms from these languages instead of the pure Georgian. There are often to be met with also, especially in the journals of Tiflis, many French and Latin words, mostly bor-

Prosody. rowed from Russian sources. "The prosody of Georgian poetry is similar to that of the Greek and Latin—founded on the tones and accents," says Eugenius, in his *Tableau Historique de la Géorgie*. "The limited number of the syllables," on the contrary, according to Brosset, "with the final rhyme, which has been borrowed from the Turks, is the only rule of Georgian versification. The most ancient

Books. Georgian book now known is the translation of the Bible, executed in the eighth century by St Euphemius or Euthymius; and the most celebrated original monument of this

Poem of Tariel. literature is the *Poem of Tariel*, composed by General Rustevel, who lived in the reign of Thamar. The complete title of this curious poem is, "The Man Clothed in the Skin of a Tiger," or, "The Amours of Tariel and of Nestan Darejan." It displays a rare fecundity of invention, and a singular richness of imagination; and it seems to be in great part drawn from Persian sources. In another composition the same poet has celebrated the exploits of Thamar. The Georgians have two heroic poems—the *Baramiani*, and the *Rostomiani*. They also still hold in high estimation *Visramiani* and *Darejaniani*, two prose romances whose respective authors were Sarg of Thmogvi, and Mosi of Khoni. The collection of hymns, religious as well as national, by the patriarch Antoni, enjoys deservedly great popularity. The *Code of Vakhtang*, and also the *Chronicle of Vakhtang*, are among the most important prose remains in the Georgian language.

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GEORGIA, *Gulf of*, an inlet of the sea on the W. coast of North America, separating the island of Vancouver from the mainland, and communicating with the Pacific on the N. by Queen Charlotte's Sound, and on the S. by the Strait of Juan de Fuca.

GEORGIC (Lat. *georgicus*, γεωργικός, rustic—derived from γη, *earth*, and ἔργον, *work*), a poetical composition on the subject of husbandry, containing rules expressed in a pleasing manner, and embellished with all the beauties and elegancies of poetry. Virgil has particularly excelled in this style of composition.

GEORGIUM SIDUS. See HERSCHEL.

GERA, the capital of a cognominal lordship in the principality of Reuss, stands in a valley on the banks of the Elster, 35 miles S.S.W. of Leipzig. In 1780 Gera was almost wholly destroyed by fire, and since that time it has been rebuilt in a more regular manner; the streets are in general wide, crossing each other at right angles, and many of the houses are handsome edifices. It has several public squares, a fine town-hall, five churches, two hospitals, a gymnasium, normal school, orphan asylum, house of correction, and a public library. Gera has long been noted for its industrial activity. Its manufactures comprise woollen, cotton, and silk goods, oilcloth, leather, hats, tobacco, soap, beer, porcelain and other earthenware, bricks, musical instruments, carriages, &c. In the neighbourhood are some baths much frequented. Pop. 11,255.

GERACE, a town of Naples, province of Calabria Ultra, on a hill near the coast, 30 miles N.N.E. of Cape Spartivento. In the middle ages this was a place of great strength, but frequent earthquakes, and particularly that of 1783, have reduced its citadel to ruins. The cathedral, a handsome Gothic edifice, was overwhelmed by the same catastrophe, and now only a small portion of its crypt remains available for public worship. In the vicinity are the remains of the ancient city of *Locri Epizephyrii*. Gerace seems to have been built in a great measure of the materials of the ancient city,—the fine marble columns of the cathedral are evidently spoils of ancient temples. Pop. 4800.

GERANIUM, a genus of plants of the nat. ord. Geraniaceæ, containing a vast number of species, many of which are cultivated in our gardens for the beauty of their flowers. Most of the cultivated species belong to the sub-genus *Pelargonium*, and are natives of southern Africa, where they abound, and form a striking feature in the peculiar vegetation of that region. See BOTANY, vol. v., p. 187.

GERARD, ALEXANDER, author of the *Essays on Taste and Genius*, was born at Chapel-Garioch, in Aberdeenshire, in 1728. After the usual preliminary studies he graduated as M.A. at Marischal College, and then began the study of theology, which he prosecuted at Aberdeen and Edinburgh. In 1752 he was appointed professor of natural philosophy in Marischal College, and contributed powerfully, by his voice and pen, to remodel the system of academic study then pursued in Aberdeen. Eight years later he exchanged that chair for the more honourable one of divinity, and in 1771 left Marischal for King's College, where he remained till his death in 1795.

Gerard is chiefly remembered by his *Essay on Taste* (which was rewarded with the gold medal of the Edinburgh Philosophical Society in 1756), and his *Essay on Genius.* These and the other works of their author exhibit a sound judgment and extensive reading. They exhibit, however, no rare or valuable qualities of mind, and are seldom or never relieved by a ray of fancy or a burst of eloquence. Besides these works, Gerard published two volumes of Sermons and a Dissertation on the Evidences of Christianity.

GÉRARD, *François*, a distinguished French historical painter, born at Rome of humble parents in 1770, died at Paris in 1837. He was a pupil of the celebrated David, whom he followed for a time as his model both in politics and art. Abandoning the sphere of politics, however, he finally devoted himself heart and soul to painting, and under the first Napoleon attained high eminence. The best of his ideal pieces are probably his *Belisarius* and his *Psyche*, the first of which is well known in Europe by engravings. Equally popular were his *Battle of Austerlitz* and his *Entrance of Henry IV. into Paris.* All these pictures are now in the public galleries of France. Though they still look well, they have evidently suffered from the lapse of time; some of them even seem doomed to share the fate of Reynolds' masterpieces, and disappear altogether from the canvas. Gérard was a remarkable portrait painter; and some of the best likenesses of the distinguished personages of his time are by his hand. It is perhaps too much to claim for Gérard the possession of great original genius, but he had a fine fancy and an exquisite taste, grouped his figures admirably, and, though far from being a striking or even a correct colourist, he yet disposed his colours so well as generally to produce a harmonious effect.

GERARDE, JOHN, a surgeon in London, and the greatest herbalist of his time, was many years chief gardener to Lord Burghley, who had the best collection of plants in the kingdom, among which were a great number of exotics introduced by Gerarde. In 1597 the latter published his *Herbal*, which was printed at the expense of J. Norton, who procured from Frankfort the same blocks in wood which were used in the *Herbal* of Tabernæmontanus. In 1663 Dr Thomas Johnson published an improved edition of Gerarde's book, which met with such approbation in the university of Oxford that they conferred upon him the degree of doctor of physic. The descriptions in the *Herbal* are plain and familiar; and both these authors have laboured more to make their readers understand the characters of the plants than to inform them that they themselves understood Greek and Latin. The *Herbal* of Gerarde is now considered only as a literary curiosity. The figures in general express very accurately the characters of the plants which they are intended to represent. Gerarde died about the year 1607.

GEREZ, SERRA DE, in Portugal, a mountain chain, consisting of a spur of the mountains of Asturias, and running between the basins of the Douro and the Minho to the W. of Montalegre. This Serra is the finest in N. Portugal, except the Scajo. It is generally composed of a succession of lofty granite peaks, and stretches about 20 miles from N. to S. The Murro de Buragciro, 4296 feet above sea-level, is the culminating point. On his retreat before Wellington in 1809, Marshal Soult led his army through a terrific gorge forming one of the passes in this chain.

GERGAL, a secular town of Spain, province of Granada, and bishopric of Almeria, is situted at the foot of the Sierra de Baza, on a rugged site in the form of an amphitheatre. Gergal contains the Santa Fuente, celebrated as a cure for cutaneous eruptions, besides a large parish church, a chapel, a granary, a prison, and a town-house. The principal manufactures are counterpanes, glass, oil, white wax, earthenware, &c.; and the trade consists chiefly in oil, wine, and hardware, with Castile, Galicia, and Murcia. The distance from Almeria is 24 miles, and the pop. (1855) nearly 6000.

GERMAIN-EN-LAYE, ST, a town of France, department of Seine-et-Oise, on an eminence on the left bank of the Seine, 10 miles W.N.W. of Paris. The streets are wide, handsome, and well paved, and the houses lofty and well built. It originated in a chapel and monastery of St Germanus, built by King Robert in the eleventh century, in the midst of the forest then called *Silva Ledia.* The royal palace, for which the town is chiefly noted, was originally built by Charles V. in 1370. It was rebuilt by Francis I., and improved and embellished by succeeding monarchs, and especially by Louis XIV. This was the favourite residence of Marguerite de Valois, Henry II., Henry IV., and Francis I., and the birth-place of Charles IX. and Louis XIV. James II. of England spent here the last years of his life. It is now used as a military prison. A fine terrace, about a mile and a half in length, and nearly 100 feet wide, extends along the brow of the hill and commands a delightful prospect. The parish church contains a monument, erected at the expense of George IV., over part of the remains of James II., which were found in making some alterations in the church. St Germain has three handsome squares, a corn market, theatre, and public library; and manufactures of woollens, leather, and horse-hair goods. Pop. 12,527. The forest of St Germain occupies an area of 8900 acres, and is traversed by numerous roads, the aggregate length of which is estimated at about 1180 miles.

GERMAN (Lat. *germanus*, a brother), in matters of genealogy implies whole, entire, or own. Thus *brother-german* denotes a brother by the same father and mother. *Cousins-german* are those in the first degree, *i.e.*, the children of brothers or sisters. Among the Romans we find no instance of marriage between cousins-german before the time of the emperor Claudius, when it became common. Theodosius prohibited such marriages under severe penalties, including even fine and proscription.

GERMAN, SAN, a town in the island of Porto Rico, near the west coast. In the vicinity cotton and coffee are are produced; and cattle are reared in large numbers. The town stands on the Guanajive or Guadianilla, and was founded in 1511. The jurisdiction of San German comprises fourteen parishes, with nearly 12,000 inhabitants. The species of resin which answers the purposes of pitch is produced here from the tabernaculo tree.

GERMAN SILVER, the name given to an alloy of nickel, zinc, and copper, which is much used as a substitute for silver plate, &c. Its beauty and resemblance to silver depend on the preponderance of nickel, up to a certain point. The imitation may be so perfect as to evade detection by the eye; but friction applied to this alloy at once develops a coppery odour. The proportions recommended are—nickel 25, zinc 25, copper 50.

GERMANICUS, CÆSAR, an illustrious Roman general, and one of the most virtuous and noble characters in the history of the empire, was born 15 B.C. He was the son of Claudius Drusus Nero and Antonia, daughter of Mark Antony, and niece of the emperor Augustus. He was thus the brother of the emperor Claudius, and the nephew of the emperor Tiberius, who adopted him in compliance with the request of Augustus. In his twenty-second year he went to assist his uncle in the war against the Dalmatians and Pannonians. For his services in these campaigns he was rewarded with a triumph on his return to Rome. About this time he married; and by his wife Agrippina, who was a granddaughter of Augustus, he had nine children, two of whom afterwards became notorious—Caius Caligula as emperor, and Agrippina as mother of Nero. After another campaign against the Germans in A.D. 11, Germanicus returned to Rome, where he was made consul without having held the

Germanicus.

St Germans ‖ Germantown.

lower grades of public office. In the following year he was sent by Augustus to take command of the legions on the Rhine. When the news of Augustus' death reached these troops in A.D. 14, they broke out into open mutiny, the veterans claiming their discharge, and the young soldiers demanding an increase of pay. It was only with the utmost difficulty, and the use of fictitious letters purporting to have been received from Tiberius, that Germanicus was enabled to crush the outbreak. Hardly was it quelled when another, still more formidable, broke out. The general threw up his command in disgust, and prepared to leave the camp with his wife and family. This conduct brought the soldiers to their senses. Discipline was restored, the ringleaders of the mutiny were put to death by the soldiers themselves, while the legions demanded to be led forthwith to battle against the Marsi and Bructeii on the other side of the Rhine. Seizing the moment of enthusiasm, Germanicus marched upon the foe, and routed them with great slaughter. Similar success attended his arms in the following year when he marched against Arminius, the conqueror of Varus; but another campaign and two bloody battles had to be fought before full vengeance could be taken for the slaughtered legions. On the trophy which commemorated the rout of the famous German chief, the Roman general, modestly and prudently omitting all mention of himself merely inscribed "The army of Tiberius Cæsar, having conquered the nations between the Rhine and the Elbe, consecrates this monument to Mars, Jupiter, and Augustus." Jealous of these successes, and alarmed by Germanicus' increasing popularity with the army, Tiberius recalled him to Rome; and though he prayed for one year more to finish the work he had so well begun, the tyrant was inflexible. In A.D. 17 Germanicus returned to Rome, and was honoured with a splendid triumph. In the following year he shared the consulate with Tiberius, and was sent to the east to quell the tumults and insurrections there. His movements, however, were watched and checked by the spies and creatures of his imperial master. One of these, Cn. Piso, governor of Syria, a man of haughty and violent temper, strained every nerve to thwart the plans and embitter the life of Germanicus, and succeeded only too well in his design. After accomplishing his mission to the east, Germanicus suddenly fell ill at Antioch, and on his deathbed declared to his wife and family that he believed himself the victim of hostile intrigue and malice. His friends, whether rightly or not cannot now be known, construed his words into a suspicion of poison. Certain it is, that with his dying words he called upon his family and friends to avenge his murder. Tacitus, however, to whose graphic pen we owe the best narrative of Germanicus' life, seems to incline to the opinion that poison was not found necessary to shorten the days of him to whom the Romans looked forward with hope and faith as their future sovereign. The insults and annoyances to which he was hourly exposed were found enough.

The character of Germanicus shows with a double lustre in the dark era of tyranny and cruelty in which he lived. Though, as a commander, he was fierce and stern in carrying out the orders of Tiberius against the enemies of the empire, as a man he displayed remarkable clemency towards his foes. His military talents were of the first order, and his successes in war were as brilliant as they were useful. But it was chiefly his personal virtues that endeared him to the Roman people. That he was disinterested is shown by his obstinate refusal to contest the imperial crown with his uncle, though he might have secured it without much difficulty. His sense of duty, his chastity, his munificent liberality, his attachment to his friends, and his great personal accomplishments, made his early death the subject of universal lamentation throughout the whole Roman empire. At the time of his death, which happened in A.D. 19, he had only reached his thirty-fourth year. The grief in every part of the world to which his fame had reached was intense, and the honours paid to his memory were almost without example in Roman history. Germanicus long enjoyed a considerable reputation as an author. There have been various editions of his remains. The best is that of Orelli, appended to the *Phædrus* of that critic, Zurich, 1831. (Tacitus, *Annal.* i., ii.; *Dion Cassius*, lib. xxxvii.; Beaufort's *Historie de Germanicus Cæsar*, &c., &c.)

GERMANS, ST, a market-town and parish of England, county of Cornwall, 22 miles E.S.E. of Bodmin. It stands on the slope of an eminence near the river Tidi, and consists chiefly of one street. From 931 to 1049 it was the seat of a bishopric, afterwards united with that of Crediton, and from this union arose the see of Exeter. The parish church, formerly conventual, was once much more extensive. It consists of a nave and two aisles. The W. front has two towers, between which is the entrance formed by a deep Norman arch. The inhabitants are engaged chiefly in agriculture and fishing. Previous to the Reform act it returned two members to parliament. Market-day, Friday. Pop. of parish (1851) 2967.

GERMANTOWN, a post-town in Philadelphia county, state of Pennsylvania, North America, on the Germantown branch railroad, 6 miles N.W. of Philadelphia. It consists of one broad street, 4 miles in length, with several others crossing it at right angles. Many of the upper classes of Philadelphia have country seats here, some of which are of great beauty and elegance. Pop. (1853) about 7000.

GERMANY.

THIS name was given by the Romans to a country inhabited by various tribes of different names, but nearly alike in manners, customs, language, and religion. But they comprehended under it not only the country now called Germany, but also Denmark, Norway, Sweden, Finland, Livonia, and Prussia. The modern inhabitants call themselves *Deutsch*, and their country *Deutschland ;* but, as to the origin, meaning, and primary application of both names (German and Deutsch), German antiquaries are far from being agreed, though most of them seem to be of opinion that *German* is a genuine Deutsch word, compounded of *ger*, or *gerra*, a spear, and *man*, and consequently meaning spearman, or warrior. *Deutsch* seems to have been known to the Carlovingians, and it first occurs in a document of the year 813 ; but it is only since the time of the emperor Otto I. (A.D. 936–73) that it has been in use as the general name of the German nation.

The Rhine on the west, and the Vistula on the east, seem to have been generally considered as the boundaries of Germany ; whilst on the north it extended along the ocean and the Baltic Sea, and on the south was terminated by the river Danube. But such boundaries were by no means definite ; for many German tribes inhabited the southern banks of the Rhine as far as the Scheldt. Between the Rhine and the Moselle were the Ubii ; and higher up, but beyond the latter river, were the Treviri, and then the Triboci, the Neimetes, and the Vangiones. The Mediomatrici were planted along the Moselle, near the site of the present city of Metz ; and above them, on the Rhine, in the present Swiss canton of Basel, were the Raurici or Rauraci. The ancient nations of Vindelicia were settled between the sources of the Rhine and of the Danube. Noricum was inhabited by several tribes between the rivers Drave and Danube, and comprehended the provinces now known by the names of Austria, Styria, Carinthia, Tyrol, and Bavaria. Beyond the Danube, to the westward of the Marcomanni, the country was occupied by the Hermunduri, and extended to the north along the Hercynian Mountains to the river Sala. A nation beyond the Hercynian Mountains, known then as the Boiohemum, and in modern times as Bohemia, were in contact with the Quadii, whose territory, now called Moravia, touched, on its southern part, the Danube. These two tribes, with the Marcomanni, and some smaller clans, were comprehended under the general name of Suevi, a people who at a subsequent period forced their way into Spain, and established themselves in that peninsula as a warlike and independent nation. The Suevi were a powerful nation, who extended themselves along the Hercynian Forest, through which they penetrated, and occupied a tract of land extending from the Vistula to the Elbe. Among their possessions were the divisions which subsequently obtained the names of Saxony, Brandenburg, Lusatia, and Silesia. One subdivision of them, called the Semnones, grew sufficiently powerful to seize some of the richest provinces of Gaul ; whilst another, the Æstii, possessed the borders of the Baltic Sea, whence they drew much amber, of which they made use in traffic with the surrounding tribes. These last, according to Tacitus, were worshippers of the mother of the gods, and relied on her for protection. They are said to have been more industrious than the rest of the Germans in the cultivation of their lands, and at a very early period produced corn. Their amber was reported to have been obtained by diving in the rivers and the sea. This substance was then highly estimated ; and at a subsequent period, in the reign of Nero, a Roman knight is stated to have purchased for that emperor, of the Æstii, at one time thirteen thousand pounds weight, amongst which was a single piece weighing thirteen pounds. At a still later period, a letter is found in Cassiodorus, in which Theodoric, king of the Goths, gives thanks to the Æstii for a present of amber, and in return assures them of his friendship and protection.

In the interior of Germany, the Cimbri and the Saxons were possessed of the country north of the Elbe ; whilst on the south side of that stream the Chauci were the masters of the district through which the Weser flows, and were in contact with the two smaller tribes of the Cherusci and Chamavi. The Frisii were distinguished as the Upper and the Lower, and were separated from the Chauci by the river Ems, and from each other by a branch of the Rhine ; whilst beyond the Yssel were some migratory tribes, the Bruckteri and the Marsi. The Uspetes were established on the river Luppia, now the Lippe ; and beyond that stream were the Usipetes, who were celebrated for changing their residence, and were thence to be found in other districts. The Teucteri were settled on the Rhine, in the country of the Menopii ; and next to them the Jubones, near the modern Juliers. The Catti or Cotti inhabited parts of Hesse and Thuringia, extending from the Hartz Mountains to the Rhine and the Weser. Their southern neighbours were the Sedusi, bordering on Suabia, where they came in contact with the Marcomanni, who have been already mentioned.

Such are the best accounts which can be collected from Cæsar, Tacitus, and Ptolemy, respecting the localities of the various tribes who inhabited Germany before the period of the intercourse between them and the Romans. It has been justly remarked, that whilst modern nations are fixed and permanent societies, connected amongst themselves by laws and government, and bound to their native soil by arts and agriculture, the German tribes were only voluntary and fluctuating associations of soldiers, almost of savages ; and the same territory often changed its inhabitants in the course of conquest or of emigration. A victorious state often communicated its own name to a vanquished people. Sometimes crowds of volunteers flocked from all parts to the standard of a victorious leader ; his camp became their country, and some event soon gave a new but general name to the mixed community. Thus the distinctions of ferocious invaders were perpetually varied by themselves, and naturally confounded the astonished subjects of the Roman empire.

It is probable that the accounts of the numbers of the German people, as transmitted by early writers, are grossly exaggerated. In great and civilized states, millions of subjects pursue their peaceful avocations in silence and obscurity ; but in a state of rude republicanism, or of civil commotions, almost every member of the community is called into active exertion ; and thus, with their irregular divisions, their restless motions, their profusion of kings and warriors, and numerous contests, they present to our minds an appearance of numbers very far beyond the reality, which is still further strengthened by the most splendid appellations being frequently and repeatedly applied to inconsiderable objects. When the Romans first became acquainted with Germany, about the year 640 from the building of their capital, or more than 100 years before the commencement of the Christian era, the natives had advanced but a few steps from the savage state. Even in the subsequent age, as Tacitus affirms, they were so ignorant of the use of letters as to be unable to transmit from one generation to another any annals of their country, or any knowledge of the agreeable or useful arts of life. In an extent very far surpassing modern Germany, Ptolemy speaks of ninety towns or cities; whilst Tacitus asserts, as a well-known fact, that in his time they had no cities, and that they affected to despise the buildings constructed by Roman industry, as places of confinement rather than of security. Their dwellings were not even contiguous, nor formed into villages, but each of these barbarians fixed his independent dwelling on any spot which a plain, a wood, or a stream of good water, invited him to settle on; and in constructing his hut, neither stone, brick, nor tiles were employed. Built of timber, they were very low, and covered with straw, having a hole to allow of the emission of the smoke.

The clothing was of the simplest kind, notwithstanding the inclemency of the climate in a territory covered with woods, and not ameliorated by cultivation. In the more northern parts scanty garments of furs were used; and in the south some coarse linen, spun and woven by the females. Their food consisted chiefly of wild animals, or of the flesh of their large herds of cows and of horses, which were nearly in the state of their original wildness. A small quantity of corn was the only produce of the soil; the use of gardens, orchards, and artificial meadows, was unknown; nor could any great improvement in agriculture have existed, where a new division of the land took place annually, and a great part lay waste and without any tillage. The Germans seem to have learned the process of brewing or of distillation, as they made intoxicating liquors from wheat and barley, in the use or abuse of which they indulged to the greatest excess in social meetings and public assemblies. Drinking and gambling were their highest gratifications. They gloried in passing whole days and nights at the table; and the blood of guests, often of friends and relations, stained their drunken assemblies. The desperate gamester often staked his person and his liberty on the cast of a dice, and then patiently submitted to the decision, and was sold into slavery by his more fortunate competitor.

Notwithstanding the grossness of manners amongst the German tribes, the females were held in high estimation; and whilst the men were brave, the women were chaste. Polygamy was not in use excepting amongst the princes; and amongst them only for the sake of multiplying their alliances. Divorces were prohibited by manners rather than by laws. Adulteries were punished as rare and inexpiable crimes; nor was seduction justified by example and fashion. The unpolished wives of the Germans partook of few of those gratifications which tend to inflame the passions, and their fidelity was in some measure secured by the exposure to which they were subject in the open huts, and by poverty, solitude, and the painful cares of domestic occupation. Besides these restraints, the Germans treated their women with esteem and confidence, consulted them on every occasion of importance, and fondly believed that in their breasts resided a sanctity and wisdom more than human. Some of these interpreters of fate, such as Velleda in the Batavian war, governed, in the name of the deity, the fiercest nations of Germany. The rest of the sex were respected as the free and equal companions of soldiers, associated even by the ceremony of marriage to a life of toil, of danger, and of glory. In their great invasions, the camp of the barbarians was filled with a multitude of women, who remained firm and undaunted amidst the sound of arms, the various forms of destruction, and the honourable wounds of their sons and husbands. Fainting armies of Germans have more than once been driven back upon the enemy by the generous despair of the women, who dreaded death much less than servitude. If the day was irrecoverably lost, they well knew how to deliver themselves and their children, with their own hands, from an insulting victor. Heroines of such a description may claim admiration, but they can scarcely inspire the passion of love. They who attempt to imitate the sterner virtues of man must lose the attractive softness of their own sex, which is their principal charm. Conscious pride taught the German matrons to suppress every tender emotion which stood in competition with honour; and the first honour of the sex has ever been that of chastity.

The Germans were a warlike people, notwithstanding which their government was a species of democracy, although a few of the tribes on the shores of the Baltic acknowledged the authority of kings; but such kings owed their power as frequently to their valour or their eloquence as to their descent; and with all of them the power was tempered by the prevalence of popular assemblies. The assembly of the warriors of the tribe was convened at stated seasons, or on sudden emergencies. When a youth had attained the age of manhood, he was introduced into the general council of his countrymen, solemnly invested with a shield and a spear, and adopted as an equal and worthy member of the commonwealth. In such assemblies, the trial of public offences, the election of magistrates, and the great affairs of peace or war, were determined by independent votes. Sometimes these important questions were previously considered and prepared in a committee or select council of the principal chieftains. The magistrates might deliberate and persuade, but the people only could resolve and execute; and hence the resolutions were for the most part hasty and violent. They too often turned away with indignant contempt from the remonstrances of justice and policy, and signified by a hollow murmur their dislike of such timid councils. But when a popular orator proposed to vindicate the meanest citizen from either foreign or domestic injury, or called upon his countrymen to follow some enterprise of danger and of glory, the applause of the assembly was displayed by a loud clashing of shields and spears; for the Germans always assembled in arms, and it was to be dreaded lest an irregular multitude, inflamed by faction and strong liquors, should use their arms to enforce as well as to declare their furious resolutions.

A general of the tribe was elected on occasions of danger; and if the danger was pressing and extensive, several tribes concurred in the choice of the same general. The bravest warrior was named to lead his countrymen into the field by his example rather than by his commands; but this power, however limited, was still invidious. It expired with the war, and in time of peace the German tribes acknowledged not any supreme chief. Princes were, however, appointed in the general assembly, to administer justice, or rather to compose differences, in their respective districts. In the choice of these magistrates, as much regard was shown to birth as to merit. To each was assigned by the public a guard and a council of a hundred persons; and the first of the princes appears to have enjoyed a pre-eminence of rank and honour which sometimes tempted the Romans to compliment them with the regal title.

The comparative view of the powers of the magistrates, in two remarkable instances, is alone sufficient to represent the whole system of German manners. The disposal of the landed property within their district was absolutely vested in their hands, and they distributed it every year according to a new division. At the same time they were not authorized to punish with death, to imprison, or even to strike, a private citizen.

The Germans respected only those duties which they imposed on themselves. The most obscure soldier resisted with disdain the authority of the magistrates. "The noblest youths," says Tacitus, "blushed not to be numbered amongst the faithful companions of some renowned chief, to whom they devoted their arms and service. A noble emulation prevailed among the companions to obtain the first place in the esteem of their chief, among the chiefs to acquire the greatest number of valiant companions. The glory of such heroes diffused itself beyond the narrow limits of their own tribe. Presents and embassies solicited their friendship, and the fame of their arms often ensured victory to the party they espoused. In the hour of danger it was shameful for the chief to be surpassed in valour by his companions, and shameful for the companions not to equal the valour of their chief. To survive his fall in battle was indelible infamy. The chiefs combated for victory, the companions for the chief. The noblest warriors, whenever their native country was sunk in the laziness of peace, maintained their numerous bands in some distant scene of action, to exercise their restless spirit, and to acquire renown by voluntary dangers. Gifts worthy of soldiers, the warlike steed, the bloody and ever-victorious lance, were the rewards which the companions claimed from the liberality of their chief. The rude plenty of his hospitable board was the only pay which he could bestow, or they would accept. War, rapine, and the freewill offerings of his friends, supplied the materials of this munificence." This institution, however it might accidentally weaken the several republics, invigorated the general character of the Germans, and even ripened amongst them all the virtues of which barbarians are susceptible; the faith, valour, and hospitality so conspicuous long afterwards in the ages of chivalry.

The religion of the Germans was as gross as that of other nations in the same low stage of civilization. They adored the sun and the moon, the fire and the earth, together with those imaginary deities who were supposed to preside over the most important occupations of human life. They were persuaded that, by some ridiculous arts of divination, they could discover the will of the superior beings, and that human sacrifices were the most precious and acceptable offering to their altars. They seem to have adopted no images as visible objects of worship, nor to have constructed any edifices for the celebration of religious rites. Their only temples were dark and ancient groves, consecrated by the reverence of successive generations. Their secret gloom, the imagined residence of an invisible power, by presenting no distinct object of fear or worship, impressed the mind with a still deeper sense of religious horror; and the priests, rude and illiterate as they were, had been taught by experience the use of every artifice which could preserve and fortify impressions so well suited to promote their own interest.

The German priests had assumed a jurisdiction even in temporal concerns which the magistrate could not venture to exercise; and the haughty warrior submitted to the lash of correction, when it was inflicted, not by any human power, but by the immediate order of the god of war. Thus the defects of civil policy were sometimes supplied by the interposition of ecclesiastical authority. The latter was constantly exerted to maintain silence and decency in the popular assemblies, and was sometimes extended to a more enlarged concern for the national welfare. A solemn procession was occasionally celebrated in what are now the countries of Mecklenburg and Pomerania. The unknown symbol of the earth, covered with a thick veil, was placed on a carriage drawn by cows; and in this manner the goddess, whose common residence was in the island of Rugen, visited several adjacent tribes of her worshippers. During her progress the sound of war was hushed, quarrels were suspended, arms laid aside, and the restless Germans had an opportunity of tasting the blessings of peace and of harmony. The truce of God, so often and so ineffectually proclaimed by the clergy of the eleventh century, was an obvious imitation or continuation of this ancient custom.

But the influence of religion was far more powerful to inflame than to moderate the fierce passions of the Germans. The consecrated standards, long preserved in the groves of superstition, were placed in the front of the battle; and the hostile army was devoted with dire execrations to the gods of war and of thunder. With the Germans cowardice was the most unpardonable of sins. A brave man was the worthy favourite of the martial deities. He who had lost his shield was banished alike from the civil and the religious assemblies of his countrymen. Some of the northern tribes seem to have embraced the doctrine of transmigration; others imagined a gross paradise of immortal drunkenness. All agreed that a life spent in arms, and a glorious death in battle, were the best preparations for a happy futurity, either in this or another world.

That singular order of men, the bards, have attracted to them the attention of all who have attempted to investigate the antiquities of the Celts, the Scandinavians, and the Germans. It is not easy, however, to calculate the enthusiasm of arms and glory which they kindled in the breasts of their audience. It was in the hour of battle, or in the feast of victory, that the bards celebrated the glory of the heroes of ancient days, the ancestors of those warlike chieftains who listened with transport to their artless but animated strains. The view of arms and of danger heightened the effect of the military song; and the passions which it tended to excite, the desire of fame, and the contempt of death, were the habitual sentiments of a German mind.

Such is the description of the manners, characters, and propensities of the ancient Germans, as delineated by Tacitus, and by which, in spite of their climate, their want of learning and the arts, and the absence of fixed laws, they were formed into a people of military heroes, and enabled to carry on formidable hostilities, during more than two centuries, with the mighty power of the Romans.

The early history of the Germans, like that of all nations who had no written records, is involved in much obscurity. The first knowledge of their transactions was that of the invasion of the country by the Gauls, commanded by Segovesus, king of the Celtæ; whilst his brother Bellovesus marched with another army into Italy; both of which divisions are said to have been directed by the flight of birds. Segovesus crossed the Rhine, and gained a settlement near the Hercynian Forest. The Germans, however, soon acted on the offensive, and expelled the Gauls, and, by the assistance of the Belgæ, one of their most warlike tribes, gained possession of some territory to the west of the Rhine, where they were enabled to fix and maintain themselves so firmly as never to be driven out, and whence they extended themselves to the sea-coasts of Britain, and even drove its inhabitants into the interior. The Germans and the Gauls, thus brought into contact with each other, continued to hold vacillating intercourse, sometimes at war, at other times in alliance in opposition to the power of the conquering and disciplined Romans. The Germans, under the name of Cimbri, then invaded the territory of Rome, and spread such terror, that Marius, by a deviation from the law, was appointed consul to command an army against them. After various marches during some years, in 102 before Christ, Marius, with an army of 52,000 men, attacked the barbarians on the banks of the Rhone, and, though they are said to have mustered 300,000 foot and 15,000 horse, completely defeated them, with a loss of 150,000 killed and 60,000 prisoners. Many, preferring death to slavery, underwent military execution; and a few were scattered over Gaul, or crossed the Danube, and so escaped to their own country.

After Julius Cæsar had completed the subjugation of Gaul, and extended his conquest to the Rhine, he first became acquainted with the German name. Ariovistus, the leader of a tribe that dwelt to the south of the Danube, attempted to fix his establishment in Gaul, but was defeated by Cæsar, and, with the loss of 80,000 men, was driven across the Rhine, though two tribes of his followers remained on the west side of that river; and the fugitives who returned augmented the numbers of the German tribe of the Marcomanni. Cæsar built a bridge over the Rhine, and twice passed that river at the head of his army, not with the view of permanent conquest, but to secure his province of Gaul against the attacks of the barbarians; and he also took many of the Germans into his pay, first in the war with the Gauls, and afterwards in the civil contest with Pompey. The civil wars, which occupied first Cæsar and Pompey, and afterwards Mark Antony and Brutus and Cassius, left the Germans opportunities to attempt incursions. The confederation of the Segambri passed the Rhine, and having repelled the attack of Agrippa, settled themselves on the western side of that river; but a few years afterwards they were defeated by Lollius the legate of Augustus, when, 14 years before Christ, Drusus, the son-in-law of the emperor, constructed several fortresses along that river, to prevent the incursions of the Germans. He proceeded with success, and penetrated as far as the Elbe. He died in the year 8 before Christ, and was succeeded by Tiberius, who during his command not only sustained the power which Drusus had acquired, but extended it towards the north; and, by intrigues among the natives, as much as by his force, induced many of the tribes to solicit peace, and excited others to enter into the military service of Rome. The body-guard of Augustus was composed of German volunteers, amongst whom was the distinguished noble whose name has descended to posterity, being sometimes called Hermanus, and at others Arminius, who received the privileges of a Roman citizen and the dignity of a Roman knight. He was the son of Sigmer, a prince of the Cherusci, and had been educated in Rome, and early appointed an officer in the army of Augustus, but is said never to have lost the relish for the customs of his ancestors, nor his zeal for the independence of his country; and during the course of his instruction in arts and in arms he warmly cherished the hope of adapting these instructions to the purpose of freeing his country from the Roman yoke. He felt a confidence that all the discipline of the Roman armies would be unable in a fair field to resist the raw bravery of his unpolished countrymen.

The best legions of Rome were intrusted to the command of Quintilius Varus, with the superintendence of the territories on the right bank of the Rhine, which had been added by Drusus to the Roman dominion. He was confident in the power of his military superiority, and thought, in addition to that, to secure obedience by changing the customs and principles of the Germans, and thus converting them into useful subjects. For this purpose he took with him a great number of civil officers, lawyers, and men of letters, to introduce the new order of things. These measures roused the jealousy of a people enamoured of their freedom, and disseminated the seeds of insurrection amongst all the tribes situated between the Rhine and the Elbe. Arminius availed himself of this spirit to form alliances in opposition to Varus, amongst all the military leaders of the districts. It happened most opportunely for the purpose of Arminius, that, in the year 9 A. D., a general revolt broke out on the Roman frontiers of Dalmatia and Pannonia. It is doubtful if this was connected with the plans of Arminius, but it helped to strengthen the confederacy which had been entered into by those tribes which were in possession of the country bounded by the Rhine, the Saale, and the Elbe. This confederacy was not broken up by the treason of one of the chiefs, Segestes, the leader of the Catti, who communicated to the Roman commander the plan and the detail of the intended insurrection, which was received by Varus with the contempt which reliance upon the numbers and discipline of his troops had inspired. Arminius redoubled his assiduities to remove suspicion, if any existed, of his fidelity to the Roman cause, and succeeded, by pointing the attention of Varus to some irruptions which, at the instigation of the confederacy, had broken out on the banks of the Weser. These small but concerted disturbances were intended to inveigle the Roman commander to advance into the interior of the country; and the leaders of the German troops in the pay of Rome, who were involved in the confederacy with Arminius, by the display of unbounded zeal and obedience, agreed in urging the Roman commander not to wait for further displays of resistance, but to advance with his three legions and the auxiliaries, and to extinguish the rebellion in its focal point. In vain did Segestes repeat his warnings. Nothing could shake the confidence of Varus in Arminius, and the confederates and the Romans plunged deeper and deeper into the heart of the country, where the snares had been laid for their destruction. Near the sources of the river Lippe, in the country of the Bructeri, after a long and wearisome march through woods and morasses, the Romans saw themselves enclosed on every side in a hollow surrounded by hills whose summits were all occupied by the natives. At this moment intelligence arrived that Arminius with the rear division, consisting of stipendaries, which he commanded, had declared against the Romans, and had been the moving spring of the whole operations. Varus saw clearly destruction before him; for though discipline and courage might prolong the contest, it could inspire no hopes of a successful issue.

Three days of suffering and ineffectual hostilities compelled the Romans to submit. Varus chose death rather than disgrace. Three Roman eagles were taken; and a limit was thus set to the advances of the Romans towards the north, which they were never afterwards enabled to pass. The Germans disgraced their victory by useless cruelties. Some of the men of letters and artists who were taken had their hands cut off, and others were blinded. The site of this memorable event cannot be clearly ascertained by any records, but it is generally placed by the antiquarians of Germany near the sources of the rivers Lippe and Ems, not far from where now stands the small city of Detmold. The event occurred in the ninth year of our era.

When Arminius had thus restored the ancient freedom to his country, he destroyed the fortresses which the Romans had constructed on the Rhine, the Elbe, and the Weser, and exerted himself to rouse the military spirit of the Germans, and taught them to rely on that spirit rather than on the strongest fortifications. A civil war soon broke out amongst the natives themselves, and the party opposed to Arminius was headed by Segestes. That prince applied to the Romans for assistance, and was aided by their general Germanicus, when he was surrounded by the troops of Arminius. His deliverance was effected with but little loss on either side; but the wife of Arminius was taken prisoner by Segestes, and on being carried before the Roman general, maintained a spirit and dignity which is highly applauded by Tacitus. The treachery of Segestes animated the exertions of Arminius, and he was offered assistance by his uncle Inguiomar, a leader of a tribe, and celebrated as a warrior. Arminius attempted also to gain to his party his brother Flavius, who like himself had been educated in Italy, but who resolutely maintained his fidelity to the Roman power. Arminius desired a meeting with Flavius, and they saw and conversed with each other across the river Weser. The expostulations and the inducements of Arminius were ineffectual; the brothers became exasperated against each other, and would have proceeded to feats of arms if they had not been separated by the stream, and at length been borne away from the scene by their respective partisans.

Germanicus the Roman commander once more attacked the army of Arminius, and gained a splendid but useless victory on the plain of Idistavius, on the banks of the Weser; but having excited the suspicious jealousy of the Emperor Tiberius, the necessary succours were withheld, and Arminius was soon enabled again to make head against the Romans, and caused them to suspend their attempts on the freedom of Germany. This temporary tranquillity, however, gave rise to an intestine war.

Marobodus, a leader of the Marcomanni, but who had been educated in the court of Augustus, was enabled by his address and his power to unite many tribes of the Suevi in a confederacy with his own nation, which collectively assumed the name of the Marcomanni. At the head of this powerful league he attacked and conquered the nation of the Boii, seated in the south of Bohemia and a part of Franconia, and founded a formidable state, which extended over the Hermundurins, the Quadi, the Longobards, and the Semnones, and could bring into the field 70,000 warriors. Augustus had given orders to Tiberius to suppress with twelve legions the power of Marobodus, but a general insurrection of the Dalmatian tribes compelled him to conclude a peace which secured to him no benefit. The subsequent disasters of the Romans in Western Germany suspended all attacks on the Marcomanni, who continued to excite insurrections in the south of Germany.

Two great powers were thus formed, the Marcomanni and the Cherusci, the one under Marobodus and the other under Arminius. Between these, dissensions speedily arose. On one side the Longobards and the Semnones, wearied by the oppressions of Marobodus, deserted his party and united with the Cherusci; and on the other side Inguiomer, the uncle of Arminius, from jealousy of his nephew, was induced to pass from his party to that of the Marcomanni. After a war between these two confederations, which was carried on with all that systematic regularity which the two commanders had learned in the Roman legions, the Cherusci remained conquerors. Tiberius, instead of giving that aid to Marobodus which he eagerly asked, left him exposed during two years to the attacks of Catualda the Goth, who compelled him to abandon his territory and seek refuge amongst the Romans; and Catualda was soon exposed to the same fate by the hostilities of the Hermundurins, who had obtained the lead among the confederates which were headed by Arminius.

The death of Arminius occurred in the year 21 A. D., at the age of thirty-seven years, during the twelve last of which he had gloriously and happily conducted the affairs of his country with the applause of his followers, to whom, after his death, he continued an object of the highest veneration. He was indeed suspected of designs to introduce royalty and to assume the kingly dignity, but it is now impossible to confirm or refute the charge which has been brought against his memory.

After the death of their leader, the Cherusci, owing to internal disputes, gradually lost the rank they had held, and at length allowed the Romans to nominate a king of their country, who assumed the name of Italicus, and was the last branch of the family of Arminius. Under him they quarrelled with their allies the Longobards, and soon sunk down into an insignificant tribe, inhabiting the district to the south of the Hartz Mountains. About the same time, in the west of Germany, the Catti raised themselves to a state of some consideration, and, whilst the Romans were occupied in suppressing an insurrection of the Frisii, seized the fortresses constructed on the Rhine. They were assailed by Galba, and induced to cede the territory included between the Lahn, the Maine, and the Rhine, to the Romans, who parcelled it out among the most meritorious of their warriors. In the year 58 the Catti and the Hermunduri contended for the salt springs on the river Saale in Franconia. The numerous followers of Marobodus and of Catualda had established themselves about the same time on the Danube, between the rivers Gran and Morava, and there, under Vannius, whom they had received as a king from the Romans, founded a new kingdom, which was soon felt to be oppressive to the people. Although Vannius had found allies in the Sarmatian Jaziges, yet he could not resist the confederacy formed against him by the Hermunduri, Lygerii, and the Western Quadi, but fled from his kingdom and took refuge with the Romans, when he was succeeded by his nephew Sido, who had performed some important services for the Emperor Vespasian. In the west the Batavians, by an obstinate struggle, shook the Roman power, which was only retained by extraordinary exertions. About this period began the war which finally terminated in the downfall of Rome. The Suevi were attacked by the Lygerii, and applied for aid to Domitian, who sent them a hundred horse soldiers, the smallness of which number was deemed an affront, and induced them to form a confederacy with the Jaziges, which threatened Dacia and Pannonia. Domitian was defeated, but Trajan proved more successful; but afterwards war broke out more fiercely under Antoninus Philosophus. The barbarians disquieted the empire on two sides without cessation. On one side small but numerous hordes of the Goths arrived in Dacia to establish themselves by force of arms; but these were removed by having a still better country pointed out to them in a southern direction. But the more terrific hostilities were those carried on by the Marcomanni, who had combined with the Hermunduri and the Quadi. Marcus Aurelius contended with them during his whole life; and Commodus purchased a peace with them in 180 A. D. At the same time the Catti laid waste Rhætia and Gaul, and the Cherusci drove the Longobards back on the Elbe, and advanced themselves under the name of Franks. About the year 220 A. D. new tribes of Germans assailed the falling empire. The Visigoths, the Gepides, and Herulians, attacked the Romans in Dacia; whilst about the same time a new race called the Alemanni, a mixed tribe, of Sclavonic origin, made their appearance in Southern Germany, in opposition to whom was constructed the celebrated *Vallum Romanorum*, the traces of which are still visible from Jaxthausen to Ohringen. The power of Rome gradually sunk, partly from the constant and increasing hostilities of the Germans and other barbarous tribes, and partly from internal dissensions. As that empire was weakened, the Franks advanced to Spain, and under Probus conquered also the Batavian peninsula. Thus the Franks and Alemanns remained the most powerful of the German nation. The former of these lost the Batavian territory to the Saxons, and the latter were humbled before the Romans in the last victory obtained by that mighty people. At the beginning of the fifth century the barbarians assailed the empire on every side. The Vandals, Suevi, and Alani became masters of Gaul and Spain. They were followed by the successful Burgundians and the Western Goths; to the Burgundians succeeded the Franks, to the Western Goths succeeded the Eastern Goths, and to them the Lombards. Then began that stream of emigration which poured from the north to the south, and, as a conquering power, became the founders of the subsequent European kingdoms. A new change was given to the face of Europe by those vast emigrations of people, mostly Germans, though some came from countries farther eastward than Germany, which gradually overspread and subdued the west, introduced new forms of society, and framed languages, which, with but little variation, have continued till the present time. The new states, formed out of what had previously been portions of the Roman empire, though often at war with each other, and differing in smaller matters, chiefly arising from difference of soil and climate, were united in one similar system of policy and domestic government, and had those common habits strengthened by the providential introduction of the Christian religion, to which, though varying in some points of faith, they all in process of time professed adherence. We have here space only for a slight sketch of the history of those emigrations the beneficial effects of which we now enjoy, and to which, during a period of more than a thousand years, Europe has been indebted for the great advancement in the arts and the policy of civilization which has raised it above the other portions of the habitable globe.

These emigrations, which thus revolutionized Europe, began from the Frozen Ocean, extended themselves to the Atlantic Sea, and stretched over a portion of Northern Africa. They continued from the year 375, when the Huns first broke into Europe, till 568, when the Lombards had completed their conquest of the Roman empire. The causes of these excursions of whole tribes were various, arising in some cases from excessive population, in others from the pressure of more remote tribes, and in all from the charms of the beautiful and well-cultivated provinces which the Romans had gradually added to their dominions. At a more early period single tribes in small parties had changed their domicils, and thereby prepared the way for the greater emigrations. The constant conquests of the too extended empire began in the middle of the third century to make it totter under its own weight. Some powerful emperors, indeed, especially Constantine and Theodosius, suspended its fall; but others, under the pressure of circumstances, and from short-sighted policy, had taken parties of the barbarians into their pay, and, as a reward for their military services, had granted them lands to establish themselves on, on the frontiers of the empire. In this way settlements were granted to the Franks in Belgian Gaul, and to the Alani, the Vandals, and the Goths, in Dacia, Pannonia, and Thrace.

Many individuals of skill and courage were appointed to offices of high power and trust, and two of them, Ruffin and Stilicho, to the command of armies. The consequence of this was, that as they improved in education, they became fully acquainted with the weakness of the Roman government, and accustomed themselves to consider it as a prey, on which in due time they might seize.

The first movement towards the emigrations was given from the farthest part of Northern Asia, where a wild and warlike tribe, probably of Mongul or Kalmuck origin, were settled on the confines of China. These, expelled from their own settlements about the end of the first century, extended themselves towards the west, and drove the Alani, a tribe from Caucasus, out of Asiatic Sarmatia, and also dislodged the Western Goths, who were settled in ancient Dacia, and in the district between the Dniester, the Danube, and the Vistula. A portion of the Alani, after long wanderings, arrived on the Danube in what is now Hungary; connected themselves there with the Vandals, an original north German colony, who had been planted there about one hundred years, and, together, pressed forward into Germany, where they further strengthened themselves by a union with the Suevi, another German tribe which had been settled on the Upper Danube. These three populations, thus united, pressed forward to the Rhine, passed that river into Gaul, captured Mayence, Strasburg, and other flourishing cities, and devastated the whole country.

After these united people had in a few years spread desolation over a great part of Gaul, they pressed on towards the Pyrenees, and entered Spain. They subdued nearly the whole of that country about the year 411, divided it by lot amongst themselves, and left a very small portion of it only in the possession of the Roman garrisons. They however retained their former discipline and courage, and formed an alliance with some of the Western Goths who had penetrated into Spain, and attacked the conquerors. The Alani, who had founded a kingdom in Lusitania, now Portugal, were completely overcome in 418; and the remnant of them, after their defeat, received protection from the Vandals; and hence from that time their name is no more to be found. They carried on the war with the Romans, and thereby gained the ascendency over them, when, in 427, they formed the resolution to pass over into Africa. The kingdom founded there by Genseric, after maintaining itself a hundred and five years, was at last subdued by Belisarius, the general of the Greek emperor Justinian. The Suevi, who after the departure of the Vandals remained in Spain, extended and maintained their power till they were defeated and scattered by the Western Goths in 584. The Huns, with whom these movements had originated, established themselves in 377 in Pannonia, whence, conducted by their king Attila, they made a wasting campaign in Gaul; but that leader having met with a signal defeat in 451, turned towards Italy, and could scarcely be induced to spare Rome itself and to quit Italy. After his death in 453 the kingdom of the Huns disappeared, its inhabitants having been scattered and lost among the tribes of the Goths and Gepides.

The most dangerous enemies of the Romans were the Goths, to whom reference has before been made. They were a tribe of Germans originally established in East Prussia, on the shores of the Baltic, but had extended themselves through Poland, to the Black Sea, and had spread themselves over the Roman provinces on the Danube. In the third century, Rome found it necessary, or at least convenient, to allow of their establishment in Dacia. This powerful nation, the first amongst the Germans who embraced the Christian religion, was divided into two branches. The Eastern Goths were established on the river Don and the Black Sea, and the Western Goths between the Dniester, the Danube, and the Vistula. As they were assailed by the advancing Huns, and compelled to abandon their settlements about the year 375, the Romans conceded to them other settlements in the interior of their empire. The Western Goths, under their king Alaric, attacked the Romans in Italy in 403, several times assailed Rome itself, and conquered and plundered it in 410. His successor Ataulf led his followers into Gaul in 411, and from thence into Spain, where was erected the largest Gothic kingdom, which from 624 comprehended the whole of the Peninsula, with a part of France and some portions of Africa, and was only terminated in 711, by the victory of the invading Moors at the battle of Xeres.

The Eastern Goths had been settled by the Romans in the country of Mœsia, now known by the names of Bulgaria and of Servia. Odoacer, the chief of two German tribes, the Heruli and the Rugieri, who had served under the Roman standards, became the master of Rome and of all Italy. But he was subdued by Theodoric king of the Western Goths, who thus succeeded to supreme power in Italy in the year 493.

Though Theodoric was one of the greatest characters of his age, the kingdom he founded proved but of short duration. The Emperor Justinian, after his successes in Africa, attacked the power of the Goths, and by his generals, first Belisarius and afterwards Narses, once more, in 554, restored Italy to the dominion of the Greek empire. The Gothic sovereigns then disappeared, and in a few years no trace of them remained except their name, which has been applied to a peculiar style of architecture.

A few years after the fall of the Gothic kingdom, the greater part of Italy fell under the power of the Longobards or Lombards. According to some accounts, they were a tribe from Scandinavia, but according to others, a branch of the great German family of the Suevi, who in earlier times had inhabited those parts on the Elbe which are now known as Luneburg, and who had, after various excursions, been settled in Pannonia about 527. They advanced from thence, in 568, towards Italy, and under their king Alboin made a conquest of nearly the whole peninsula; a feat which was easily effected, owing to its desolate and depopulated condition. The chief opposition they encountered was from the city of Pavia, which, after a siege of three years, was captured in 572, and made the capital of the kingdom. Lombardy flourished during two centuries, till it fell under the power of the Emperor Charlemagne in the year 774.[1]

The history of Germany between the years 560 and 670 is wholly destitute of the materials necessary to frame a consecutive narrative. The only writer of the period was Gregory bishop of Tours, and his attention was wholly engrossed by the events of the Frank kingdom which had sprung up in Gaul, and had begun to decline, the manners, laws, and customs of which he has faithfully represented. The only part of his voluminous work which relates to Germany, is an account of an alliance formed between the Bavarians and Longobards, which offended the Franks, and proved the cause of hostile movements, which, however, were speedily and pacifically terminated in 589. From the death of Dagobert in 632, the dominions of the Frankish kings of the Merovingian race were gradually diminished. One portion after another fell into the hands of great lay or ecclesiastical feudatories; but these circumstances seem to have had little effect on the German tribes. They scarcely interfered in the Frankish contests; and though not without internal controversies and contentions, these were of local and temporary importance only, and seldom produced extensive or calamitous convulsions. Preparations for defence against the Franks were carried on; some fortresses were constructed, and military discipline was maintained. But the most distinguished feature of the century, was the spread of the Christian faith. A saint from Ireland, with his assistants, laboured amongst the German tribes with great diligence and success. The cross of Christ had been planted among them, and publicly acknowledged as their standard; but the remains of heathenism, with its superstitions, were cherished by the great mass of the rude people, and the sacred rites of the Druids were performed in their hallowed groves.

Columban indeed found almost everywhere Christian priests, but their knowledge was slight, many of their ceremonies were idolatrous, their faith was wavering, and, what to the Irish saint was most annoying, their dependence on the see of Rome slightly if at all acknowledged.

The success of the Irish missionaries is much lauded by the monkish writers of the ages that followed their exertions; and whatever effect they may have produced upon the manners and morals of the Germans, it must be acknowledged that they were successful in bringing that people into that close connection with the great head of the Christian church, which became, in a succession of centuries, under the guidance of Providence, one of the means of their advancement in civilization.

During the same period was laid the foundation of those small sovereign states which successively grew up in Germany under ecclesiastical and lay chiefs, who bore the titles of archbishops, bishops, abbots, princes, dukes, counts, margraves, landgraves, and barons. These, in process of time, had the indirect choice of the emperor, who assumed the title of Chief of the Holy Roman Empire, and was elected to that dignity by princes called electors, who were independent, though nominally the household officers of the reigning emperor. The emperor Charlemagne was the real founder of the holy Roman empire, although that name was not given to it until a later period. He was of the race of the Frankish kings, the son of Pepin and the grandson of Charles Martel, and, jointly with his brother Carloman, ascended the throne of Gaul in 768. He was one of those extraordinary characters calculated to change the face of the civilized world. The history of his actions, during a long and glorious reign of forty-seven years, would relate his transactions in France, Spain, Italy, and Germany, but must here be restricted to those which relate to the last of those countries. (See article FRANCE.) The death of Carloman in 771 gave him the sole command of France, and his authority extended over Italy and a portion of Germany. He wished to obtain more power in that direction, and resolved to attack the Saxons, and made religion one of the pretexts for his attempt. The Saxons were a pagan people settled in Holstein and Westphalia, between the Weser and the Elbe, and, like all people in a barbarous state, thought themselves warranted by this independence in making incursions on their neighbours. They were frequently defeated, and made treaties of peace, which they soon broke, and thus continued until they were completely subdued in 803, when Charlemagne settled some of them in Flanders, and others in Switzerland, whilst the country was occupied by a Vandal tribe from Mecklenburg.

This long resistance of so weak a power was owing to the enlistments of the troops of Charlemagne being but for one year, and to the other wars in which he was engaged with the Lombards, the Danes, and the Saracens, as well as with some of the feudatories in his patrimonial dominions. He had long nourished the desire to become emperor of the West, and had negotiated a treaty of marriage with Irene, empress of Constantinople, which would have led to a general union of all Christendom under one head, but which was frustrated by the death of that princess. He was, however, in the year 800, crowned in Rome, by Pope Leo III. and acknowledged as emperor of the West in all the extensive dominions he had obtained. He reigned as emperor fourteen years, and died in 814, at Aachen or Aix-la-Chapelle in Germany, which had been early selected as his favourite residence.

The German empire may be dated from the treaty of Verdun in 843, by which the Frankish kingdom was divided. Lorraine was added to it in 924. Otto the Great brought the kingdom of Italy in 961, and the imperial dominions in that country in 962, into close connection with the empire of Germany, which then for the first time received the appellation of the Holy Roman Empire. But the Italian states were rather feudatories than subjects of that empire, and this slight bond was in a few years dissolved. Bohemia was a part of the empire under Otto, and continued to be so considered until a later period. For a short time the kings of Denmark owned allegiance on account of Jutland, and the king of Poland on account of Silesia, a state of things which continued till 1355. Hungary was also a part of the empire from 1045 till the reign of Henry IV. Prussia likewise, the possession of the Teutonic order, stood in the same relation to the empire from 1230 to 1525, and Livonia from 1205 to 1556.

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[1] See Luden's *Geschichte des Deutschen Volkes*, 2 und 3 Theil; also Sartorius *De occupatione et divisione agrorum Romanorum per barbaros Germanicæ stirpis*, &c. 1812.

The Emperor Conrad II., in 1033, united a part of the kingdom of Lower Burgundy with the empire, which thus comprehended Franche-Comté, Dauphiné, the Lyonnois, West Switzerland, Provence, and Savoy. These portions were, however, one after another separated from it; and in 1648, when Switzerland and the United Netherlands were declared independent, none of them remained to the empire but Savoy, Mompelgard, and the bishopric of Basel. The principles which regulated the intercourse of the emperor with the several princes, and of those princes with each other, were grounded, not, as in other states, on charters granted by the chief, but on resolutions adopted at various times amongst the several states in general assemblies. The most memorable of these resolutions were, 1*st*, that of internal peace in 1495; 2*dly*, the Golden Bull, so called from having a seal of gold appended to it. This was agreed to under the Emperor Charles IV. in 1356, and confirmed at two subsequent diets or assemblies, which were held at Nuremburg and Metz. The chief object of it was to secure to the several states the right of independent voting in the election of an emperor. 3*dly*, The treaty of Passau in 1552, or rather that concluded in consequence of it at Augsburg in 1555. This treaty established religious peace, and conferred on the several sovereigns who had embraced the Lutheran religion the free exercise of it in their dominions; and to the subjects the right to change their religion, and to leave the dominions without permission from the princes. 4*thly*, The treaty of Westphalia, concluded in 1648, which extended freedom of religion to those who had embraced the reformed or Calvinistic religion, as well as to the Lutherans.

Germany was divided, in 1500, under the Emperor Maximilian I. into six circles, viz. Franconia, Bavaria, Suabia, Upper Rhine, Westphalia, and Saxony. These were increased in 1512 to ten, by adding to them the circles of Austria and Burgundy, and forming two circles out of that of Saxony, and two out of that of the Rhine. But Lausatia, Silesia, Bohemia, Moravia, and other countries, though encompassed by the empire, were nevertheless not included in it. Each of these circles had at its head an ecclesiastical and a lay prince, who assembled the states of the circle, communicated between the emperor and them, and called their attention to the civil or military affairs of the body. Besides these, each circle had a military chief, generally denominated the field-marshal, who commanded the forces, and had the care of providing subsistence, arms, and other stores. In the assembly of the states a majority decided every question; but the decision required to be conformable to the general laws of the empire.

After the reformation of religion at the treaty of Westphalia, the circles were divided into Catholic, Protestant, and mixed. The circles of Austria, Bavaria, and Burgundy belonged to the first; to the second appertained Saxony; and to the third the remainder.

The imperial dignity was retained by the family of Charlemagne till the year 888. After that time it was elective, although for a long period there was a general adherence to the family which had been once chosen. At the commencement, the emperor was elected by the whole of the princes, whether lay or ecclesiastical; but during an interregnum, which lasted from 1197 to 1272, the highest or arch-princes, called *kurfursten*, assumed the exclusive right of electing, and by a subsequent union amongst themselves, at the election of Charles IV. in 1356, secured the power they claimed. Frankfort was the place of election to which the Archbishop of Mentz summoned the princes or their ambassadors who were allowed to vote; but none of them was to be attended by more than two hundred followers, of whom only fifty were permitted to be armed. All strangers, even sovereigns, and the ambassadors of foreign potentates, were commanded to leave the city on the day of election. After the choice had been concluded, the person chosen, or his representative for him, was required to take the prescribed oaths to maintain the golden bull and the several capitulations. He was then led into St Bartholomew's Church, and declared emperor. The early emperors were crowned by the pope or his delegates, and several of them made toilsome marches to Rome, chiefly for that purpose. Till they received that coronation they were only styled kings; and the popes carried their arrogance so far as to claim the right, not merely of confirming and crowning, but even of electing and deposing the emperors. In 1338, however, the electors asserted their right to elect the emperor independently of the pope, and this became a law of the empire.

It became usual, during the lifetime of an emperor, to choose a successor to the imperial dignity; and the person so chosen was designated king of the Romans. This institution first arose in 1220, when Henry VII., a son of the Emperor Frederick II., was elected. He was bound to take oaths similar to those enjoined upon the emperor; but during his lifetime he was forbidden to mingle in the public business of the empire. In case of the death, of the minority, or of a protracted absence of the emperor, the golden bull had provided that the Prince of Saxony should exercise vicariate power in Saxony and Westphalia, and the Prince of Alsace similar power in Franconia, Suabia, and the Rhenish circles. They could call assemblies, collect and control the finances, and administer justice; but they had no power to grant imperial dignities or feudal estates. In neither of the circles of Austria or Bavaria was any provision made for the exercise of this vicariate power.

The states of the empire, or general assembly, consisted of the clergy and laity, who held their property direct from the empire. The first comprehended the archbishops, bishops, prelates, abbots, abbesses, and the masters of the Teutonic and St John's orders; the second included arch-princes, dukes-princes, landgraves, margraves, burgraves, graffs or counts, and the free imperial cities. After the peace of Westphalia, the states were divided into the Catholic and the Protestant portions, who on many subjects deliberated and resolved separately. Whilst the inferior princes exercised the executive and legal authority within their own states, those greater affairs which related to the empire in general, and to the respective connection of one sovereignty with another, were brought under the notice of the general assembly, in which the emperor presided either personally or by his commissary, who was always a prince of the empire, and who was attended by an assessor. The assembly was divided into three benches or colleges, in which every thing was decided by a majority of voices; but at a subsequent sitting they were united, and then the majority of the three benches determined the final resolution. Many subjects were intrusted to the examination of imperial deputations or committees. The power of making war or concluding peace belonged to the assembly, but was sometimes intrusted solely to the emperor, though only in pressing emergencies. The emperor had originally the power of nominating to the ecclesiastical dignities; but the popes gradually so intruded their authority, as to reduce the monarch's power to almost a shadow. After the peace of Westphalia, the empire was divided between the three religions. In the Catholic states, the pope and the bishops had usurped the judicial power, and administered it according to the canon law. In the Protestant parts, all the juridical power of the church was abolished, and the affairs of religion were left to the management of consistories chosen from among the subjects, in most cases on the nomination of the princes.

The power of coining money appertained originally to the emperor, but was gradually obtained by several of the chiefs of the respective states; but the fineness and the weight of the coin were directed by the authority of the emperor and the general assembly. The tolls on certain rivers and roads, the regulation of the great fairs of Frankfort, Brunswick, and Leipsic, and the conveyance of letters by post, as well as providing post-horses, were the regalia of the emperor; and the latter were granted hereditarily to the Prince of Taxis, whose successors, even to the present day, have some power and some profit connected with them. The degrees in the universities were conferred in the name of the emperor; and, through a prince named by him, called the Pfalzgrave, the doctors, licentiates, advocates, solicitors, notaries, and other legal officers, were admitted to practise their professions in the courts of law.

The finances of Germany, viewed as one empire, were under the direction of the general assembly. The contributions were called Roman months, each of which amounted to a force of 20,000 infantry and 4000 cavalry; and the number of these months which were granted to the emperor was adapted to the occasion that required them. These were divided among the several states, and called their contingents. They were, however, in process of time, frequently converted into payments in money, at stipulated rates. In later times each Roman month was estimated at 128,000 florins, or about L.12,000 sterling. This tax was paid either at Augsburg, Frankfort, Nuremburg, or at Leipsic, and the collectors of it were called Pfenning-meister.

Many of the individual princes were under greater or less restraint in the exercise of power, from the rights of their state assemblies; and when there was a collision between them, an appeal was made to the imperial tribunals. To those courts the princes were answerable for the debts they incurred, and by them their dominions were on some occasions put in a state of sequestration; but in other of the principalities there were no assemblies of the states, and consequently less limitation of powers, though in them the sovereign could be brought under the authority of the imperial chamber, and obliged to fulfil his engagements.

This sketch of the ancient constitution of the German empire is interesting, from the length of time which it lasted, and from having, during ten centuries, with all its complexity and impediments, preserved, among the many independent states of which it was composed, a feeling of nationality, which is still cherished by all who are descended from the rude and ancient tribes of German origin. This constitution gave to Germany but little other unity, and less power, and rendered the greatest of the European kingdoms the weakest of them all. It kept them, however, from suffering the misery of a conquered and an oppressed people, and has led them to a degree of intellectual culture, in which they have been equalled by few, and exceeded by no other nation. Perhaps the distribution of the territory in such small sovereignties was one of the most effectual means of advancing and securing that reformation of religion, which all Protestants regard as one of the greatest blessings to the whole human race.

The history of Germany in modern times is so much connected with that of the rest of Europe, especially during the wars of the last and the present centuries, that a narration of it would only be a repetition of what is to be found in this work under the heads of EUROPE, FRANCE, and especially BRITAIN; and to them the reader is referred.

The peace of Presburg in December 1805 first gave occasion for the dissolution of the ancient constitution of Germany. By that treaty the Dukes of Bavaria and Wurtemberg were raised to the rank of kings, and the Prince of Baden to that of an independent sovereign. Soon afterwards (28th May 1806) the arch-chancellor of the empire declared to the assembled diet, that, though contrary to law, he had nominated Cardinal Fesch, the uncle of Bonaparte, as his coadjutor and successor; and on the 12th of July the new kings of Bavaria and Wurtemberg, and sixteen other princes, formally announced to the Emperor Francis II. their separation from the empire, and invited the other princes to join them in a new alliance. The Emperor Francis on the 6th of August issued a declaration of his withdrawing from the head of the empire, abandoning the title of Emperor of Germany, and assuming that of Emperor of Austria.

In the room of this dissolved constitution, of nearly a thousand years' continuance, the several states which had been accomplices in its destruction, with some others added to them, formed what was called the Confederation of the Rhine, which, by February 1808, had received the adhesion of most of the princes, and placed Bonaparte at its head, under the title of protector. Two years afterwards, the protector, by his sole decree, united the rivers Scheldt, Meuse, Rhine, Ems, Weser, and the mouths of the Elbe, to France, and robbed of their dominions several of the smaller princes, whom he had contracted to defend. With these augmentations he continued his aggressions till the dispersion of his army in Russia.

As the events which produced the deliverance of Germany from the yoke of France belong to the history of that country as much as to this, our notices of it here must be brief. After the destruction of that vast army which penetrated into Russia, almost all the states of the north of Germany, with Prussia at their head, declared war against France. An army was quickly collected from the French conscription, and, with a wonderful celerity, Bonaparte, at its head, was enabled to penetrate into Saxony, to threaten Prussia, and exhibit a force which he supposed would overawe Austria. The battles of Lutzen and Dresden, in 1813, produced an armistice, during the continuance of which negotiations for peace between Russia and Prussia on one side, and France on the other, were carried on under the mediation of the Emperor of Austria. But as peace could not be concluded, Austria was induced to join the allies against France. During these periods a spirit had risen in Germany which animated all classes of its inhabitants, so that those powers which still clung to the interests of France could place no reliance on the support of their subjects. Bonaparte, overpowered by numbers, with an army of raw troops from his own dominions, and with troops of doubtful fidelity from the dominions of his allies, was surrounded, and, after being compelled to retreat from Dresden, fought the important battle of Leipsic against the armies of Russia, Austria, Prussia, and Sweden. The issue of that battle was not considered as doubtful even from its commencement; but, during the contest, the Saxon division of the army marched from their station in the French line, and took up their position with the Prussians. The result of the battle was a hurried retreat from Leipsic to the frontier of France, which was then the river Rhine. On the retreat to the Rhine, the shattered remains of the French army were intercepted by the forces of Bavaria. A battle was fought at Hanau, about twelve miles from Frankfort, which, though gained by the French, tended only to hasten their flight, and led to the loss of much that remained of their stores, arms, and ammunition.

By the end of the year 1813, the French were totally expelled from every part of Germany, and the occupation of Paris by the allies, early in 1814, led to general tranquillity. The Congress of Vienna soon afterwards met, and never was a body of plenipotentiaries plunged into such a labyrinth of difficulties. The great extent of country which had been delivered, and was without any government; the number of claims urged either from previous possession, or from active service in effecting the deliverance; were such as to perplex with difficulties which appeared to be nearly insuperable, and, in whatever way they were terminated, must necessarily have left great dissatisfaction. They were, however, so settled as to leave Germany in the state described in the preceding pages; and whether they could have been adjusted with more regard to the principles of equity is not for us to decide.

The return of Bonaparte from Elba produced most gigantic efforts upon the part of all those smaller sovereigns who had been reinstated in their dominions by his downfall. The number of troops actually mustered and prepared to march when the battle of Waterloo took place and suspended them, amounted to more than 1,200,000 men. They were not indeed all armed, but many more men could have been raised if arms for them could have been procured. These efforts, added to the costly exertions made in the war of the deliverance, have encumbered with debts almost every state, as is noticed in the detailed account of them. These debts, however, have not been solely created by the events in question. The ephemeral kingdom of Westphalia, formed for Jerome Bonaparte, extended over Hanover, Brunswick, and Cassel, as well as the circle from which it was denominated. During his government, all the different portions of his kingdom had incurred vast debts in executing his projects. These debts were owing to individuals or corporate bodies within the dominions attached by the congress to their new sovereigns; and the princes, for the sake of the people, were compelled to assume the debts, and provide means for their liquidation, and the payment in the mean time of the interest. Thus the ungrateful task of providing for the expenditure attending the subjection of their states, as well as for their liberation, became one of the first duties on their resumption of power. This odious consequence of former circumstances has been industriously improved by the enemies of tranquillity, and has created considerable discontent.

These feelings of discontent were chiefly confined to writers in periodical papers of the smaller kind, and to associations amongst the young men in those universities in which the discipline was the most relaxed. The demonstrations of this dissatisfied state of the public mind were few, and scarcely noticed except in narrow circles. The murder of Kotzebue by Sandt, and a similar attempt on the life of Ibell, the minister of Nassau, were tokens of great excitement amongst a few fanatics; but the judicial inquiries which followed these transactions seemed to the governments to prove that the mischievous views of insurrection or assassination were confined to a very narrow circle. There was no interruption to the full exercise of the powers of the law, nor any necessity for increasing the military establishments. The Revolution in Paris in 1830 produced, however, considerable excitement in several parts of Germany, particularly in Hanover and in Saxony, and also in Brunswick, though in the latter country it was more owing to the personal character and conduct of the sovereign, which led to his deposition and to the investing of the power in the hands of his brother. In Hanover, the suspension of the university of Göttingen, and the mild but firm measures of the government, soon led to tranquillity; and in Saxony, though some mischief was effected, it was but of short duration, and the kingdom soon returned to that tranquil state which was habitual to the greater part of its inhabitants.

So matters continued till 1848, when the spirit of the French Revolution of that year soon spread over Germany, and awakened the slumbering consciousness of the German people. The effects were seen in various political agitations and commotions, and in the important concessions made by the terrified princes to the demands of their subjects. On the 2d of March the subject of a general representation of the states of Germany, was discussed in the assembly of the states of Baden, and on the 5th of that month, fifty-one German notables met at Heidelberg, passed various resolutions, appointed a committee of seven to prepare the plan of a new German parliament, and called a preliminary meeting, or *Vor-parlament*, to meet at Frankfort on the 30th. This vor-parliament met accordingly, and determined the mode of election for the great national assembly, which was appointed to meet at Frankfort on the 18th of May. When the assembly met, they received a message from the federal diet, expressing the desire of the latter to act in friendly unison and co-operation with the representatives of the nation. The assembly's chief occupation for several weeks was to determine the nature and limits of the authority that it was deemed necessary to lodge in some sort of central executive government, and the result of their deliberations was the appointment of the archduke John of Austria to the provisional office of regent, vicar, or administrator (*Reichsverweser*) to administer the central government till the election of an emperor; and, so completely were the princes humbled, that this appointment was immediately confirmed by the diet, as so instructed by their respective governments. The archduke accepted of the office of vicar, and was formally installed at Frankfort 12th July. At the end of June the committee to whom had been intrusted the task of preparing the draft of a constitution for United Germany, presented their report to the assembly, and the following were its principal provisions. Germany was to form an empire, comprising not only all the states of the confederation, but also the extra-federal provinces of Schleswig, Posen, East and West Prussias, and Austria; and the existing sovereignties were to be limited and subordinated down to the point at which their action might be found compatible with the perfection of imperial unity. The head of the empire was to be a *kaiser* or emperor, whose office was to be hereditary and his person inviolable, but whose powers were to be controlled by a diet of two chambers. The upper chamber of the diet was to be constituted by the reigning subject sovereigns or their deputies, and a deputy from each of the four free cities, with a complement of as many imperial councillors, with certain qualifications, as should raise the number of the members to 200. The latter were to be appointed by the sovereigns or diets from the citizens of any German state, to serve for twelve years, one-third going out every four years by rotation. The lower chamber was to consist of representatives elected by the people in fixed proportions according to population, but by methods to be determined by the governments of the respective states. The members were to be elected for six years, but one-third was to retire every two years. The diet was to hold its sittings, and the emperor to reside, at Frankfort. The emperor's dignity was to be maintained by a civil list voted by the diet. He was to exercise the executive power in all the business of the empire; to nominate and appoint the officers of the state, of the army and navy, and of the staff of the national guard. He was to have a voice in proposing measures to the diet, and the right of affirming their acts. His ministers were to be responsible, and no edict was to have legal force without the signature of one of them. In the emperor and parliament together was to be vested the national representation of Germany with respect to foreign states, the disposal of the army, the right of conducting negotiations and concluding treaties, making peace or declaring war. Provision was also made for the establishment of an imperial court of justice, to have the cognisance of all disputes between the citizens of different states; between the German states and princes; and between princes and their diets; and of all imperial fiscal matters. Free municipal institutions were to be guaranteed; a national guard was to be instituted; there was to be unrestricted freedom of public meetings; and absolute freedom of religion, science, and the press.

Such were the outlines of this memorable constitution. The members of the assembly, however, being men better acquainted with theoretical speculation than with practical business, wasted their time in idle discussions, and the only one of their acts worth further notice was their offering the imperial crown to the king of Prussia, which his majesty felt himself constrained to decline. In May 1849 the assembly split into two parties, one of which transferred its sittings to Gotha, and the other to Stuttgard, and so the bubble burst. The vicar resigned his office in December; the princes have recovered their sovereignties, and the *bund* has been renewed.

Situation and boundaries. Germany may be considered in two points of view, either politically, as the country included within the limits of the Germanic confederation; or ethnologically, as the country inhabited by the people who speak the various branches and dialects of the Deutsch or German language. In the latter respect, the Deutsch or German nations are found to extend in a compact mass along the shores of the German Ocean and the Baltic or East Sea, from a point between Calais and Gravelines, near the Straits of Dover to the Gulf of Riga, and from that long line of boundary southwards, with dimensions continually narrowing to the Alps and the Adriatic Sea. Politically considered, Germany is situate between 45. and 54. 50. N. Lat. and 5. 43. and 20. 50. E. Long., bounded N. by the German Ocean, Denmark, and the Baltic Sea; E. by West Prussia, Posen, Poland, Galicia, Hungary, and Croatia; S. by the Gulf of Venice, Italy, and Switzerland; W. by France, Belgium, and Holland. Its whole extent, including rivers and lakes, is about 246,770 square English miles, which is about the 16th part of Europe, the 215th part of the whole dry land, and the 800th part of the whole surface of the globe.

Face of the country. The southern and the central parts of Germany are occupied by numerous ranges of hills and mountains, sometimes separated only by narrow valleys, and elsewhere forming large elevated plains or table-lands, while the northern portion of the country sinks into a wide sandy moorish plain, but little raised above the level of the sea. The Tyrol and the south-eastern provinces of Austria are occupied by branches of the Alps, which present long narrow valleys, dismal precipices, cataracts, and glaciers; and the northern border of this alpine region may be defined by the towns of Bregenz, Southofen, Fuessen, Traunstein, Salzburg, Gmunden, Steier, St Polten, and Baden. Immediately to the northward lies the valley of the Danube, which stretches almost across the breadth of Germany, declining from an elevation of about 2200 feet, near the source of the river, to about 350, on the borders of Hungary. In passing through Bavaria the valley expands into a plain of considerable extent, which, at Ratisbon on its eastern border, has an elevation of about 1000 feet, and gradually rises as it approaches the mountains that surround it. Further north the middle region of Germany is occupied by various ranges of hills, terminating northwards in a line drawn through the towns of Aachen, Duren, Krefeld, Dortmund, Soest, Paderborn, Bielefeld, Teklenburg, Bentheim, Furstenau, Rehburg, Hanover, Braunschweig, Magdeburg, Dessau, Halle, Weissenfels, Wurzen, Meissen, Bautzen, Goerlitz, Liegnitz, Breslau, Ramslau, and Rosenberg. These hills form a series of elevated valleys and table lands, the most remarkable of which is the valley of Bohemia, which has all the appearance of having been a lake before it was drained by the bursting of its mountain barriers. This region is much diversified by picturesque scenery, and abounds in verdant and well-wooded valleys, watered by clear streams. The banks of the Meyn, the Fulda, and the Moselle, are remarkable for their varied scenery, and the valley of the Rhine unites the grandeur of a fine landscape with the appearance of a highly fertile country. To the northward again of the hilly region, the country sinks into plains, which fall very gradually from an elevation of about 300 feet at the foot of the hills to the level of the sea. These plains extend through Lower Silesia, Lusatia, Brandenburg, Pomerania, Mecklenburg, Holstein, Hanover, and the lower part of Westphalia. To the west of the Elbe the flat country is almost entirely destitute of trees, and presents only a succession of level tracts, covered with heath and juniper, and of moors consisting chiefly of deep beds of turf intersected by rivers which flow in depressions from 100 to 200 feet below the general level of the plains. To the east of the Elbe the country is more sandy, but the sandy tracts are covered with pines, and interspersed with fertile spaces of sometimes considerable extent. The beds of the rivers also are generally wider and less deep than in the western part of the plain. Through the northern part of this plain a higher tract may be traced from west to east, from Oldeslo in Holstein to Schwedt on the Oder, about 70 miles from the sea. Eastward of the Oder it continues for some distance due east, then gradually approaches the sea, terminating on the banks of the Niemen near Grodno. It seems to have formed at one time the shore of the sea, and it is on its northern sides that are found those numerous erratic blocks or boulders that have attracted so much of the attention of geologists. Though it does not rise into hills, it forms the watershed between a number of small streams that run direct to the Baltic, and others that run southward to the Elbe, the Oder, and the Vistula. To the alpine region belong the territories of Liechtenstein, Tyrol, Southern Bavaria, Styria, Salzburg, Carinthia, and Illyria; to the middle region, Baden, Wurtemberg, Hohenzollern, the greater part of Bavaria, the northern portions of Austria, including Bohemia and Moravia, Hessen, Nassau, Luxemburg, Schwartzburg, Reuss, Saxony, and Anhalt; to the low country, Hanover, Oldenburg, Braunschweig, Lippe, Holstein, Mecklenburg, and nearly the whole of Prussia.

Mountains and hills. The Rhætian Alps extending eastward from Switzerland, occupy the provinces of Vorarlberg and Tyrol, where they are divided into two branches by the valley of the Inn the northern branch being called the Algauer Alps, the southern the Tyrolese Alps, through which lies the Brenner Pass. with a summit elevation of 4700 Paris feet above the level of the sea. In the same chain is the highest mountain of Germany, the Orteler-spitz, the elevation of which is estimated by various authorities at between 11,800 and 14,004 Paris feet. Further east, the Noric and Carnic Alps, with their various branches, occupy the greater part of the Austrian territory south of the Danube.

Westward of the Rhine the Vosges mountains extend into the lower palatinate of Bavaria, under the names of the Wasgau mountains and the Hardtwald, the highest of which, the Donnersberg (Fr. *Mont Tonnere*), rises to 2223 feet. The Hochwald and the Hundsruck (dog's back) fill up the rest of the country between the Rhine and the Moselle. To the north of the latter river the country is occupied by the Eifel mountains and branches of the Ardennes, whose range eastward is cut through by the valley of the Rhine. In the N.E. angle formed by the Rhine, in its course from the Lake of Constance to Mentz, and to the N.W. of the Upper Danube, the country is traversed by the various diverging ranges of the Schwartzwald or Black Forest, in Swabia, the Rauhe Alp, the Odenwald, and the Steigerwald, which are terminated northwards by the valley of the Meyn. North of that river, between the Rhine, the Saale, and the Elbe, are the Taunus, the Westerwald, the Ohreberg in Nassau, Hesse, and Rhenish Prussia; the Rodhaar and Eggsgebirge, in Westphalia and Waldeck; the Osning or Teutoburgerwald, in Lippe, Westphalia, and Hanover; the Hohe Rhön and the Spessart, in Bavaria and Electoral Hesse; the Vogelgebirge in Upper Hesse; the Frankenwald, Thuringerwald, and the Hartz, in Bavaria, the Saxon duchies, and Hanover. East of the Meyn and the Saale on the Fichtelgebirge, in the upper palatinate of Bavaria; the Boehmerwald on the south-west, the Erzgebirge on the north-west, the Riesengebirge or Sudetic Mountains, and the Geisenkergebirge, on the east and north-east, and the Zdarsky-Hory, on the south-east of Bohemia. The Erzgebirge are connected with the Fichtelgebirge by the Egergebirge, whose highest points rise only to 2381 and 2335 feet.

None of these mountains attain an elevation comparable to that of the Alps; and the central knot, the Fichtelgebirge, which send their rivers to the German Ocean, and the Baltic and Black Seas, are less a connected range of mountains than an elevated plateau, with a mean elevation of little more than 2000 feet. Their highest point, the Schneeberg, is estimated by different authors between 2599 and 3303 feet.

The principal points of elevation in or among the other ranges are these:—

	Eng. feet.
The Hohnacht, in the Eifel range	2349
Ernstberg, in the Schneifel or Schnee-eifel	7497
Laacher-see	748
Feldberg, in the Schwartzwald	4966
Belchen ,,	4656
Herzogenhorn ,,	4592
Kandel ,,	4165
Kesselberg ,,	3417
Seekopf ,,	3204
Kniebis ,,	3097
Belchen Pass ,,	3631
Kilben Pass ,,	3521
Kniebis Pass ,,	2734
Kinzigthal Pass ,,	2670
Feldsee and other lakes, in the S. Wald.	1532 to 3632
Katzenbuckel, in the Odenwald	2328
Sieglitzberg, in the Frankenwald	2456
Hohe-kulm ,,	2424
Beerberg, in the Thuringerwald	3272
Schneekopf ,,	3257
Inselsberg ,,	3044
Gickelhahn ,,	2819
Blissberg ,,	2849
Eissenberg ,,	2884
Finsterberg ,,	3097
Wurzelberg ,,	2530
Hartz plateau, general elevation	1922
Brocken or Blocksberg, in the Hartz	3746
Heinrichshohe ,,	3375
Village of Hohngeiss ,,	2051
Klausthal ,,	1869
Geiersberg, in the Speissart	2029
Great Feldberg, in the Taunus	2892
Little Feldberg ,,	2563
Hunau, in the Westerwald	2745
Siebengebirge (Lowenberg), in the Westerwald	1602
Crest of the Erzgebirge, nowhere below	2136
Plateau of Gottesgabe, the most elevated town in Germany, in the Erzgebirge	3578
The Keilberg ,,	4019 to 4163
Fichtelberg ,,	3973
Schwarzwald, near Joachimsthal	3951
Schneekopf ,,	3909
Riesengebirge	1708 to 4272
Schneekoppe or Riesenkoppe	5254[1]

Geology. The nucleus of the Alps consists of granite. Along the southern slopes of the Rhætian Alps, and in the valley of the Adige (Etsch), the peaks are composed of primary rocks, and rugged masses of dolomite or magnesian limestone look at a distance like buildings in ruins. This formation overlies porphyries, which seem to have undergone, through the action of great heat, a modification that appears even in limestone, having changed its primitive compact into a granulated texture, and destroyed the organized bodies that it contained. At the base of the Styrian Alps, freestone, clay, and shell-marl, accompanied with large deposits of fossil vegetation, are found in the valley of the Muhr. These mountains contain no thermal water, but a great number of chalybeate springs. The Alps of Salzburg are composed of granite and other primitive rocks, and their summits are lost in the clouds, though their elevation appears less than that of the limestone mountains below them, an optical illusion occasioned by the abrupt slopes of the latter. To the west of the lower part of the Ens there are fine marbles and rock salt; to the east, mines of lead, silver, iron, and coal. To the north of the Danube, in the valley of the river March, the low plains are covered with alluvium and detrital matter. On the adjoining slopes of the Gesenke, Karpathian, and Sudetic mountains, there are isolated basins of the coal formation, composed of freestone, schistose clay, clay-ironstone, porphyries, metalliferous limestone, containing lead, iron, and zinc, rocks composed of ancient shells, clay, gypsum, and beds of rock salt. The adjoining summits consist of granite; but schistose and micaceous rocks appear in the lower parts. In Silesia, the alluvial plains abound with bluish clay.

The constitution of the Bohemian mountains is essentially different in several respects. The Boehmerwald consists of small-grained granite, micaceous rocks, slate-schist, and syenite. These rocks present very rugged tops, with pyramidal and needle-shaped peaks, separated by deep ravines. Forests occupy their upper parts, while their bases are covered with pools and marshes. The summits and rounded flanks of the Riesengebirge indicate the former presence of volcanic fires; they contain freestone and basalt, surrounded with limestone full of fossil shells. The southern slopes of the Erzgebirge show also many traces of volcanic agency. Their porphyries have undergone some violent upheavings; the celebrated mineral waters of Carlsbad and Töplitz spring from among them, and the ferruginous waters of Bochin and Eger, and several others less celebrated, rise from ground that bears the marks of igneous origin. Near Eger is the Rammerberg, a conical hill covered with lava and scoriæ. The substructure of the Erzgebirge is granitic, and its mineral wealth, particularly on the Saxon side, is of such importance as to have given the chain the name it bears, which means metalliferous mountains. The eastern part, however, of the Erzgebirge, towards the Elbe, becomes a sandstone range, which bears the name of the Saxon Switzerland, and is much celebrated for its grotesque rocks, romantic valleys, and sublime and picturesque views. Towards the centre of Bohemia, near the banks of the Moldau, the primitive micaceous rocks are covered with alluvium, in which are found fossil wood and iron ore. "In the country round Prague there is a most complete and symmetrical exposure of the whole silurian system, whether as respects the clear order of the strata, or the vast abundance of organic remains." In the mountains of Moravia, particularly towards the north, the freestone is so easily decomposed as to exhibit everywhere at a distance the forms of extensive ruins.

The course of the Danube divides Bavaria into two great geological districts. On the south, from the Lake of Constance to the mouth of the Inn, extend vast tracts of the same epoch as the formations of the Paris basin, reposing upon the older rocks that underlie the granite of the Alps. To the north of the river there is a large development of oolitic rocks, chiefly of the later, middle, and newer periods, amongst which are the remarkable and valuable lithographic limestones of Solnhofen, rich in fossils of various kinds. The alluvial and transported soil of this region contains the bones of extinct species of animals. In the valley of the Regen are found the bones of tapirs and rhinoceroses; in the valley of the Meyn the bones of gigantic elephants; and the caverns of the limestone rocks of the Steigerwald contain immense masses of the bones of lions, hyænas, and various ruminant animals scattered in the alluvial clay. Deposits of the same kind abound in the valley of the Neckar. The calcareous schists of the valley of the Altmuhl contain the remains of crocodiles. The banks of the Regnitz and the Meyn consist of primitive limestone and other quartz deposits. The nucleus of the Schwartzwald seems to consist of granite, but in some places the granitic rocks support secondary limestone. The spaces which extend northward are composed of old sandstone. The slopes that overlook the Rhine are formed of soil posterior to the chalk.

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[1] "Winderlichs Deutschland." Leipsic, 1852.

To the north of the Meyn the hills are composed of primitive limestone, flanked with sandstone. To the east and west they contain volcanic deposits, which form on the one side the chains of the Vogelsberg and the Westerwald, and on the other, to the west of the Rhine, the basaltic group of the Eifel. Among these oceanic and volcanic products granitic summits and table lands occasionally appear; but to the north of the Thuringerwald granite becomes less and less frequent, till there is no further trace of it. At the mouth of the Aller the old limestone terminates; and to the north and the west all the plains that fall to the North Sea, as far east as the Elbe, are covered with immense beds of sedimentary deposits, or with beds of sand lying upon chalk, limestone, sandstone, and gypsum, which mix at last along the shores of the Baltic, with the sandy and marshy soil of Pomerania. This great plain has every appearance of having been, at no very distant epoch, covered by the sea; in many places its surface still consists of bare sand, but in the Isle of Rugen, and several places in Pomerania, Hanover, Luneburg, and Holstein, there are to be found isolated masses of rock belonging to the chalk or muschelkalk formations.

In the S.W. and N.W. of Germany the new red sandstone formation has been more fully developed than in England or France. It has been called by German writers *Trias*, or the triple-group, because it is separable into three distinct formations called the *Keuper*, the *Muschelkalk*, and the *Bunter-sandstein*. This last consists, as the name implies, of various coloured sandstones, dolomites, and red clays, with some lias, especially in the Hartz, and of calcareous pisolite, or roestone, the whole sometimes attaining a thickness of more than a thousand feet. In Wurtemberg, the keuper, and in Baden, the muschelkalk, attain the same thickness.

According to Sir R. I. Murchison, rocks which have been, or may be classified as silurian, devonian, carboniferous, and permian, occupy detached districts in the S.E. of Prussia, Saxony, and the smaller states westward, and spread over large tracts in the northern territories of Austria, particularly in Bohemia and Moravia. Palæozoic rocks abound in Thuringia, Franconia, Saxony, and the adjacent principalities, the older sedimentary formations occupying a considerable region on the north-western flank of that devious chain of granitic gneissose, and other crystalline rocks that, ranging from N.E. to S.W., divides Saxony from Austria, and trends into the Fichtelgebirge of Bavaria. From that chain these deposits descend into, and spread over, a broad and comparatively low undulating tract, which, in its central part, is cut transversely by the river Saal, as it flows from Hof on the S.E. to Saalfeld on the N.W. On their N.W. boundaries these rocks rise again into the lofty eminences of the Thuringerwald, the whole succession having a dominant strike from the S.W. to N.E. In this way the newer strata may be said to occupy a broad trough ranging lengthwise from Renneburg and Gera on the N.E. by Schleitz, Planen, and Hof, to Upper Franconia on the S.W., whilst the older rocks of the series, rising up on both sides, are often found in a highly metamorphic state, but chiefly on the S.E. flank of the depression. The lower silurian rocks of the Thuringerwald and of the Saalfeld tract, are penetrated at intervals by porphyries and greenstones, and irregularly overlapped towards the S.E. flanks by masses of devonian age.

In advancing westward from central Germany to the Hartz and Rhenish Prussia, nearly all traces of the silurian rocks are lost, whilst devonian and carboniferous deposits become vastly more expanded. The grauwacke of the Hartz is now ascertained to be no older than the devonian era. The Brocken itself is composed of a comparatively modern granite, which has become decomposed into chaotic piles called *Felsen-meer*.

The convoluted and broken rocks that present such an antique slaty aspect, and, crowned with castles, form the chief features of the gorges of the Rhine and the Moselle, and all the territory on the right bank of the Rhine, from the Taunus, S.E., to the coal-fields east of Dusseldorf on the N.W., including the duchy of Nassau, and having its northern frontier in Westphalia, bounded on the E. by the secondary rocks of Hessia, which range southwards by Marburg and Giesen to Frankfort, formerly considered to be a tract of undivided grauwacke, is now found to consist of the devonian and lower carboniferous systems. On the left bank of the Rhine the same succession occurs between the lower devonian rocks of the Hundsruck on the S.E. to the coal-tracts of Aachen and Belgium on the N.W. It is only by deflecting westward into the mountainous region of the Ardennes that the slaty rocks, rising from beneath all the other deposits, are met with. The upward succession, from the devonian to the carboniferous, is clear on both banks of the Rhine.—(*Murchison's Siluria.*)

The coal measures are widely distributed in many parts of Germany, as Bohemia, Saxony, Silesia, Rhenish Bavaria, and Rhenish Prussia, from the last of which Holland is supplied with coals.

No part of Europe yields a greater variety or abundance of mineral productions, and in no part of the world are the mines worked with so much skill or so much economy. Precious stones are discovered in many parts; rock-crystal, amethysts, topazes, are found in Bavaria; calcedony, agate, petchstein, and porcelain-jasper, in Bohemia; barytes in many parts; marbles, gypsum, and alabaster, in Bohemia; alum, near Töplitz; rock-salt and Glauber salts in various parts; and abundance of the earths calculated for making earthenware, from the coarsest description to the finest porcelain. Fossil coal is found in many districts, and much of it is consumed; but the cheapness of wood, and the prejudices of the people against the use of it in their houses, have operated to prevent the mines from being completely explored or worked to anything approaching the extent of which they are capable. Gold is procured, though in very small quantities, by washing, in Salzburg, in Bohemia, in the Rammelsberg, and in Silesia. Silver and cinnabar are raised from the mines of the Erzgebirge in Saxony. Iron, copper, tin, lead, calamine, bismuth, cobalt, nickel, titanium, arsenic, and almost every other mineral, is more or less raised from the mines. The abundance of mineral substances everywhere scattered, and which it would be difficult to enumerate, has promoted the study of mineralogy, and given birth to the school of Freyburg, whence the pupils of Werner carried the science to every part of the world.

Mineral springs.

The great abundance of mineral springs, hot, cold, bitter, acid, salt, is a peculiar characteristic of Germany. The warm waters of Aix-la-Chapelle, Pyrmont, Carlsbad, Töplitz, Baden-Baden, Bruckenau, Kissingen, and Wiesbaden, attract every year crowds of visitors. Those of Ischel, Baden near Vienna, and many more, though less resorted to, are nowise inferior. The acidulated springs of Selters, Driburg, and Rohitschs, the bitter waters of Seidschutz, Seidlitz, and other places, and the long series of salt springs that follow the base of the northern Alps, are sufficient proofs that Germany abounds with mineral veins or deposits of the most various kinds. The country is, moreover, generally well supplied with good and wholesome water for the ordinary purposes of life. The only exceptions consist of some marshy tracts in Westphalia, and of some of the colder valleys of Salzburg.

Soil.

The soil is generally productive. The plains in the north have indeed much arid sandy land; but nature has provided some rich and fruitful soils along the borders of the rivers, where the most abundant harvests are gathered. The south has also on its mountains much barren or slightly productive land; but the beautiful valleys and plains among the hills rival in fertility the best alluvial lands on the banks of the northern rivers. In general the soil in the north is heavy, and in the south light; the former most adapted for corn, and the latter for vines. The best soil is in the middle, between the mountains and the sandy plains. In Bohemia, Silesia, Franconia, Saxony, and on the Rhine, the proportion of good soil is much greater than in the north or the south.

Rivers.

Germany has seven large rivers which pass through it to the sea, and in their course receive about 500 smaller streams, about sixty of which are navigable, either naturally or by means of artificial improvement. These are the Danube, Rhine, Weser, Elbe, Oder, Etsch or Adige, and Ems, which will be found described under their own names.

Lakes.

The chief of the German lakes is the *Boden See*, or Lake of Constance, on the borders of Switzerland. (See CONSTANCE.) To the eastward, among the valleys of the Alps, are several lakes of inconsiderable dimensions, as the Walchen, Kochel, Ammer, Wurm or Starenberger, Tegern, Schleier, Chiern, Grundel, Hallstadter, Traun or Gmunden See, Mond, and Kammer or Alter, lakes.

Along the southern shores of the Baltic or East Sea there is a number of lakes, which form the western portion of an innumerable series, extending through Prussia into Russia and Finland, and occupying comparatively higher ground than the adjoining plains and river channels. Some of these are of considerable extent, as the lake of Schwerin in Mecklenburg and the Spirding See in East Prussia, the latter, however, beyond the political limits of Germany. At the eastern base of the Hartz are the salt and the sweet lakes (*Salzige* and *Süsse Seen*), and to the north of Minden, to the east of the Weser, is a considerable sheet of water called the *Steinhuder Meer;* and to the west of the Weser is a smaller lake called the *Dummer See.*

Climate.

The climate of Germany is very uniform in respect of the degrees of cold or heat experienced in its different regions; for though there is a difference of 9° of latitude between its southern and northern borders, that difference is compensated by the different elevations of the country, the northern part being lowland on the sea, while the midland and southern regions rise to a considerable elevation. This is indicated by the following table of places from north to south.

Places.	Latitudes.	Elevation above the sea in feet.	(Fahrenheit.) Mean temperature of the Climate.		
			Year.	Winter.	Sum.
Stralsund……………	54°19′	51	47°	30°	63°
Berlin ………………	52°30′	140	48°	31°	64°
Gotha ………………	50°57′	1010	46°	29°	60°
Baireuth ……………	49°57′	1119	46°	29°	61°
Ratisbon……………	49° 1′	1260	48°	31°	64°
Munich………………	48°10′	1733	48°	34°	65°
Innsbruck ……………	47°16′	1905	50°	29°	64°

The mean temperature of the coldest month varies from 29° at Munich to 26° at Stralsund; and of the warmest month, from 67° at Innsbruck to 62° at Gotha.

The climate, however, of some parts of Germany is milder than the table would indicate; for a great part of the north-western provinces is open to the influence of the sea, and experiences the benefits of the same western breezes that soften the climates of Britain and Norway. The valley of the Rhine, likewise, being deeply sunk between ranges of mountains, enjoys the finest climate, having the highest annual temperature, a mild winter, and not too hot a summer. A similar climate is enjoyed in the south-eastern part of Germany, the lowlands of Austria, where the mean temperature of the year is 51° at Vienna; of the winter, 33°; of the summer, 69°; of the coldest month, 30°; and of the warmest month, 71°

In Germany the prevalent winds are westerly, or a little to the south of west. Blowing from warmer climates and from the sea, they carry much vapour with them, which, coming in contact with the cold air of the Alps, produces a great deal of rain, particularly in the basin of the Danube. The number of rainy days in each year is about 150, but the greater number of them happens in summer, and the smaller in autumn. From the coast of the North Sea to the plain of Bavaria, the number of foggy days is about 40; but at the foot of the Alps the number increases to 133 or 135. Storms of thunder and of hail are not frequent; they happen oftenest in Lower Silesia, and least frequently in Lower Austria. The quantity of rain that falls yearly on the plains is, in the basin of the Rhine, 25 inches (Paris); of the Weser, 25; of the Elbe and the Oder, 22; and of the Danube, 30.

Except the Alps, none of the German mountains rise to the snow-line. In the southern Tyrol that line is found at an elevation of 8760 feet; in the Alps of Salzburg and Styria, at 8505.

From what has been said respecting the face of the country, and its diversities of elevation, it will readily be understood that no general accounts of the climate will be properly or strictly applicable to every particular region. The whole country may be divided into three zones. The first of these comprehends the northern plains, the climate of which is not cold, but humid and variable. They are exposed to every wind, and to the fogs and storms of two seas. The north-western plains are subject to frequent rains and devastating hurricanes from the North Sea; but the influence of the Baltic on the north-eastern plains is much less, and their climate though colder is less moist and less variable. The second zone comprehends the middle portion of Germany, including Moravia, Bohemia, Saxony, Franconia, Swabia, Hessia, and the country on the Rhine. The mountains of this region form in some degree a barrier against the direct effects of the maritime climate of the lowland. The sky is not so obscured by mists, and the regularity of the seasons is not so much disturbed by winds and storms; but the general elevation of this country renders the climate colder than it is in other countries in the same latitude but nearer the level of the sea. This region is, however, the most agreeable in Germany, and may be divided into three parts: the first comprising Hesse and Saxony, where the grape yields only an acid and imperfect wine, but the peach and the apricot flourish. In the second, comprising Bohemia, Moravia, and part of Franconia, from the height of the mountains the winter's snow is of longer continuance, but the effect of the summer's heat is more sudden and powerful, so that early and abundant harvests depend in a great measure on favourable exposures. In the third, which comprises the countries on the Meyn, the Neckar, and the Rhine, the grape is of better quality, woods of chestnut and almond trees grow, and the summers are warmer and less variable than in the northern provinces of France. The climate, indeed, of these countries is finer than any other in Germany, and is the most salubrious and most agreeable of any in Europe. The third general zone is that of the Alps, whose elevated heights and rapid declivities connect very different climates. Thus the culture of the vine ceases in Bavaria and Upper

Austria, but is resumed with fresh vigour in the neighbourhood of Vienna. In the valleys of Styria and Carniola fields of maize or vineyards are in close contiguity to the glaciers and perennial snows of the Tyrol and Salzburg. In general, the climate of Germany is very healthy. In the south, however, under the influence of the Alps, the air is raw and cold, whilst in the plains and open valleys a climate equal to that of the finest parts of Italy is enjoyed. The northern provinces are colder, damper, and more ungenial, and, near the stagnant lakes that abound in the Baltic provinces, unwholesome. The weather besides undergoes extreme variations, and frost is frequently felt at a late period of the year. It is also often very severe through the winter, and even the great rivers Rhine and Danube are frequently frozen over from November to March.

Vegetable productions.

Germany is suitable for the cultivation of all the kinds of useful plants that belong to the temperate zones; and, owing to the equality of the climate, they are spread over all the country. The highlands of the middle region as well as the northern lowlands grow the different species of cereals; and in the eastern part of the latter region there are tracts of land which will bear comparison with those that are called the granary of Europe. Wheat, rye, barley, and oats are the cereals most generally cultivated; but in some districts to these are added spelt, buckwheat, millet, emmer (*Triticum dicoccum*), einkorn (*Triticum monococcum*), and maize. The potato is largely cultivated, not merely for food, but for the purpose of distillation into brandy. Beans, pease, vetches, and lentils are also produced abundantly. The common beet (*Beta vulgaris*) is largely cultivated in some districts for the production of sugar. Flax and hemp are cultivated, though not to so great an extent as formerly, for manufacturing into linen and canvas, and the expression of oil. In many districts tobacco is the most productive and most profitable object of culture. To these are to be added rapeseed and poppies, and above all cabbages, of which the Germans make a favourite mess called *Sauer-kraut.*

The fruits of temperate climates are largely produced; apples, pears, cherries, and plums are everywhere common. The more delicate fruits, as apricots and peaches, only grow in the warmer districts on the Rhine and the Danube, where likewise are to be found the true chestnut, the common almond, and the fig-tree growing in the open air. The olive-tree is only to be found on the Italian side of the Alps. Vines are grown to a large extent in the west and south, particularly along the Middle Rhine and the Lower Danube. On the Upper Danube, as far down as Austria, no vines thrive; and though vines are grown in the valley of the Saale, on the Weser, and in Silesia, they are in small quantity, and of inferior quality. On the contrary, the lower slopes of the hills along the Rhine from Basel to Coblentz, in Baden, the Palatinate, and Hesse, and above all in Nassau, are literally covered with vines. There are produced the celebrated Andesheimer, Hochheimer, and Johannisberger. The wines of the lower Meyn, particularly those of Würzburg, are of the best kinds; those of the upper Meyn and the valley of the Neckar are rather inferior. The Moselle wines are lighter and more acid than those of the Rhine.

The forests, as well in the plains as in the mountains, produce an abundance of juicy berries of the most various kinds, including strawberries, bilberries, raspberries, and cranberries. The heaths of the north-western plains afford abundant food for bees, which produce large quantities of honey and wax.

The woods are extensive, especially among the hills, where the finest forest-trees of the temperate zone grow to perfection; and on this account it is that so many of the mountain-ranges have the word *wald* attached to their names, as the Schwartzwald, the Böhmerwald, the Thuringerwald, &c. The elevated plateaux are less wooded than the hills; but the eastern region of the northern lowlands abounds with extensive woods. A narrow strip along the shores of the Baltic is covered with oaks and beeches; further inland coniferous trees are the most prevalent, particularly the Scotch fir (Kiefer). Birches are also widespread. Woods on the mountains consist chiefly of firs, pines, and larches, but contain also silver-leaved firs, beeches, and oaks. Chestnuts appear on the terraces of the Rhine valley, and in Swabia and Franconia. Quite woodless is the whole north-west of Germany, where the people find compensation for the want of wood in their boundless fields of turf or peat.

Animals.

Wild animals of numerous kinds abound all over Germany, to the great injury of agriculture; among these may be mentioned particularly the roe, stag, hare, and boar. The fallow deer and the wild rabbit are more rare. Of other wild animals, the Alps produce wolves, bears, and lynxes. The wolves are likewise a scourge of the Scheifergebirge, on the west of the Lower Rhine, to which they find their way from the French territory. The chamois and marmot are numerous in the Alps; the wild goat, or ibex, is seldom met with. Foxes, martens, weasels, badgers, and otters abound everywhere; the hamster particularly at the foot of the Hartz.

Of domesticated animals, horses, oxen, sheep, and swine are the principal objects of attention in Germany. They are bred everywhere, as well in the plateaux as in the lowlands, but more successfully in the latter. The coastlands of the North and the East seas are celebrated for the excellence of their cattle. Saxony, Silesia, Bohemia, and Moravia feed the finest sheep; Westphalia and the districts bordering on the lowlands furnish excellent swine. The ass is found in the hill-countries only, and the mule among the Alps. The hilly regions are also favourable for the breeding of goats. The finest breed of German horses is to be found in Mecklenburg and north Hanover, mixed indeed, it is admitted, with English blood, but not improved. The pure Mecklenburg horse is particularly excellent, the Holstein horse is larger and heavier, and often purchased for the Mecklenburger, but is not so enduring. The Hessian horse is large and strong, of little beauty, but spirited, and a good worker. Horses are mostly brought from Westphalia, Friesland, and north Holland. Various other breeds might be named; but, generally speaking, those of North Germany are better than those of the south.

The feathered tribes are everywhere abundant in the fields, woods, and marshes. Partridges, snipes, thrushes, quails, wild geese, bustards, grouse, blackcocks, woodcocks, wild ducks, widgeons, and teal abound everywhere. The Leipzig larks are known all over Germany; thrushes, sparrows, bullfinches, and serinfinches are plentiful, the last especially in the Hartzwald. Bohemia is celebrated for its pheasants, bustards, and mountain-cocks. Geese and ducks are found mostly in the flat districts, where the great abundance of standing water affords ample scope for their increase. The lammergeir and the golden eagle are found only, with the chamois, among the highest Alps. Tame geese are bred in large flocks, particularly in Pomerania. The length of time during which the migratory birds remain in Germany differs considerably with the different species. The stork remains about 170 days; the house-swallow 160; the snow-goose 260; the snipe 220. In Northern Germany these birds arrive from twenty to thirty days later than in the south.

The waters of Germany abound with fish; but the genera and species are few. Carp and the salmon tribes are the most abundant; after them rank the pike, the eel, the shad, the loach, the perch, the lamprey, and many others.

Besides frogs, Germany has few varieties of amphibia. Of serpents there are only two kinds, but both poisonous. In Southern Germany the edible frog (*Rana esculenta*) and the *Helix pomatia* are used as food. The most remarkable animal of Germany is the olm (*Proteus anguinus*), which is found in the lake of Zirknitz, the cave of Adelsberg, and the lake of Sittich.

The rearing of bees is chiefly attended to in the heaths of Hanover, where they abound. The cultivation of the silkworm has been attempted, but has either entirely failed, or had at best very indifferent success; the black mulberry, which grows in Germany, being less suited to them than the white. Of late an attempt has been made to extend the cultivation of silkworms in Lusatia and the Mark of Brandenburg, but it seems not yet to have become an object of general attention.

Inhabitants.

Germany is inhabited by people of two distinct families, Deutsch and Slavs. The former are the more numerous, and exclusively occupy the northern, western, and southern provinces; the latter prevail in the east, where, besides forming the bulk of the population of Bohemia and Moravia, they have likewise colonized in the alpine valleys of Styria and Illyria, on the northern slope of the plateau of Upper Silesia, on the plateau of Lusatia, and on the coasts of Pomerania. In the latter province they are called Kassubes; in Lusatia, Wends; in Bohemia, Czechs; in Moravia, Slowaks, Hannaks, Chrowats, &c. The Slavic population bears the proportion to the Deutsch of about 2 to 13. But, besides these principal stocks, there are also groups of people of other families,—Italians, in the valleys on the south side of the crest of the Alps, in the Tyrol, Friuli, and Istria; French, in a small district of the Lower Rhine, to the west of that river, and in several parts of the northern lowlands, in small colonies, where, however, they have acquired the German manners and customs, language, and way of thinking. Greeks and Armenians are to be found in the Austrian provinces; Jews are scattered over all Germany, and gypsies wander about as nomades or vagabonds. The total number of all races was estimated, in 1854, at 43,286,116, being an increase of only 13,121,716 since 1816, or less than 1 per cent. per annum. The increase, however, in North Germany has been in a ratio double of that of the south, which seems to have nearly reached the maximum of its capabilities of supporting population, and it is from that region principally that during this period several millions of people have emigrated to America and elsewhere abroad.

The Roman writers described the Germans as large and powerful men, with blue eyes and yellow hair. These characteristics are still preserved among the people of the highlands of Middle Germany and the adjoining borders of the northern lowlands. In general the Northern Germans are taller and more slender than those of the south; and, instead of the yellow hair and blue or light gray eyes of the former, the latter have dark gray or brown eyes and brown hair. The inhabitants of the Alps, even the women, are distinguished for their large bones and great bodily strength. In the flat land the forms are not so angular as in the south; but the northerns are not on that account inferior in bodily strength.

The German is earnest, quiet, and somewhat listless; he is considered, however, industrious and persevering in everything he undertakes, honest and frank in expression, simple in his manners. "To be always true and honest" is his motto, and his courage is equal to any emergency. Gifted with a deeply penetrating spirit of observation, and naturally inventive, the exact sciences have been always his favourite object of study, while at the same time he has not neglected the fine arts. The Germans have been the authors of many useful inventions, among which, those of gunpowder and printing have been attended with the most important results.

The German loves his country, but for a long time it has been more the love of home than true patriotism that has been most obvious in the character of the German people. The splitting of Germany into so many states, and the difference of interests thence necessarily arising, increased by difference of political and commercial institutions, have essentially contributed to lessen their general patriotism, though in the minds of many enthusiasts, notwithstanding the failure of the great experiment of 1848, the union of the whole German race into one great nation is contemplated as not only desirable, but as even still within the limits of probability.

Languages.

The German and the Slavonic languages are of course the prevalent ones; but in southern Tyrol and the Adriatic coast-land Italian is spoken, and in the small district round Malmedy in the Lower Rhine French is most general.

The German language is divided into two great branches. the High (Hoch) Deutsch and the Low (Platt) Deutsch; the former being the language of books and the educated classes, while the latter is spoken by the lower classes. The Low Deutsch is divided into many dialects, which, according to the situations of the places where they are spoken, may be called Upper Dutch and Lower Dutch (*ober-deutsche und nieder-deutsche*). The ober-deutsche dialects are spoken in the alpine and middle highland regions of Germany by a greater number of people than the nieder-deutsche. Among these dialects may be noticed the following:—

The *Alemannic*, the language of the German Swiss, which has spread itself within the political limits of Germany, into the north-western region of the Alps, the Black Forest, and the valley of the Rhine, as far down as Baden-Baden. Rough guttural tones are its characteristics.

The *Swabian* dialect prevails between the Black Forest and the Lech, and from the Alps to Kocher, consequently in the greater part of the kingdom of Würtemburg and as far as Augsburg. Its characteristics are nasal sounds, and a peculiar but pleasing ringing soft sing-song utterance.

The *Bavarian* dialect, which is broader and more nasal than the Swabian, and slurs over a great many sounds, is spoken in the plateau of Bavaria, and the adjoining region of the Alps, as far as Austria and Carinthia.

The *Frankish* dialects are very manifold. In place of the broad and strong tones of the Bavarian and Swabian, they have more flexibility and sharpness. They are distinguished into East Frankish and West Frankish: the former prevailing in Bohemia, the Voigtland, and the western portion of the Erzgebirge; the latter in Hesse, as far as the Taunus, and across the Rhine, in this middle part of its course. Both are subdivided into a variety of minor dialects.

The *Upper Saxon* dialect which forms the transition from the *ober-* to the *nieder-*deutsch, is spoken in Thuringia, the whole of Saxony (except the Upper Erzgebirge), Lusatia, and Silesia, with differences of tone and expression in the different districts.

The *Nieder-Deutsch* dialects are spoken by the people of the whole of the northern plains, from the hill country to the sea, and from the eastern borders of Germany to the western. They are the proper *platt-deutsche*, in contradistinction to the *ober-deutsche*, out of which the *hoch-deutsche*, or written language, has been framed. Two principal dialects may be distinguished in this nieder-deutsche, viz., the *Lower Saxon* and the *Westphalian*, the latter of which approaches, in some of its branches, to the hardness of the ober-deutsche, while the former exhibits great softness, flexibility, and euphony, but at the same time a want of power. The Lower Saxon branch extends from the east side of the Weser eastward throughout the plain of Germany, and is divided into the Holstein, Hamburg, Mecklenburg, Pomeranian, Brandenburg-Markish, and Luneburg varieties, the last of which is spoken through Brunswick and Hanover east of the Weser. The Westphalian branch prevails from the Weser westward to the Rhine, not only in the plains but also in the adjacent hill country. Its varieties are the Munster, the Osnaburg, and the Sauerland dialects. The Flemish and Dutch dialects are spoken in a small corner of Germany, where the Rhine passes into its delta.

The mixture of Westfrankish, Westphalian, and Dutch has produced a particular dialect called the *Lower Rhenish*, which is spoken on the Lower Rhine, particularly to the west of the river.

The *Frisian* language, which differs considerably from the Deutsch dialects, is spoken on the shores of the North Sea, between the Ems and the Elbe, not however always in its original purity, but much intermixed with the Westphalian and Lower Saxon dialects, which are its immediate neighbours.

The Germans have spread themselves and their language in numerous colonies beyond the proper bounds of their fatherland, not only in Europe but also in America. Since the twelfth century they have occupied the shores of the Baltic provinces of both Prussia and Russia, imposing their language as well as manners and customs upon those regions. Numerous German colonies are also to be found on the banks of the Volga, the shores of the Black Sea, and beyond the Caucasus. German miners inhabit the Urals; and it was Germans that in the tenth century carried the first elements of civilization to the Magyars, by settling in Transylvania, where their descendants still form an industrious community. Germans have crossed the Atlantic in swarms; there are said to be now upwards of five millions of them settled in the United States, and emigration is still continuing on a large scale.

Of the *Slavonic* languages, the Polish is spoken in Upper Silesia, and the Czech in Bohemia and Moravia, in various dialects. The dialect spoken in Prague and its vicinity is the finest and purest, and has now become the language of writing and books. Other dialects of the Slavic tongues are spoken in Carniola, Carinthia, and Styria, and the eastern regions of the alpine valleys, and in Lusatia.

Ranks and classes.

Noble, burgher, and peasant are the three ranks or classes that form the population of Germany. The nobility are divided into the higher and the lower; the burghers, according to their occupations, into many branches; the peasantry into still more, which, in the several states and their constituent parts, exhibit many differences, arising from the political and civil arrangements of the particular districts.

The German civil law, in its present state, secures to every German the privilege of changing his residence from one German state to another, of becoming its subject, and even of entering into its civil or military service, unless his obligation to the military service of his native state stands in the way. He has likewise the privilege of acquiring and possessing landed property beyond the limits of the state where he lives, without being subjected to more burdens and taxes on that account. He is also free of any transit dues on his property passing into another state, unless there be particular treaties on this subject between the one state and the other.

To the high nobility belong all those princely and *gräflich* (of the rank of count or earl) families, which, before the establishment of the existing political constitution, were immediate feudatories or princes of the empire, in the enjoyment of territorial possessions, of which they were sovereigns. The heads of these families form now the first rank in the state to which they belong; and they and their families are the most privileged class, particularly in respect of taxation. In respect of their persons, families, and possessions, they still retain most of the old rights and privileges attached to their estates not inconsistent with the sovereign power and the higher rights of the state governments. Among these may be mentioned the unlimited right of living in any German state, or in any foreign state at peace with Germany; of making obligatory engagements respecting their estates and family relations, freedom from military service, the exercise of civil and criminal jurisdiction on their estates in the first instance, and, when their territory is large, in the second instance also, jurisdiction in the forests, and in matters of local police, and connected with the churches and schools and other institutions, but always according to law. Many of the same sort of privileges were also allowed to the other nobles of the empire, who are not of this first and most highly privileged class. But of the more invidious of these privileges, especially that of exemption from military service and taxation, the *old* nobles, as they are called, were deprived in 1848.

Religions.

Christianity was introduced into Germany in the seventh century, and Mentz became the ecclesiastical metropolis of the empire. The Reformation, in the sixteenth century, divided the Germans into three denominations, the Catholic, the Lutheran, and the Reformed; but in recent times the two latter are scarcely to be discriminated, and in most of the states they have become united under the name of the Evangelical Church. The difference of religions, however, occasions no difference in the enjoyment of civil and political rights. The Catholics are the most numerous in the south of Germany, the Protestants in the north. They stand to each other in the proportion of about 22 Catholics to 15 Protestants. In south-eastern Germany there are a few thousand members of the Greek Church; and scattered over all the country about 300,000 Jews. The spiritual affairs of the Roman Catholic Church are administered by nine archbishops and their thirty-one suffragan bishops, namely:

Archbishoprics.	Bishoprics.
Vienna	St Poelten, Graetz, Gurk, Leoben.
Salzburg	Linz, Brixen, Trent.
Görz	Laibach, St Andree-lavant, Gradiska, Trieste, Citta-nova.
Prague	Leitmeritz, Budweis, König-grætz.
Olmütz	Brunn, Breslau.
Freising	Passau, Augsburg, Regensburg.
Bamberg	Eichstadt, Würzburg, Speier.
Freiburg	Mentz, Fulda, Rottenburg, Limburg.
Cologne	Treves, Munster, Paderborn, Hildesheim.

The archbishops and bishops are the representatives of the pope in all spiritual affairs and matters of conscience; but they are not allowed to publish any papal bull without the express permission of the state governments. Occasional outbreaks, however, still serve to show that the spirit of the long-during contest between church and state is only slumbering, and not extinct; and the supremacy and other inadmissible claims of the church are still asserted with as much zeal, if not with the same success, as in the middle ages. Mentz and Treves, formerly the sees of archbishops who were prince-electors of the empire, have been degraded into suffragan bishoprics.

The Evangelical Church acknowledges the headship of the state, and submits to the rule of the spiritual officers and boards appointed by government. These consist of a minister of church affairs, consistories, and of general superintendents, who, in the Prussian states, generally bear the title of bishops. There is a bishop of the Greek Church in Trieste; and the spiritual concerns of the Jews are superintended by land-rabbis.

Industry.

In the intelligent practice of agriculture some of the Germans are not behind the most advanced of the other countries of Europe. Mecklenburg, in particular, and Holstein are distinguished for their excellent husbandry; and in Hanover, Brunswick, Bohemia, Saxony, and some parts of Prussia and Austria, it is scarcely inferior. Generally speaking, agriculture is the principal occupation of the Germans, particularly in Bavaria, Würtemberg, Baden, Hesse, Nassau, Hanover, Brunswick, Oldenburg, Prussia, Anhalt, Holstein, and Mecklenburg; while in the Saxon duchies, Schwartzburg, and Reuss, some districts of Prussia, Bohemia, and the kingdom of Saxony, manufactures employ at least an equal, and in some cases even a greater, number of the people. The greatest contrast in respect of agriculture is to be seen in Mecklenburg and Würtemberg. In the former farming is conducted on a large scale; in the latter, as well as in other provinces, the land is divided into small parcels, cultivated by small proprietors or tenants, who follow ancestral usages, and are unprovided with means to make any improvements, by draining or otherwise. In the former the *Schlagwirthschaft* prevails, according to which one immense field is covered with wheat, while another is covered with oats, a third with clover, a fourth is being ploughed and harrowed, and a fifth is feeding herds of cattle, the common size of farms being so much as 500,000 square *ruthe*, or almost 2000 acres; in the latter, everything is grown chequerwise, in small patches, more like gardening than farming, the usual size of Würtemberg farms being only from 5 to 20 square *ruthe*, or from $\frac{1}{40}$th to $\frac{1}{10}$th of an acre.

There are three systems of husbandry at present practised in Germany. In the first, called the three-field husbandry, while one field is sown with winter corn, and another with summer corn, a third lies fallow; but sometimes, instead of a fallow the third field is sown with green crops, pease, potatoes, &c. In the second system, called the four-field husbandry, the principle is that the same field shall not be occupied two years together with corn, without at least one fallow intervening; as, for example, one year, rye; second, clover; third, oats or barley; fourth, potatoes; fifth, again winter corn. This is also called the rotation system (*Fruchtwechselwirthschaft*). The third system, called the *Schlag* or *Koppelwirthschaft*, practised in Holstein and Mecklenburg, divides a farm into a number of large parcels of equal size (*stucke*, *koppeln*, or *schläge*), which, after several years' continuous bearing of grain or other produce, are allowed for several years more (3 to 7) to lie fallow, or in grass for summer pasture. For these two countries this system is found very suitable, for the population is there comparatively thin.

In the different provinces of Germany different kinds of corn obtain the preference and are most cultivated, as in the following list, where the different articles follow each other in the order in which they are named.

Bavaria,—Rye, oats, barley, spelt, wheat.

Würtemberg and Baden,—Spelt, oats, barley, rye, wheat, maize.

Hesse,—Rye, barley, oats, wheat, spelt, maize.

Mecklenburg,—Wheat, barley, rye, oats.

Brunswick,—Barley, rye, wheat, oats.

In Germany generally, and in Mecklenburg in particular, the production of corn is greater than the consumption. Assuming the productiveness of the kingdom of Saxony as a standard, Germany could maintain about 54,000,000 of inhabitants, or 12,000,000 more than at present. The cultivation of the potato is now largely extended, particularly in Prussia. In the north-east of Germany buckwheat is also cultivated; but the cultivation of oil plants, pease, beans, turnips, and other roots, flax, hemp, and hops, is not large enough to dispense with the importation of these articles. About three-fourths of the Germans are employed in agriculture; and many parts of the country are crowded with small proprietors or tenants, who necessarily live in a state lower than that of hired labourers. Of the great bulk of the people the food is of the poorest kind—rye-bread or potatoes; and it is chiefly owing to this general misery that Germany can export corn in most years. In bad seasons the distress is sometimes dreadful; the agricultural population having no means of procuring foreign supplies,—nothing to give in exchange for bread.

Naturally, in accordance with climate and other physical circumstances, the production of wine and fruits (*Obst-und Weinbau*) is greater in the south and west than in the north and east. The districts on the Rhine, the Lower Maine, and the Neckar are the best; but, even in the south of Germany, there are districts, as in Old Bavaria, between the Inn and the Lech, that are less productive of fruit than even Mecklenburg and Brandenburg. In both quantity and quality, however, the south excels the north, where the best kinds of fruit only ripen with difficulty. The principal places for the production of wine have been already noticed. The quantity is estimated at about 3,000,000 of *eimers*, worth about 18,000,000 of *thalers* = about L.3,000,000 sterling yearly.

The cultivation of forest trees is now more scientifically practised in Germany than in any other country, and the care of the government is now directed to the restoration of the forests, which, till recently, were completely neglected and left exposed to every kind of destructive agency. In all the states likewise, institutions for the promotion of agriculture, in all its branches, have been or are being formed.

The relative proportions of ground occupied in agricultural and other natural productions in the different states is shown in the following table.

State.	Agriculture.	Wine.	Gardening.	Meadows.	Pastures.	Wood and Forests.	Waste.
Austria	34·0	1·2	1·7	5·1	15·5	26·0	15·5
Prussia	48·0	0·5	1·0	6 5	11·0	24·0	9·0
Bavaria	41·0	0·4	1·0	14·0	5·0	30·6	7·0
Würtemberg	39·0	1·2	3·0	12·8	5·2	30·8	8·0
Baden	35·0	1·6	2·6	9·7	6·4	32·0	11·7
Hesse	50·0	1·2	0·2	11·0	1·2	33·6	3·0
Mecklenburg.	75·0	...	0·2	9·0	2·8	8·0	6·0
Brunswick	35·0	...	2·0	6·0	3·0	32·0	2·0
Nassau	39·0	2·0	1·4	9·0	5·0	40·0	2·6
Saxony	70					26·0	4·0
Hanover	40					15·0	45·0

The following table shows the absolute quantities (in English acres) of the ground so occupied.

State.	Agriculture.	Meadows.	Garden-land.	Wine-land.	Woods and Forests.
Austria	15,322,812	5,217,162	362,110	415,732	15,850,837
Prussia	18,867,581	3,074,151	493,958	38,421	8,866,652
Bavaria	8,326,641	2,589,024	213,859	79,487	5,622,170
Würtemberg	2,045,859	686,369	94,628	64,347	1,493,862
Baden	1,444,628	391,129	34,696	53,307	1,227,641
Elect. Hesse	876,228	256,757	447,906	788	948,153
G. D. Hesse	976,561	266,851	365,895	23,341	685,107
Nassau	433,396	121,123	4,415	9,462	493,327
Saxony	1,838,939	412,578	104,090	4,415	1,131,121
Weimar	494,944	81,380	18,294	473	225,214
Coburg Gotha.	278,837	34,696	7,570	...	140,049
Altenburg	212,597	23,972	10,724	...	66,239
Meiningen	249,187	43,528	13,247	...	226,476
Hanover	2,752,413	1,606,154	168,438	...	1,302,082
Brunswick	340,030	74,440	15,771	...	299,655
Oldenburg	464,939	155,190	27,126	...	232,099
Mecklenburg Schwerin	2,242,261	287,038	40,374	... ...	372,834
Meck. Strelitz	425,826	43,528	7,570	...	135,633
Luxemburg	281,360	61,823	10,093	1,766	199,294
Limburg	152,666	164,022	8,201	...	32,804
Holstein	1,463,793	316,688	25,234	...	167,807
Lauenburg	173,484	29,650	4,418	...	29,650
Other States	1,186,636	237,201	35,327	1,198	592,727
Totals	60,851,618	16,174,454	2,513,944	692,737	40,341,433

Great attention has been paid for the last 30 or 40 years to the breeding and rearing of all sorts of useful animals, and every encouragement and facility have been given by the governments to the improvement of the breeds. The following table, from Winderlich's Deutschland, shows the number of the principal kinds of stock in the German states, in or about 1848.

States.	Horses.	Cattle.	Sheep.	Swine.
Austria.........	572,800	3,981,200	4,774,300	1,205,200
Prussia.........	909,700	3,543,400	11,356,400	1,271,000
Other states...	1,242,500	8,450,400	9,032,300	3,044,800
Totals..........	2,726,000	15,975,000	25,163,000	5,601,000

Metals and minerals.

The whole Austrian territory produces yearly about 7000 marks of gold, whereof five-sixths in Hungary and Transylvania; silver, 180,000 marks, whereof three-fifths in Hungary and Transylvania; copper, 15,000 centners, whereof four-fifths in Hungary and Transylvania; iron, 2,000,000 centners, whereof only one-seventh in Hungary and Transylvania; quicksilver, 6000 centners; lead, 110,000; cinnabar, 1000; zinc, 12,000; tin, 950; coal, 7,500,000; salt, 5,500,000; cobalt and nickel, 20,000; arsenic, 1800; sulphur, 18,000; alum and vitriol, 160,000; graphite, 35,000; and about as much sulphuric acid. Of the German provinces, Bohemia produces silver, tin, iron, vitriol, and coal, the last equal to three-fifths of the produce of the whole empire; Austria and Styria produce half of the whole quantity of iron; Illyria, the quicksilver and most of the lead; and Galicia most of the salt.

Prussia:—No gold; 23,000 marks silver; 40,000 centners of lead; 36,000 of copper; 230,000 of zinc; 7000 of smalt; 3360 of arsenic; 35,000 of vitriol; 4,500,000 of iron; 46,000,000 of stone-coal; 11,000,000 of brown-coal; 1,750,000 of salt; and stone-quarries to the value of 1,500,000 thalers, = L.240,000. Silesia produces zinc, iron, coal, arsenic, vitriol, and sulphur; Saxony, silver, copper, iron, &c.; the Rhine provinces, iron and coal; Westphalia, coal, and some metal and salt. Nearly 3,000,000 tons of coal are extracted yearly from the coal-field on the banks of the Ruhr; and 4 miles above Bonn are the large brown-coal mines and alum works of Friesdorf.

The produce of the other states amounts to about 60 marks of gold, and 125,350 marks of silver; 1,200,000 centners of iron; and the various other articles above mentioned in comparatively small quantities.

Manufactures.

In many branches of manufacturing industry the Germans have reached a high degree of excellence. German linen is known to the whole world; and the linens of Bielefield and Silesia in particular are equally valued in America as in Europe. Of late years, however, the introduction of cotton, and the high prices obtained for corn, have tended greatly to lessen the cultivation of flax, which was formerly a principal staple of agricultural industry, and the linen manufacture has suffered in consequence. With the improvement of the breeds of sheep within the last half century, the woollen manufacture has made great progress, the German cloth being now not merely equal but even superior in quality to the cloths of England and Belgium. The chief seats of the cloth manufacture are in Brandenburg, Saxony, Bohemia, Moravia, and the Prussian Rhenish provinces, from which it is exported to all parts of the world. The cotton manufacture has been established and is rapidly extending in Saxony, Austria, and along the Rhine; the silk manufacture is carried on successfully in Vienna, Roveredo, Gorz, Berlin, Elberfeld, Erefeld, and other places. Works in metal, especially iron and steel, are produced in great perfection, and large quantities in Styria, Austria, Rhenish Prussia, Westphalia, and the district of the Hartz; brass work, in Rhenish Prussia, Bavaria, and Brandenburg; gold and silver work in Augsburg, Vienna, and Berlin. Pottery and glass-making have reached a high degree of perfection; the porcelain of Vienna, Berlin, and Meissen is much in request, on account not only of the fineness of its material, but also for the tasteful elegance of its forms and ornaments. Bohemian glass is to be met with in all parts of the world. The manufacture of leather is particularly extensive in Rhenish Prussia; of soap, tallow wares, and wax, in many places. Paper-making is carried on to a great extent, and of late has been very much improved in quality. Sugar-refining is carried on in Hamburg, Berlin, Potsdam, and other places; brewing of beer, to a great extent in Bavaria; and ardent spirits (Branntwein), to a still greater extent in the north. Ship-building and the connected trades are of little importance; but German industry is much distinguished in the making of mathematical, physical, surgical, and musical instruments; the chief seats of these branches of trade being Munich, Vienna, Berlin, and Cassel. German clocks and wooden articles, manufactured in the Tyrol and other mountain provinces, are exported to all parts of the world.

The great progress which the Germans have made in manufacturing industry since 1815, is chiefly the result of extraordinary exertions on the part of the German governments. In every district industrial schools have been established or extended; and in all the chief towns there are schools and institutions for instruction in the higher branches of art, where pupils are trained in both theory and practice, at the expense of the government. Numerous societies also have been formed for the promotion of art and industry.

Commerce.

The commerce of Germany has always been extensive; but the abolition of the innumerable state custom houses and tolls, and the long-continued peace, have given an immense impulse to its activity. Germany exports corn and timber to England and the Netherlands; linen to Spain, Portugal, Poland, Russia, America, and Africa; woollen cloth to Western Asia, and even to China; iron wares to every part of Europe; and lead to France. The exportation of fat cattle to England is also becoming a great trade. The other principal articles of export are horses, glass wares of all kinds, cobalt, galmei (siliceo-carbonate of zinc), potash, porcelain, hides and skins, honey, wax, lime, gypsum, copper, horns, bones, rags, millstones, turnip seed, swine's bristles, vitriol, tin, and spirits. The chief articles of import are sugar, coffee, tea, cacao, rice, vanilla, rum, and other colonial produce, spices, drugs, dried fish, cheese, tobacco, olive-oil, and southern fruits, French, Spanish, and Portuguese wines and liqueurs, cotton, raw silk, cotton and silk stuffs, leather, train oil, and many smaller articles. The intercourse within Germany is much facilitated by excellent carriage roads; and all the chief towns are now connected by railways. The principal rivers are also made available for the transport of bulky commodities, and were connected by several canals, before the introduction of the far superior method of locomotion by railways.

The principal seats of the inland trade are Vienna, Prague, Reichenberg, Brunn, Olmütz, Troppau, Linz, Steyer, Salzburg, Grätz, Botzen, Roveredo, and others, in the Austrian provinces; Berlin, Breslau, Cologne, Magdeburg, Frankfort-on-the-Oder, Naumburg, Posen, Traustadt, Aachen, Coblentz, Elberfeld, Erfurt, Munster, Minden, and others, in the Prussian territory; Leipzig, in Saxony; Munich, Augsburg, and Nurnberg, in Bavaria; Frankfort-on-the-Maine, Cassel, Brunswick, Hanover, Mentz, &c. But of all these places four hold the first rank; Vienna for the south-east; Augsburg, for the south-west; Frankfort-on-the-Maine for the northwest; and Leipzig for the north-east. Large fairs are held twice or thrice a year in Leipzig, the two Frankforts, Brunswick, and other places; but it is only in those named that these fairs are of much importance. Those of Leipzig are celebrated for the sale and exchange of books. Great wool-markets are likewise held in Berlin, Breslau, Dresden, Magdeburg, Prague, Stettin, &c.

The principal commercial seaports are Hamburg, Bremen, and Embden on the North Sea; Lübeck, Rostock, Stettin, Dantzig, Königsberg, and Memel on the East Sea; and Trieste on the Adriatic. Hamburg is one of the principal commercial towns of Europe, and with its neighbours Altona (in Holstein), Bremen, and Embden and the Baltic ports, connects Germany with the countries of the north and west, and with America, India, &c. Trieste forms the communication with the south of Europe and the Levant.

Commerce was not a little impeded by the different money systems of different parts of Germany; but, on the other hand, it was much facilitated by the establishment of banks and exchanges in the principal towns. Of late years also the postal system has been very greatly improved, but the German governments have not yet seen their way to the adoption of the British penny postage. They cannot indeed expect, in the circumstances of their country, that enormous increase of the number of letters that would compensate the diminution of rates.

The internal trade of Germany has been greatly facilitated by the formation of the customs unions and commercial treaties, of which an account has already been given in the article EUROPE.

The following table shows the proportions of revenue drawn by the different states.

An Account showing the proportion of the Revenues of the German Customs Union raised in the different States respectively, in the year 1851, *and the distribution thereof according to Population. Compiled from the official "Centralblatt der Abgaben," &c., Berlin,* 1852. *By J. G. Flügel, United States Consul, Leipsig.*

STATES.	Population.	Amount of common gross receipts.	Import duties. Amount of common nett receipts for distribution.	Amount payable to each State according to its population.	Export and transit duties payable to each State, according to its population.	Import, export, and transit duties payable to each State, according to its population.	Balance due to or from the common fund which each State has had	
							To pay.	To receive.
Prussia ......thalers*	16,669,153	15,572,929	14,347,476	11,211,383	244,203	11,455,586	3,111,161	...
Luxemburg	189,783	77,114	[c]10,445	127,645	2,241	129,886	...	136,011
Bavaria	4,526,650	1,210,539	904,991	3,044,546	53,463	3,098,009	...	2,166,021
Saxony....................	1,894,431	2,119,847	1,995,287	1,274,161	29,736	1,303,897	786,761	...
Würtemberg	1,805,558	348,527	330,237	1,214,387	21,325	1,235,712	...	899,766
Baden	1,360,599	652,625	353,482	915,115	16,070	931,185	...	534,069
Hesse Cassel...........	731,584	433,046	342,256	492,051	8,641	500,692	...	157,434
Hesse Darmstadt......	862,917	412,803	402,501	580,383	10,192	590,575	...	191,371
Thuringian States....	1,014,954	391,793	391,793	682,640	15,931	698,571	...	306,489
Brunswick.............	247,070	390,143	229,523	166,175	3,534	169,709	63,289	...
Nassau..................	425,686	74,829	71,310	286,309	5,028	291,339	...	219,591
Frankfort *a*...........	......	861,492	636,384	......	...	......	649,541	...
Total	29,728,385	22,545,687	20,005,240	19,994,795	410,364	20,405,159	4,610,752	4,610,752
			[c] Less 10,445[b]					
			19,994,795					

* The thaler is very nearly worth 2s. 11d. of our money; more exactly, it is equal to 2s. 10·84d.

a Frankfort is regulated by a specific arrangement, and not by population. *b* A special payment by Prussia, on account of the Union.

Mental cultivation, and moral condition.

In respect of mental cultivation the German nation stands in a high rank; and according to Professor Berghaus it may be said without vanity, that Germany stands on the highest step of the ladder of civilization. In no country of Europe, he continues, are education and true enlightenment so generally spread over all classes of society, from the richest to the poorest, as in his fatherland. This result has been brought about only in recent times, and it is ascribed to the unceasing exertions of the state governments to free their people from the darkness of ignorance and superstition. There is not a village in Germany that has not its school to spread intelligence among its people; but the present or probable effects of this universal teaching upon the moral condition of the country form still a grave subject of discussion among German philosophers. In a moral point of view there are great differences among the Germans, and it is admitted that there are among them some extremely lamentable moral (or *im*moral) phenomena highly deserving of general attention, with a view to amendment. In this respect it may be said generally that the Northern Germans are more moral than those of the south, though, whether that is to be ascribed to the prevalence of Protestantism in the former, and of Popery in the latter, is a question we will not presume to determine.

For the purposes of education there are, especially in Protestant Germany, numerous schools or institutions for elementary instruction in all the towns, for both the higher and the working classes. For the higher civic professions and employments there are *real* professional and commercial schools, seminaries for the training of schoolmasters, gymnasiums and lyceums for the higher branches of education, and for the highest of all there are twenty-three universities, to which may be added the German University of Königsberg, in East Prussia, making in all twenty-four. The institutions preparatory for the universities are the gymnasia, in which the educational course consists chiefly of classical studies, that is to say, Greek and Latin, with French, mathematics, and a considerable portion of the natural sciences. The basis of their constitution lies in remote times, and there have been but few and slight alterations in their plans of study since the beginning of the present century. Owing, however, to the smallness of the emoluments, and the consequent low estimation in which the office of teacher is held, there is not a sufficient number of qualified competitors to supply the vacancies that occur. The government has been obliged in consequence to raise their emoluments, and thereby obviate this increasing evil. A more recent class of institutions are the *real-schulen* (or high town schools), in which Latin is the only ancient language taught, the other branches being modern languages, especially French and English, mathematics and natural philosophy. These schools have for a long time enjoyed much approval as preparatory institutions for many departments of civil life. Industrial schools are of still more recent origin. They have been established by government in the larger towns of every province; the one half of the expense of maintaining them being defrayed by the government, and the other half by the municipality. Their purpose is purely industrial; drawing, mechanics, mathematics, physics, and chemistry, are the subjects taught; languages are excluded.

The following tables contain the names of the twenty-four universities; the dates of their respective foundations; the number of professors and other teachers; the number of students that attended them during the winter session of 1853-4, and the numbers that attended each branch:—

Names.	Dates of foundation.	Number of Professors and Teachers.	Number of Students.
Berlin	1810	173	2,204
Bonn	1818	87	888
Breslau	1702 1810	96	789
Erlangen	1743	48	479
Freiburg	1457	41	376
Giessen	1607	58	380
Göttingen	1737	111	699
Grätz	1586 1826	29	429
Greifswald	1456	54	222
Halle	1694	71	650
Heidelberg	1386	87	718
Jena	1557	69	380
Innsprück	1673 1826	22	278
Kiel	1655	42	142
Königsberg	1553	64	326
Leipzig	1409	113	807
Marburg	1527	61	268
Munich	1826	98	1,810
Olmütz	1581 1827	13	203
Prague	1348	88	1,415
Rostock	1419	31	111
Tübingen	1477	81	742
Vienna	1365	113	2,614
Würzburg	1403	47	706
Totals		1697	17,636

The teachers consisted of the following classes, viz., 1. Ordinary professors; 2. Extraordinary professors; 3. Honorary professors; 4. Private teachers or tutors; 5. Language and exercise-masters. The students consisted of—

1.	Students of Protestant theology	1692
2.	... Roman Catholic theology	1606
3.	... law, statecraft, and forestry	6394
4.	... medicine, surgery, and pharmacy	3644
5.	... philosophy and philology	2592
6.	... not matriculated	1708

In the matter of education Prussia is the ruler and guide, and whatever is established or pursued in that kingdom comes sooner or later into operation in other states. Since the beginning of the present century education has occupied the attention and received a new impulse at the hands of the other governments; but it is only since 1848 that the school organization of Prussia has been transplanted into the Austrian territory, where, however, it still continues to experience the opposition of the nobles and clergy. The ignorance which formerly prevailed among the lower classes has almost entirely vanished in Northern Germany at least, and there is no class in which scholarly culture and scientific attainments may not be expected. The constant care, however, and determination of the government to make all partakers of a certain amount of education has made it seem necessary to constrain all parents by fines or other punishments to send their children to school. Peculiar attention is at present being paid to educational institutions, and the governments are seeking to reform them so as to prevent the recurrence or continuance of those evils that are believed to have flowed from them, and to have occasioned, in a great degree, if not entirely, the popular outburst in 1848.

Mental cultivation and the general diffusion of knowledge are largely promoted by means of numerous public libraries established in the capitals, the university towns, and other places. The most celebrated public libraries are those of Vienna, Berlin, Göttingen, Munich, Dresden, Hamburg, Wolfenbuttel, Stuttgart, Frankfort-on-the-Maine, and Weimar. Besides the public ones there are throughout Germany many private libraries of extraordinary richness in literary treasures of all kinds. There are also numerous societies and unions, among which the most distinguished are the academies of sciences at Berlin and Munich, and the society of sciences at Göttingen, which are state institutions. With scientific collections of all kinds every place is richly provided, either at the public expense or by the favour of private persons. The observatories of Altona, Berlin, Breslau, Göttingen, Mannheim, Munich, Prague, Seeberg near Gotha, Vienna, and Königsberg in Prussia, are distinguished for the promotion of astronomy and other branches of physical science. The taste for astronomy is very great in Germany, as is evidenced by the existence of many private observatories, among which those of Olbers at Bremen, and of Beer near Berlin, are the most celebrated. In this department Germany can boast of the names of Copernicus, Kepler, Herschel, Olbers, Bessel, and many others.

Fine arts.

The fine arts likewise are carefully fostered. There are academies at Berlin, Dusseldorf, Munich, and Vienna, whose object it is to spread a taste for painting, sculpture, architecture, and music, and to improve the technics of art. The taste for art has struck deep root among all the educated Germans, particularly in the north, and is directed and represented by three schools, those of Berlin, Dusseldorf, and Munich, which have produced some of the finest proofs of German genius. Besides the academies, there are numerous art-museums and collections of pictures and antiquities, particularly in Berlin, Cassel, Dresden, Munich, and Vienna. In sculpture German genius has of late years greatly excelled, as in the works of Dannecker, Schwanthaler, and Kiss; and architecture has received the greatest encouragement in the erection of both public and private buildings of great magnificence, of which the late king of Bavaria showed the most munificent example in the embellishment of his capital Munich, and the erection of the German Valhalla, near Ratisbon, though the attempt to adapt the Grecian temple style, without regard to climate and other circumstances, to modern buildings, intended for very different purposes, has failed as completely there as it has everywhere else.

Book trade.

The activity of the German mind on the wide fields of art and science has, through the effect of general intercourse and exchange of ideas, produced a liveliness of which the Germans believe there is no parallel to be found in any other country of Europe. The German book trade, in respect of the position it has gradually acquired since the Reformation, must be considered as a prime mover in the mental culture of Germany; while, in a material point of view, it has acquired an extent and importance elsewhere unknown. Thousands of people find in it employment and maintenance, as printers, typefounders, machine-makers, paper-makers, and bookbinders; and the productions of the press are spread over all Germany with the most marvellous rapidity. Leipzig is the central point of this important branch of industry. The general taste for the beautiful has had its effect on the art of printing, in requiring the use of fine, close, white paper, clear type, and elegant binding, instead of the gray-brown blotting paper, and worn out and broken type, that were formerly used. The periodical press is very active; but political discussion is not free. On political subjects freedom of speech does not suit the German governments, and offences of this kind are very severely punished, as happened in 1854 with Gervinus in Baden. On religion, however, and philosophy, the utmost freedom of publication is allowed; and the effect has been almost to root out ancestral faith and dogmatic theology from the minds of most educated people, though, of late years, an evangelical reaction seems to have made, or to be making, considerable progress. The publication of Kalendars, which have been of late years vastly improved, is of much importance in the instruction of the people. Almost every town in Germany has its own daily newspaper, and of these five have acquired a European reputation, if not for the excellence, at least for the importance of their contents. These are the Austrian *Observer* and the Prussian *State Gazette*, the organs of their respective governments; the Hamburg *Correspondent*, and the Augsburg and Leipzig *General Gazettes.* Of the number of weekly newspapers and popular instructive publications, their name, says Dr Berghaus, is legion. The higher branches of learning and of art are equally well attended to by their respective journalists.

No field of knowledge has been left uncultivated by the Germans; but much of the best talent of the country has been wasted in the attempted cultivation of the barrenest of all fields, that of speculative philosophy, or, if it be not a contradiction in terms to call it so, the science of the unknowable. In this science the most eminent professors have been Fichte, Schelling, and Hegel, whose doctrines, promulgated during the first thirty years of the present century, almost entirely superseded those of the soberminded Kant, and prevailed to a wide extent; for in Germany, as elsewhere, says Schlosser, whenever a new direction is taken in philosophy or theology, a new head of a sect appears, or a new school is formed, a multitude of followers at once adopt, and devote themselves to, the new prophets with blind zeal and madness. The doctrines of these philosophers have, in succession, superseded each other, only to be superseded themselves in turn by some new phase of Idealism, or systematized play of words. The Hegelians have split into sects, or factions, and Kant is again in the ascendant. The Germans, however, seem to be awakening from their dreams, and to be now directing their attention more and more to the cultivation of the concrete, the positive, and the practical, instead of the abstract, the speculative, and the mystical, which have occupied so long the attention of their fathers. Speculative philosophy is said indeed to be almost already dead. There is not one celebrated professor to represent it in any German university. The governments dislike and discourage it; and the lectures of its remaining adherents are delivered in empty halls. Notwithstanding, however, this unfortunate predilection of the German mind for the speculative and the useless, Germany can boast of many names that have acquired pre-eminent distinction in the cultivation of physical science, and in philology, now no longer confined to Greek and Latin, but become of paramount importance in enabling us to trace the affinities of nations, and the early history of the earth's inhabitants. In this latter department the names of Adelung, Klaproth, Grotefend, William Von Humboldt, Bopp, Grimm, Lassen, and Lepsius, have become familiar even in Britain.

In theology, which, as treated by the Germans, must be considered as a branch of speculative philosophy, and not the least barren portion of it, they have been pre-eminently busy, the country swarming with theologians, and biblical critics and commentators, who have carried the Protestant principle of private judgment to its natural but very utmost extreme. In the art of explaining away the obvious meaning of the Bible they have never been excelled. Their theology, indeed, and criticism have degenerated into neology and rationalism, and even into a wide-spread pantheism, which seems to be the inevitable result of Hegel's principles carried out to their legitimate consequences. Supernaturalism, however, still asserts its right to hold the mind in bondage, and a strong evangelical party have roused themselves to oppose the prevalent scepticism and infidelity, with what success remains to be seen. Roman Catholic theology likewise still clings to the authority of the fathers and the decrees and canons of the church.

In the cultivation of their native tongue, the Germans long remained behind other nations. The language of books dates from the Reformation, but it has been only since the middle of the eighteenth century that it has been strenuously and systematically cultivated. This cultivation began with Gellert (1715-1759), Lessing (1729-81), Klopstock (1724-1803), and Wieland (1733-1813). Since their time the language has been cultivated to the utmost; and the rich fancy of the Germans has expressed itself in lyric poetry, ballads, idylls, fables, and epics. Lessing was the founder of dramatic poetry and true representation, which have been cultivated to excess. Novels, tales, and romances have given employment to thousands of persons, and pastime to millions of readers, but not always to the moral improvement of the nation. The multitude of writers in the department of belles-lettres defies enumeration.

Other German prose writers have been neither fewer nor less able than the poets and romancers, but their names have not had the good fortune to be so far renowned as those of Goethe, Schiller, Lessing, Richter, Tieck, and others. In history and geography many excellent works have been produced. In classical and biblical literature many Germans have acquired distinguished reputation as critics and editors. Many others have exhibited the most indefatigable zeal in ransacking all the treasures of ancient and modern learning; collecting materials for new judgments on every point of history, philosophy, science and art; and throwing, perhaps, as much doubt as light on many established opinions, venerable for their antiquity.

Political state.

As settled by the treaty of Vienna in 1815, Germany was divided into forty sovereign states, or portions of states; but the number is now reduced to thirty-five, as stated in the following table:—

Table of the Thirty-Five Sovereign States.

NAMES.	Area in square English miles.	Population in 1852.	Title of Sovereign.
Austrian provinces	75,979	12,919,300	Kaiser.
Prussian provinces	71,987	12,937,228	King.
Bavaria	31,392	4,559,452	...
Hanover	14,769	1,819,253	...
Würtemberg	7,632	1,733,269	...
Saxony	5,772	1,987,832	...
Hesse-Cassel	4,439	755,350	Elector.
Baden	5,918	1,356,943	Grand-Duke.
Mecklenburg-Schwerin	4,815	542,763	...
——— Strelitz	767	99,750	...
Hesse-Darmstadt	3,761	854,314	...
Oldenburg	2,421	285,226	...
Luxemburg	2,308	394,262	...
Saxe-Weimar-Eisenach	1,419	262,524	...
—— Coburg-Gotha	799	150,451	Duke.
——Meiningen-Hildburghausen	888	166,364	...
—— Altenburg	510	132,849	...
Holstein and Lauenburg	3,719	550,000	...
Nassau	1,757	429,060	...
Brunswick	1,507	267,177	...
Anhalt Dessau-Cöthen	666	111,759	Prince.
——— Bernburg	340	52,641	...
Waldeck	461	59,697	...
Lippe-Detmold	437	106,615	...
Schwarzburg-Rudolstadt	410	69,038	...
——— Sondershausen	359	74,956	...
Reuss, elder	145	34,896	...
—— younger	448	79,824	...
Schaumburg-Lippe	206	29,000	...
Liechtenstein	53	7,000	...
Hesse-Homburg	166	24,941	Landgrave.
Hamburg	151	211,250	City.
Lübeck	142	48,425	...
Bremen	106	88,000	...
Frankfort	91	73,150	...
Totals,	246,740	43,286,116	

The Saxon princedom of Gotha became extinct in 1826 by the decease of the last grand-duke, and his territories were divided by compact among his collateral relatives, the princes of Coburg, Meiningen, and Hildburghausen, the last of whom ceded Hildburghausen to Meiningen, and assumed instead the additional title of Altenburg, from the chief town of that portion of the Gotha territory that fell to his share. The prince of Coburg-Saalfeld likewise ceded Saalfield to Meiningen, and received Gotha in its stead. In 1846, the lordship of Kniphausen was absorbed in Oldenburg; in 1847, Anhalt-Cöthen became annexed to Anhalt-Dessau; and in 1849, the two princes of Hohenzollern abdicated the government of their states in favour of their kinsman, the king of Prussia.

Confederation.

These states exhibit every form of government from absolute autocracy to democracy; but even in those that are constitutional the authority of the sovereign is but feebly limited by his states. They are all united into a *bund* or confederation, the object of which is the maintenance of the external and internal security of Germany, and the independence and inviolability of the several states. The confederation is represented by the diet which is composed of the plenipotentiaries of all the states, and is the constitutional organ of its will and action; but the diet has no power of self-action, the plenipotentiaries that compose it acting only according to the special instructions of their respective sovereigns; and there is no central executive government to carry its resolutions into effect. In fact it has been found that there is no power of ensuring the combined action of the members for any object or purpose whatever, either civil or military; though, having many interests in common, and the territories of the smaller states, in multifarious parcels, being so intermingled[1] that with most of them separate action would be impossible, they naturally follow the same course of policy, modified by the influence of the powerful neighbours at whose mercy they would seem to lie.

The management of the ordinary business of the bund is entrusted to an ordinary and permanent diet, at which the plenipotentiary of Austria presides; but there are only 17 votes to be divided among the 35 states, Austria, Prussia, and the larger states having one each, and only six being allotted to the smaller states and cities. When fundamental laws are to be made or changed, when measures are to be taken that relate to the federal act itself, when changes of organic institutions or other arrangements of general interest are to be adopted, when war or peace is to be made, or when a new member is to be admitted, the diet becomes a general assembly, a *plenum*, in which 70 votes were originally distributed among the members in classes, Austria, Prussia, Bavaria, Saxony, Hanover, and Würtemberg, having each four; five others having each three; three having each two; and the smaller states each one vote.

The diet holds its sittings at Frankfort-on-the-Maine, and has ostensibly at its disposal, in terms of the federal act, a numerous army, of whose constitution and efficiency we have already given an account in the article Europe.

Authorities.

(*Das Europaïsche Staaten System, &c.*, Von Dr Heinrich Berghaus.—Vol. iv. of his *Allgemeine Lander und Volkerkunde.*—*Das Deutsche Land und seine Bewohner*, von Carl Winderlich. Leipzig, 1852. *Deutschland und das ubrige Europa.* Vom Dr Freiherr Friedrich Wilhelm von Reden. Wiesbaden, 1854. *Universal Lexikon*, &c. von H. A. Pierer, Vierter Band. Altenburg, 1850; articles *Deutschland*, &c.) (W. J. & J. L—IE.)

GERMEN, or Germ, in *Botany*, the name formerly used for the ovary or seed-bud.

GERMINATION. See Botany, v., pp. 162–7.

GERONA, anciently Gerunda, a city of Spain, was well fortified till the French invasion of the Peninsula in 1808. It is the capital of the modern province of the same name—one of the four into which Cataluña has recently been divided. It stands on a declivity, and at the foot of a steep hill surmounted by the fortress of Monjuí, near the junction of the Ter and the Oña, 54 miles N.E. of Barcelona. The name of Gerona, is thought by many to be a compound of the Celtic *ger*, "near," and *ond*, "confluence." The form of Gerona is nearly triangular; and it is defended by the Monjuí, which is a square fort 720 feet on each side, with bastions and outworks of various kinds. The city wall is now in a very dilapidated state. Gerona boasts that it is the city in which St Paul and St James first rested when they came to Spain. During the time of the Moors it generally took part with them, though not unfrequently it changed sides. Its Emir Soleyman was in alliance with Pepin so early as 759 A.D. It was taken by Charlemagne in 785; but the Moors regained and sacked it in 795. Soon after, it was recovered by its counts, and then passing to Aragon, it gave the title of prince to the king's eldest son. The most remarkable and interesting relic of the Moorish period is an elegant bath in the Capuchin Convent: it is a light pavilion rising from an octangular stylobate. The modern town contains three *plazas*. The part of the city situated on the left bank of the Oña is called the Mercadal, and is very ancient, but now much dilapidated—the results of the French siege and bombardment. The bishop's see was founded so early as 786 A.D. by Charlemagne; and the ancient cathedral was pulled down and rebuilt in 1316. The approach to this cathedral is very handsome and imposing. There is a superb flight of 86 steps, raised by Bishop Zuazo in 1607, leading to the façade, which rises in tiers, order above order, and terminates with an oval rose-window. The upper story of the hexagonal belfry tower commands a fine panoramic view. In the cathedral are the tombs of Ramon Berenguer II., and his wife Ermesendis, who died in 1058 A.D. In the archives in the cloister are some early MSS. and a copy of the Bible written in 1374 by Bernardin Mutina for Charles V. of France, but ascribed here to Charlemagne.

Gerona has been several times blockaded. In the war of the succession, Philip V. came against it with 19,000 troops, and abolished its university and its liberties. Again, in June 1808 with 300 men of the Ulster regiment under O'Daly, Gerona beat off Duhesme with 6000 men. Once more, in May 1809, it was besieged by the French with 35,000 troops under Verdier, Augereau, and St Cyr, who bombarded the city; and though the resistance was dogged and desperate, at last famine and disease effected what force of arms could not accomplish, compelling the governor Alvarez to capitulate on 12th December 1809. In this siege the French spent 20,000 bombs, 60,000 balls, and lost 15,000 men. The manufactures are coarse woollen and cotton goods, hosiery, paper, and soap. The trade of the city is, however, very insignificant. Every one here seems to live alone, giving the place a very melancholy look. It has no theatre, no public amusements, no common rendezvous. The population amounts to about 8000, of whom one-fourth are priests, monks, nuns, and students. (*Memorias*, por J. A. Nieto y Samaniego, Tarragona, 1810; *Resumen de las Grandezas*, por Juan Gasper Roig y Yalpi, fol. Barcelona, 1678; Ford's *Handbook of Spain*).

GERONTES, in *Grecian Antiquity*, the members of the γερουσία, or council of elders in the states of Doric origin generally; in a more limited sense applied to the senators of Sparta. The constitution of the Gerusia was essentially aristocratic. It corresponded to the βουλή or democratic assembly of the Ionic states of Greece. No one was elected into it who was not sixty years of age. The conditions were also of a very exclusive nature. In theory, the office was held to be the reward of virtue, and none were admitted to it but persons of known character and distinguished position. The Gerusia comprised in all thirty members, returned by the thirty "obæ," or "phratriæ," into which the three tribes that constituted every Doric state were subdivided. The method of their election was peculiar. The candidates presented themselves in succession before their constituents, who received them with applause proportioned in intensity according to their respective merits. Persons were stationed in an adjoining room to note the applause without knowing by which of the candidates it was elicited. The candidate most applauded was declared successful. An election was a matter of great importance, and the result was always watched with great anxiety. The powers of a councillor were great. His term of office was for life, and his authority was irresponsible.

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[1] For example, the grand-duchy of Saxe-Weimar-Eisenach consists of at least 10 parcels perfectly separated from each other by the territories of other states, Hamburg and Lubeck each of 7 or 8. In short, the 35 states are divided, within Germany, into more than 150 separate parcels of territory, all inextricably mixed together.

It is not easy to define with exact precision the extent of the functions of these councillors. They were partly legislative, partly executive, and partly judicial. As a criminal court they could punish without appeal by death and civil degradation. They appear to have also taken a general care of the lives and morals of the citizens, and made provision against the dangers of wealth and luxury by maintaining the ancient strictness of discipline and austerity of manners.

GERRHA, near the modern El-Katif, one of the chief cities of Arabia, stood on the N.E. coast of Arabia Felix, and became a great emporium for the trade of India and Arabia. The site is about 25 English miles from the shore of the Sinus Gerrhaicus, now Elwah Bay, on the W. side of the Persian Gulf, 240 miles from the mouth of the Tigris. The inhabitants were considered originally to have been Chaldeans who had been expelled from Babylon. Niebuhr considers it the modern Koneit. There was a small place of the same name on the N.E. frontier of Egypt, about 8 miles from Pelusium.

GERS, a department of France, so called from the river of that name by which it is intersected. It is composed of parts of the old provinces of Gascony and Guienne; and is bounded N. by the department of Lot-et-Garonne, E. by Tarn-et-Garonne and Haute-Garonne, S. by Hautes-Pyrénées and Basses-Pyrénées, and W. by Landes. It lies between 43. 17. and 44. 5. N. Lat., and between 1. 10. E., and 0. 18. W. Long., being about 72 miles in length from E. to W., and 53 in breadth from N. to S., and having an area of 2425 square miles. This department is hilly, particularly in the south, where it is mostly covered with ramifications of the Pyrénées. Some of those in the north attain a height of nearly 1200 feet above the level of the sea, but they rapidly decrease in height towards the south. The principal of them run from N. to S., and are separated from each other by longitudinal valleys, each having its own peculiar stream. Thirty-eight water-courses mark out as many valleys of great beauty and fertility, opening in width from a few yards in the southern to three or four miles in the northern extremities. The greater part of this department belongs to the basin of the Garonne, while a small portion in the W. is drained by the Adour. The chief affluents of the former are the Save, Gimone, Arratz, Gers, and Baïse; and those of the latter, the Arros, Midou, and Douze, the last two uniting and taking the name of Midouse previous to joining the Adour. None of these rivers is navigable within the department. The climate is temperate and salubrious, but very changeable. The coldest month is January, but from October to May, rain, frost, and snow are not unfrequent. In May and June the weather is warmer, and during July and August is very hot. Of this department rather more than $\frac{1}{2}$ is arable, about $\frac{1}{7}$th in vineyards, $\frac{1}{10}$th in natural pasture, $\frac{1}{10}$th in woods and forests, $\frac{1}{17}$th in heath and moorland, and $\frac{1}{32}$d in rivers, ponds, and canals. The soil is not of great fertility, but is tolerably well cultivated, and the grain produced is more than sufficient for home consumption. Wheat, maize, oats, and rye, are the principal grain crops. The quantity of wine annually produced is about 24,000,000 gallons, of which about one-third is used for home consumption, and the remainder is chiefly manufactured into brandy known by the name of Armagnac. Horned cattle, sheep, mules, swine, game, and poultry, particularly ducks and geese, are abundant. The minerals and manufactures of this department are unimportant. It is divided into five arrondissements as follows:

	Cantons.	Communes.	Pop. 1851.
Auch	6	85	61,925
Lectoure	5	72	51,125
Mirande	8	152	83,113
Condom	6	87	69,901
Lombez	4	71	41,415
	29	467	307,479

GERSON, Jean Charlier de, chancellor of the University of Paris, surnamed the Most Christian Doctor, was born in 1363 near Reims, in Champagne, in the village of Gerson, from which he took his name. He was educated at the college of Navarre in Paris, and there distinguished himself so highly that he was chosen to succeed the famous Pierre d'Ailly as chancellor of the university, and canon of Notre Dame. These appointments Gerson owed to the influence of his friend the Duke of Burgundy. When that nobleman, however, tarnished his good name by the murder of the Duke of Orléans, none denounced his conduct more severely than Gerson who owed him so much; and the duke's partizans, enraged at what they considered his ingratitude, broke into his house and pillaged it, and would have slain himself, had he not fled for refuge to the vaults of Notre Dame. Undaunted by these demonstrations, Gerson, as soon as he resumed his functions, attacked before the church and the university of Paris the doctrine of Jean Petit, a hireling apologist of the murder of Orléans as a legitimate act, on the ground that the murdered man was a tyrant; and that tyrannicide was not only lawful but praiseworthy. In the schism which long divided the church, Gerson was often employed on missions to the popes at Rome and Avignon; and by his treatise *De Unitate Ecclesiastica* contributed to bring about the result afterwards attained by the Council of Pisa, when the rival popes Gregory XII. and Benedict XIII. were both deposed in favour of Alexander V. At this time, also, Gerson wrote his famous essay *De Auferibilitate Papæ*, in which he advocated, not as has been sometimes thought the suppression of the papal office, but the right of the church to depose any particular pope, when the interests of peace and unity require it. At the Council of Constance he appeared as ambassador of Charles VI., and exercised immense influence, especially in effecting the deposition of Pope John XXIII. who had succeeded Alexander V. The object of all his writings and speeches at this time was to vindicate the power of the church over its temporal head as well as its members; to prove the necessity of councils, general as well as special, and their right to meet without the papal consent, if that be needlessly withheld; to extirpate simony, at this time very common, &c. He was also successful in establishing the supremacy of the church in matters of doctrine and discipline as the basis of the decrees of the council. On the same occasion he distinguished himself in the discussions with John Huss; and though the spirit of the age was still too strong upon him for him to use his influence in preventing the martyrdom of that theologian and his party, yet many acts of his life show his religious zeal to have been wonderfully free from bigotry or superstition. In his essay *Contra Sectam Flagellantium*, he denounced the abuses of these fanatics and their leader, whom he endeavoured to reclaim by friendly remonstrance. Again, in his work *De Probatione Spirituum*, he laid down rules for distinguishing false revelations from true. He applied these rules in the case of St Bridget, whose revelations were then making a great noise in the world. Gerson proved these pretended prophecies to be false, but the influence of the famous Cardinal Torquemada saved their author from the consequences of her imposture. Instead of returning home from Constance, Gerson, well assured that the powerful faction of the Duke of Burgundy were plotting his destruction, fled for refuge into Germany. Disguised as a pilgrim, he sought the mountains of Bavaria, where, in imitation of Boethius, he wrote his *De Consolatione Theologiæ*, partly in prose and partly in verse. From Bavaria he passed into Austria, where the duke offered him an asylum. At the abbey of Mölek where he resided were found after his death many copies of his works, especially that on the Consolation of Theology. Appended to one of these was found for the first time a MS. of the *Imitation of Jesus Christ*, which circumstance gave rise to the idea that Gerson was the author of that famous work. Many competent authorities still incline to support the claims advanced in favour of the learned Frenchman. After a residence of several years in Germany, Gerson returned to France, and fixed his residence at the convent of the Celestins at Lyons, of which his brother was prior. Here he employed the remainder of his days in teaching and catechising the little children whom he daily collected in the church of St Paul, and from whom he exacted no other fee than that they should repeat on his behalf the simple prayer, "Seigneur, ayez pitié de votre pauvre serviteur Gerson." In the midst of these humble functions Gerson died, 12th July 1429, at the age of sixty-six. (*Biog. Univ.; L'Enfant's Hist. of the Council of Constance*, &c. &c.)

GERUND (*gerundium*, from *gerere, to bear*), in *Latin Grammar*, a verbal noun of the neuter gender, in form nothing else than the four oblique cases singular of the neuter of the gerundive or participle of necessity. It governs the case of its verb, and in signification supplies the place of a declinable infinitive active. See Zumpt's *Lat. Gram.* § 655, &c.

GERUSIA, in *Antiquity*, the assembly of elders at Sparta. The term was also applied to like councils in other Dorian states. See GERONTES.

GERVAISE, or GERVASE, of Tilbury, an historian of the thirteenth century, was a native of Tilbury in Essex, and nephew of Henry II. The exact date of his birth has not been ascertained. Having visited part of Europe, he arrived about 1208 at the court of Otho IV., emperor of Germany, who received him with the greatest distinction, and appointed him marshal of the kingdom of Arles. Gervase died about 1218. His principal works are—*Otia Imperiali*, libri tres, a work which is also known under the titles *Mappa sive Descriptio Mundi*, and *De Mirabilibus Orbis ; Illustrationes Galfridi Monemuthensis*, libri iv. ; *Historia Terræ Sanctæ ; De Origine Burgundiorum ; Facetiarum liber*, dedicated to Henry II. of England ; *Tricolumnium Angliæ* ; and, *Metrica Descriptio Balneorum Puteolanorum*. The compilation of the Exchequer book, entitled *Liber Niger Scaccarii*, was ascribed, though on insufficient evidence, to Gervase. Bale and Pitts differ considerably in their accounts of Gervase's works, the greater part of which still remain in manuscript, and are but little known.

GESENIUS, FRIEDRICH HEINRICH WILHELM, a distinguished German orientalist and biblical critic, was born in 1786 at Nordhausen, in Hanover. He was educated at the gymnasium of that town, and afterwards at the universities of Helmstadt and Göttingen. In 1806 he became *magister legens*, and *repetent* in the latter university, where he continued for three years. His studies had early been turned to the oriental languages ; and the need which he soon perceived of a better mode of treating both the grammar and lexicography of the Hebrew, led him to devote himself exclusively to the elucidation of the Old Testament. This determination he formed during his residence at Göttingen, where he already made preparations for his Hebrew lexicon. In 1809 he was appointed professor of ancient literature at Heiligenstadt, whence in the following year he was transferred to Halle. After holding a subordinate office there for a year, he was chosen in 1811 ordinary professor of theology. Many offers were subsequently made to him of high preferment elsewhere, but he clung to Halle during the remainder of his life, and never left it except for an occasional literary journey to England or France or some part of Germany. It was at Halle that he died, Oct. 23, 1842.

The great literary objects to which the life of Gesenius was devoted were first the lexicography and then the grammar of the Hebrew tongue. At the early age of twenty-six he had completed his dictionary of the Old Testament, a work exhibiting a depth of research, a command of materials, and a sagacity in using them, that immediately placed its author in the first rank of modern philologists. Gesenius himself in after life came to regard this as a juvenile effort, and disavowed many of the views and results embodied in it. The lexicon was followed in 1813 by a grammar, which in its successive editions has continued to be the current and almost the only grammar of the Hebrew tongue in common use in the schools of Germany. In 1815 he conceived the idea of a thesaurus of the Hebrew language. This work he was unable to execute on the scale which he had originally proposed, and it finally took the form of a manual or lexicon for schools. In that same year appeared his *History of the Hebrew Language*, which, however, has been long since superseded by his own researches, as well as those of other scholars. Gesenius' next work was published under the title of *Lehrgebaüde*, a systematic work on Hebrew grammar, a vast and valuable storehouse of the *facts* of Hebrew, but defective in so far as it enters little into the *philosophy* of the language. During these and the succeeding years Gesenius was amassing materials for his *Thesaurus*, of which the first fasciculus appeared in 1827. Various causes prevented him from bringing out the parts regularly, and death surprised him before he had quite completed the whole work. The only other important work of Gesenius which remains to be mentioned is his *Commentary on Isaiah*, on which he has brought to bear all his learning and ingenuity. His opinions as to the origin, history, and prophetical character of this book are strongly tinged with those rationalistic views with which he had allowed himself to become imbued in early life. The services which Gesenius rendered to literature by his writings were not his only or indeed his greatest ones. To him alone is due the revival of Hebrew learning in Germany, where it had almost fallen into abeyance since the time of the Buxtorfs. When he opened his course at Halle, he had only ten students ; for some years before his death their numbers had increased to 500 annually. As a lecturer he was natural and animated, and always perfectly clear and intelligible. In respect of these latter qualities, indeed, his mind seemed as if cast in an English rather than a German mould. (Robinson's *Bibliotheca Sacra ; Encycl. of Religious Knowledge ; Encycl. des Gens du Monde*, &c.)

GESNER, CONRAD, a celebrated naturalist, surnamed the Pliny of Germany, and, for his time, a prodigy of application, knowledge, and sagacity, was born at Zurich on the 26th March 1516. He was the son of Vasa Gesner, a furrier, and Barbara Frick, persons who, besides being poor, had several other children, so that he would not have been able to continue his studies had it not been for the assistance of his maternal uncle John Frick, a minister, who formed his taste for literature, and gave him his first ideas of botany. But this uncle having died, and his father having been killed in 1531 at the battle of Albis, where the celebrated reformer Zwinglius also perished, young Gesner found himself obliged to seek his fortune in a foreign country. He accordingly went to Strasburg, where, by means of a salary, he for some time seconded the labours of Capiton; then, having obtained some assistance from the canons of Zurich, he repaired to Bourges, and there commenced the study of medicine. At the age of eighteen, having occasion to visit Paris, he indulged without guide and without restraint his passion for all kinds of study, being assisted in his poverty by John Steiger, a young Bernese of patrician family, with whom he was connected by the ties of friendship. From Paris he returned a second time to Strasburg, whence, in 1536, he was recalled to Zurich to occupy in the college of that place the petty employment of regent. But the magistrates having soon perceived that he was formed for less obscure and more important labours, made him in 1537 a new grant to enable him to continue his medical studies at Bâle; and it was in this city that he began to labour for the public by superintending an edition of the Greek Dictionary of Favorinus. The following year the senate of Berne having founded an academy at Lausanne, Gesner was appointed to that institution, and taught Greek there for three years. He then passed a year at Montpellier, where he became intimately connected with the celebrated physician Laurent Joubert, and the great naturalist Rondelet. At length, in 1541, he was received as doctor in medicine at Bâle, where he completed some extracts from the Greek and Arabian authors on botany and medicine, which were published the same year at Zurich, and the succeeding one at Lyons. Soon afterwards he published a Catalogue of Plants in four languages, in which he gave proofs of very extensive knowledge in botany, and indicated several vegetables which were then new. Some journeys in the Alps of Switzerland and Savoy enabled him to discover other plants which were also new, and led him in 1542 to write a little book on milk, accompanied by a letter on the beauty of the mountain scenery. The same year he translated from the Greek a Treatise on Syllogisms, and other philosophical works; which were followed in 1543 by the Maxims of Stobæus, and in 1544 by the Allegories of Heraclides of Pontus, the Discourse of Dion Chrysostom on Homer, and a "purified" edition of Martial. In 1545 he made a journey to Venice and to Augsburg, where he formed an acquaintance with several men of merit, and had an opportunity of consulting many rare works and valuable manuscripts. It was then that he began to bring out his famous *Bibliothèque Universelle*, the first great bibliographical work which the moderns had produced. The titles of all the works then known in Hebrew, in Greek, and in Latin, whether extant or lost, and often a summary of their contents, with a judgment of their merits, and some specimens of their style, formed the substance of this collection. The first volume, published at Zurich in 1545, is classed in the alphabetical order of the names of the authors; the second, which is arranged in the order of the materials, and divided into nineteen books, appeared at the same place in 1548, under the title of *Pandects;* the twenty-first book, devoted to theology, was published the following year; but the twentieth, which was to treat of works on medicine, has not been printed, because the author did not conceive it so complete as it ought to be, or as the subject required. The Library of Gesner has been abridged by Lycosthenes, and completed by Simler and by Fries, Zurich, 1583, in folio. During the same time he occupied himself with editions or translations of different small Greek treatises; in particular, he published a corrected edition of Hermolaus Barbaro, a critical Preface on the works of Galen, another on the History of Plants by Tragus, a Treatise on the Mineral Waters of Switzerland and Germany, and a Description of Mont Pilat near Lucerne. But amidst these diversified labours he lost no opportunity of collecting and arranging materials for a great work on Natural History, of which he had conceived the plan from his earliest youth. Numerous friends whom his merit had procured him over almost all Europe, sent him figures and notices of the productions of their various climates, and sometimes the natural objects themselves, which he caused to be painted and engraved. As often as he had leisure, he also travelled in Switzerland and in Germany. He had long desired to visit the coasts of the North Sea, but the religious war which broke out in 1551 constrained him to return home without having accomplished the object of his wishes. Gesner has written on the three kingdoms of nature, but his History of Animals is the most considerable of his works on natural history, and that which will ensure him the most enduring reputation. It is divided into five books, which are commonly bound in three volumes folio. The first book, printed originally at Zurich in 1551, treats of viviparous quadrupeds; the second, printed in 1554, of oviparous quadrupeds; the third, printed in 1555, of birds; the fourth, printed in 1556, of fishes and other aquatic animals; and the fifth, a posthumous publication, which appeared at Zurich in 1587, of serpents. There was to have been a sixth book on insects, but it is doubtful whether Gesner had commenced preparing it, and all that remains consists of some inedited figures of butterflies. Besides these first editions of the different parts of the History of Animals, there appeared several others, some of which, considerably amplified, were printed during the author's lifetime, or after his death, in Latin, German, and French, and also various abridgments under the titles of *Icones Animalium*, *Icones Avium*, *Nomenclator Aquatilium*, &c. In this great work the author arranges animals in the alphabetical order of their Latin names, and gives details respecting each, divided into eight heads, viz., its denominations in the different languages, ancient and modern; its description, internal as well as external, and the countries it inhabits; the duration of its life and of its growth, with the epoch of its fecundation and birth, and the number produced at a birth; the maladies to which it is subject; its peculiar habits and instincts; its utility; the aliments on which it subsists; the remedies which it supplies; and, lastly, the images which it furnishes to poetry and eloquence, as well as the epithets which have been applied to it. This work may be considered as the basis of all modern zoology. Copied almost literally by Aldrovand, and abridged by Johnston, it has served as the foundation of works much more recent; and more than one celebrated author has borrowed from it, without acknowledgment, nearly all his erudition. Another important service rendered by Gesner to zoology consists in his edition of a complete translation of the works of Ælian, which he published in 1556, immediately after his volume on fishes. His new notes on the text, which had long occupied his attention, appeared for the first time in the edition published by A. Gronovius, London, 1744, two vols. folio, as those on the *Historiæ Diversæ* did in the edition of Leyden, 1731, 4to. His *Enchiridion Historiæ Plantarum*, printed at Paris in 1541, is not deserving of much attention; it is a youthful performance of Gesner, and is merely a compilation. His real botanical works, after having passed in manuscript into different libraries, were, about the middle of the last century, acquired by Trew, a botanist of Nuremberg, and published by Schmiedal, physician to the margrave of Anspach, Nuremberg, 1754 and 1770. They consist of Commentaries on the fifth book of Valerius Cordus, Fragments of a History of Plants, commenced according to the plan of Gesner, by his pupil, Wolf, and a great number of figures which he had designed, with the relative notes and descriptions. The little treatise of Gesner on the figures of fossils, stones, and gems, Zurich, 1565, 8vo, attracted attention to the subject of petrifactions and crystals; and we find from his letters, that he had made experiments on several minerals, and was not ignorant of the electrical qualities of certain precious stones. Lastly, in his *Mithridates de differentiis Linguarum*, Gesner, not confining himself to the comparison of different languages, threw out several very ingenious ideas respecting language generally, which have since been more fully developed. His own acquisitions as a linguist were in fact very considerable. He possessed a knowledge of the three learned languages, had some knowledge of Arabic, understood French, Italian, and Flemish, and had laboured much to improve the German language. So many useful works having secured to Gesner merited consideration, the magistrates of Zurich, in the year 1555, created him public professor of natural history. But he did not long enjoy this mark of esteem. A pestilential malady, which had commenced at Bâle in the spring of 1564, and extended itself to Zurich, where it re-appeared the following year with great fury, at length smote Gesner. During these two years he had bestowed great care on the persons who were affected with this disease, and had even written a dissertation on the best method of treating it; but a bubo having showed itself under his right armpit, although it occasioned him but little pain, he considered himself as doomed to fall a victim to the prevailing malady; and, accordingly, having caused himself to be carried into his cabinet, that he might put his works in order, he died there, while thus occupied, on the 13th of December 1565, aged only forty-nine years and some months. He bequeathed his library and his manuscripts to Gaspar Wolf, his pupil, whom he charged to publish all that could be extracted from his papers calculated to advance any branch of the natural sciences. (*Eloges de M. de Thou; Mémoires de Nicéron; Biographie Universelle.*) (J. B—E.)

GESSNER, Solomon, a Swiss painter and miscellaneous writer of considerable note, was born at Zurich in 1730. His early life gave no indication of the talents which afterwards made him famous. A residence in a romantic part of his native country awakened in him a love of poetry; and a volume of *Idyllen*, which both had and deserved success, encouraged him to fresh literary effort. His next attempt, the *Death of Abel*, was still happier and more successful than his Idylls. The story is based upon the narrative in the book of Genesis, and reflects the spirit of the Bible with wonderful closeness. The principal charm of the work, however, lies in its touchingly simple and pathetic descriptions of patriarchal manners. Some of the female characters are portrayed with beautiful truth and delicacy. The male characters, however, are deficient in force and individuality; and the descriptions of nature, though often very fine, are too numerous, and bear too great a likeness to each other. His pathetic scenes are sometimes spun out to a tiresome length, and the speeches of his *dramatis personæ* are often too detailed and languid to please any but a German reader. Gessner's other poem of the *First Navigator* is characterized by the same excellences and defects. All these pieces were speedily translated into the principal modern tongues, and their author became an especial favourite in France. Though often invited to exchange Switzerland for that country he steadily refused, and spent the remainder of his life in the energetic and successful pursuit of his business as a bookseller. His leisure hours were devoted to his favourite arts of painting and engraving, in both of which he attained very considerable eminence; and his house was the rendezvous of the leading artists and literary men of his native town. After his death, which happened in 1788, his fellow-citizens erected a handsome monument with a bust in his honour in one of the finest promenades in Zurich, at the confluence of the Lint and Limmat. There have been numerous editions of Gessner's works both in French and German.

GETÆ. See Dacia.

GETHSEMANE (seemingly from two Hebrew words denoting an *oil-press*), the name of a small field, or garden, just out of Jerusalem, over the brook Kidron, at the foot of the Mount of Olives. That which is now pointed out as the garden in which our Lord underwent his agony, occupies part of a level space between the brook and the foot of the Mount, and corresponds well enough in situation and distance with all the conditions which the narrative requires. It is about fifty paces square, and is enclosed by a wall of no great height, formed of rough loose stones. Eight very ancient olive-trees now occupy this enclosure, some of which are of very large size, and all exhibit symptoms of decay clearly denoting their great age. The garden belongs to one of the monastic establishments, and much care has been taken to preserve the old trees from destruction. Dr Robinson admits the probability that this is the site which Eusebius and Jerome had in view; and, as no other site is suggested as preferable, we may be content to receive the traditional indication.

GEX, a town of France, capital of a cognominal arrondissement, department of Ain, on the road from Paris to Geneva, 10 miles N.N.W. of the latter. It has an active trade in cheese, corn, wine, and charcoal, and contains 2710 inhabitants.

GEYSER (*i.e.*, *raging* or *roaring*), the name given to certain boiling springs in Iceland. These are particularly described under Iceland, and Physical Geography.

GHADAMES. See Gadames.

GHARA, in Hindustan, a river formed by the united streams of the Beas and Sutlej from their confluence at Endreesa to the confluence of the Chenaub, in Lat. 29. 18., Long. 71. 6. The length of course between these points is about 300 miles. See Sutlej. (E. T.)

GHAUTS. The term Ghaut signifies properly a pass through the mountains, or a place where boats land. But it has been applied to designate the mountainous chains which run in a direction nearly north and south through southern India. These are divided into the Eastern and Western Ghauts. The eastern ridge commences in the south at a point within about 20 miles of Cape Comorin, where it appears to issue from the termination of the Western range. From the point of convergence the Eastern Ghauts take a northerly direction, and may be characterized rather as detached groups and clusters of hills than as a regular range until they reach the latitude of 11. 40., when they assume the character of a continuous chain. The ridge then skirts the coast of Coromandel in a north-westerly direction to the vicinity of the city of Madras. At Naggery, in Lat. 13. 20., it forms a junction with the chain which crosses the peninsula in a south-westerly direction to the Neilgherries, where, according to some authorities, the point of junction between the two great ranges of Coromandel and Malabar should be regarded as taking place, instead of at Comorin as before stated. The course of the Eastern Ghauts north of the point of junction with the transverse range, is continued in a northerly direction, and terminates in the vicinity of Balasore, where they unite with the Vindhya mountains, and thus constitute one side of the triangle on which rests the table-land of the Deccan. In regularity and grandeur the Eastern Ghauts bear no comparison with those of Western India; their average elevation does not exceed 1500 feet. The intermediate table-land has consequently a gradual slope to the eastward, as indicated by the drainage of the country in that direction. All the principal rivers—the Godavery, Cauvery, Kistna, and Pennaur, though deriving their sources from the base of the Western Ghauts, find their way into the Bay of Bengal through fissures in the Eastern Ghauts. According to Captain Newbold, the mean elevation of the table-land around Bangalore and Nundidroog above the sea is 3000 feet; northerly, towards Hyderabad, it sinks to 1800 feet; and a little south of Bangalore it falls by rather abrupt steps 1400 feet to the level of the plains of Salem; whence to Cape Comorin the mean height of the country is about 400 feet. The average height of the low country between the Ghauts and the sea, on both the coasts of Coromandel and Malabar, may be roughly estimated at 200 feet, rising at the base of the mountains to 800 feet. On the Coromandel side the slope to the sea is gentle, exhibiting the alluvial deposits borne down from the higher portions of the table-land. Granite, gneiss, and mica slate, overlaid by clay slate and hornblende, constitute the geological strata of these mountains.

Ghauts, *Western*. This great chain of mountains runs along the peninsula of Hindustan, from Cape Comorin to the Taptee or Surat river, at the distance of not more than 60 or 70 miles, and in some places not above 40 from the western shore of the Indian peninsula, namely, the coasts of Malabar, Canara, &c.; and they are frequently visible from the sea, to which at one point they approach within six miles. By this peculiar configuration of the country all the great rivers of the peninsula of India run down the eastern slope of these mountains into the Bay of Bengal, there not being sufficient space for the collection of any great body of water on the western declivity, which is of greater elevation, and more abrupt in its ascent. These hills extend about 800 miles in length, forming a continuous line, with the exception of a break in the ridge about 16 miles wide, where the river Paniany takes its course from the Coimbetore country to the sea; and here it is well known that ships which navigate the Malabar coast during the N.E. monsoons commonly experience a stronger gale in the neighbourhood of Paniany than elsewhere—a circumstance which Major Rennell ascribes to this opening in the Ghaut Mountains. The range has an average height of 4000 feet above the level of the sea; but this degree of elevation is considerably exceeded at particular points, Bonasson peak being 7000 feet above the sea-level, and that of Dodabet in the Neilgherries having an elevation of 8700. At the extreme south near Cape Comorin, and at the point of convergence with the range from the opposite coast, the Western Ghauts terminate abruptly in a peak about 2000 feet above the sea. The average height of the low country between the Western Ghauts and the sea may be roughly estimated at 200 feet, rising to 800 at the base of the mountains. This tract, which is called the Coast of Malabar, is marked by a succession of irregular hilly spurs, from the Ghauts descending to the sea in abrupt cliffs. The altitude of this mountain chain is sufficient to intercept the great body of the clouds which are alternately impelled across the continent of India by the S.W. and N.E. monsoons; and accordingly these winds occasion a rainy season on one side of the mountains only, so that while the periodical rains are deluging the country on one side, the weather is serene and dry on the other. But it is only a particular tract of country that is sheltered from rain by the ridge of the Ghauts; for the clouds do pass over, but at too great a height and too much attenuated to be condensed into rain. At a greater distance, however, they collect into masses, and occasion a rainy reason in the countries farther to leeward. Thus, at Nagpoor, in the centre of the Deccan, the seasons differ but little from their usual course in Bengal and on the western side of India. They have a rainy season occasioned by the S.W. monsoon, though it is not so violent as in Bengal. At the mouth of the Godavery, and in the neighbourhood, the S.W. monsoon occasions a rainy season, when the Godavery is swollen and overflows; and this country is about the same distance to leeward of the Ghauts as Nagpoor. Major Rennel suggests that the clouds which occasion the rainy season at the mouth of the Godavery may come from Cape Comorin, though from the prevalence of westerly winds this appears doubtful. But it is certain that the clouds which bring rain at Nagpoor must pass over the Ghauts. Madras lies in the sheltered tract, though at least 300 miles to leeward of the Ghauts. The country near the mouth of the Godavery is about 200 miles further. It would be curious, if we had facts for such a speculation, to trace the limits between wet and dry, and thus to ascertain the influence which this elevated and extensive mountain chain exercises on the climate of the Indian peninsula; but without fuller and more minute information we can scarcely enter into such an inquiry.

The Western Ghauts, about the fifteenth degree of north latitude, although they are steep and stony, are by no means rugged or broken with rocks. On the contrary, in the Province of Canara the stones are buried in a rich mould, and in many places are not visible until they are dug up. Thus, instead of the naked, sun-burnt, rocky peaks, so common in the eastern chain, these mountains are clothed with stately forests. Dr Buchanan mentions that he had nowhere seen finer trees, nor any bamboos that could be compared to those he saw there. These bamboos compose a large part of the forest; they grow in detached clumps, with open spaces between, and equal in height the most stately palms, which are also found in great abundance. There is no underwood nor creepers to interrupt the traveller who may choose to wander in any direction through these woods. But there are numerous tigers, which, besides the unhealthiness of the climate, renders any long stay there uncomfortable. About midway up the mountain the teak becomes common; but it is very inferior in size to other trees. Roads have been formed through these mountains with great labour, out of a bed of loose rock. These roads are ploughed up by torrents during the rainy season, which wash away their softer parts, and leave single rocks of four or five feet diameter standing in the centre. The difficulty formerly experienced in penetrating these mountain passes was very great. In 1791, when the Bombay army was advancing to the Mysore through the Poodicherrim pass, it required two days to draw up twenty light field-pieces two miles, and three weeks to bring up the other artillery to the top of the Ghauts. (E. T.)

GHAZEEPORE, a town of Hindustan, and the capital of the district of the same name, situated within the jurisdiction of the lieutenant-governor of the north-western provinces. The town is built on the left bank of the Ganges, which is here crossed by ferry, and, according to Bishop Heber, is as wide as the Hooghly in the vicinity of Calcutta. At the eastern extremity of the town is the palace of Meer Cossim Ali, the Nawaub of Bengal, who rendered himself infamous by the massacre of his British prisoners The building is at present a custom-house, its numerous apartments being converted into store-rooms and habitations for the guards and officials. At the west end of the town are the military cantonments; and in their vicinity is the cenotaph monument to Lord Cornwallis, who died here in 1805. A government stud is maintained close to the town, and the races annually held here are reckoned among the best in India. According to the census of 1853, the population of the town amounts to 38,573.

The district, of which this town is the chief place, embraces an area of 2181 square miles. It is one of the most fertile districts in India, remarkably well supplied with water, being bounded and traversed by several noble rivers, among which are the Ganges, Goggra, Karamnassa, and Tons. Besides grain of all kinds, it produces cotton and sugar, as well as opium and very fine indigo; and it has long been celebrated for its attar of roses and rose water. The entire population is returned at 1,596,324, of whom 1,438,085 are Hindus and 158,239 Mohammedans. Ghazeepore, with other territory, was ceded to the East India Company in 1775 by the Vizier of Oude. The town of Ghazeepore is in Lat. 25. 32., Long. 83. 39. (E. T.)

GHEE, a kind of butter much used by the natives of India. It is prepared by boiling fresh-drawn milk (generally that of buffaloes) in earthen pots for an hour or more, and adding, after it has cooled, a little curdled milk called *tyre*, in order to promote its coagulation. When this process is completed, the curdled mass is churned for half an hour, some hot water is added, and the operation of churning continued for half an hour longer, when the butter forms. Its tendency to become rancid may be obviated by boiling it until all the water that may be mixed with it is evaporated, and then adding some tyre and salt, or betel leaf, and excluding it from the air in closed jars. In this way it may be preserved for many months. Ghee is an article of considerable commercial importance in many parts of India, though from its strong smell and flavour it is considered unpalatable by Europeans.

GHEEL, a town of Belgium, province of Antwerp, 26 miles E.S.E. of the town of that name. Lunatics and idiots are sent from all parts of Belgium to Gheel, where they are boarded with the inhabitants, and employed in manual occupations chiefly agricultural. In 1851 they amounted to 931. Pop. about 7000.

Name, features, and aspect.

GHENT (in Latin *Ganda*, French *Gand*, Flemish *Gend*, German *Gent*), a city of Belgium, standing on the rivers Scheldt and Lys, whose numerous branches traversing the town form canals in all directions, and so intersect each other as to partition the town into twenty-six islands, which are connected by forty-two large and forty-six small bridges. The number of fine promenades forms another striking and pleasing feature of Ghent. Of these the most remarkable is the Coupure, formed by rows of trees extending along the Bruges Canal. In general the town is well built, and occupies a larger area than most European towns in proportion to the number of houses and the population. The general aspect of the city, without being highly picturesque, is very agreeable. When Charles V. was recommended by the cruel Alva to raze it to the ground on account of its rebellion, which had given him so much trouble, he is said to have taken him to the top of the Beffroi (Belfry Tower), and showing him the vast city spreading out beneath, asked, " How many skins of Spanish leather (Alva was a Spaniard) would it take to make such a glove (*gant*[1]) ?" thus rebuking the duke's atrocious suggestion. And truly interesting is the prospect from this elevation. The walls extend nearly eight miles in circumference, inclosing a large space interspersed with gardens, orchards, and corn-fields, as well as with canals and rivers. The number of the squares and width of the streets permit the eye to range over more than mere roofing and chimneys. Besides the towers and steeples of numerous churches, and the imposing pile of the town-hall close by, in the distance is seen the site and ruined walls of the citadel, erected by Charles V. to overawe the rebellious citizens. Beyond this, if we continue the survey, lies the Great Béguinage, one of the largest nunneries in the world, with its streets and squares; and following the line of ramparts still further to the left near the Coupure promenade, the Maison de Force, a vast building resembling a wheel in its ground plan, with the prison-church steeple rising in the centre. At every turn in Ghent the eye is arrested by the picturesque appearance of the houses and the fantastic variety of gable-ends rising step-like, or ornamented with scrolls and carving. Most of the canals are bordered with magnificent quays, and some of them with beautiful rows of trees. The streets in general are wide and straight, and the greater number of them have been modernised. Almost all the houses are constructed on the Italian model, and are large, with ample portes-cochers, spacious court-yards, lofty stair-cases, tall windows, and frescoes and bas-reliefs occasionally on the exterior. Here and there, on the quays and in the narrower streets, are to be seen the gloomy old residences of " The men of Ghent," with their sharp tilted roofs and mullioned windows sunk deep into the walls. The most remarkable among the numerous squares are the Marché-du-Vendredi, where in early times the counts of Flanders were inaugurated and the trades unions used to assemble, but now the weekly market is held; the Kauter (the Flemish of " field") or Place d'Armes, a large square within the town, planted with trees and surrounded with large buildings, among which are the three clubs—the military, the nobles, and the merchants; the Plaine de St Pierre, especially used for reviews and military exercises; the corn market, near the centre of the town: the Place de Pharailde, near the Marché aux Poissons, where the old turreted gateway called the Oudeburg or 's Gravensteen (" the Count's Stone," *i. e.* castle) still stands hard by; and the Plaine des Recollets, with its numerous elegant mansions and fine hotels. Near the Marché-du-Vendredi is the enormous cannon, eighteen feet long and ten in girth, and nearly three feet wide at the mouth, formed like Mons Meg in Edinburgh Castle, and surnamed *Dulle Griete*, " Mad Margaret."

Dimensions,—squares and public buildings.

Principal public buildings.—The Cathedral of St Bavon (Flem. *Baefs*), an enormous structure, in its exterior rather heavy, but in its internal proportions and decorations one of the most splendid churches in Belgium. It has a large crypt, a beautifully carved pulpit, many interesting monuments and fine paintings, and is surmounted by an elegant tower 272 feet high. It was founded in 944; the choir and crypt were rebuilt in 1228; and the whole was finished in the beginning of the sixteenth century. It was at first dedicated to St John; but in 1540 received the name of St Bavon, when Charles V. caused to be removed to it the collegiate chapter of the abbey of St Bavon; and in 1560 the church was constituted a cathedral. The choir and transepts are lined with black marble, and the balustrades are of white or variegated marble, in the Grecian style; but these, though elegant, are very unfit for a Gothic church. The gates of the chapels are of brass, and every vacant space is ornamented with a painting or a statue. The arms of the knights of the Golden Fleece are affixed over the choir at a considerable elevation. The last chapter of this order was held here by Philip II. of Spain in 1559. The high altar is adorned with a statue of St Bavon in his ducal dress, and in front of it are four tall copper candlesticks which belonged to Charles I., and still bear the royal arms of England. The twenty-four chapels of this cathedral contain pictures of the highest excellence. The most ancient church in the city is that of St Nicholas, but it is now much altered by conflagrations and repairs. Other churches worthy of mention are St Michael's, an elegant light structure on the bank of the Lys, in the centre of the city; the parish church of St James, and many others, some of which are very ancient, and mostly all contain pictures and sculptures of great excellence. The only Protestant place of worship is the English church, on the Braband Dam. The university of Ghent is an elegant modern edifice, with a noble Corinthian portico after the model of the Pantheon at Rome, and founded by William I., king of Holland, in 1826. The museum of natural history is extensive, but it has no collections of any remarkable excellence. The library contains upwards of 60,000 volumes, and the number of students averages 350. Not far from the Beffroi stands the Hôtel-de-Ville, with two façades in totally different styles of architecture, having been built at intervals between 1480 and 1620, according to several different plans. The Beffroi or Belfry Tower, which originally served as a watch-tower, and contained the tocsin-bell, is one of the most ancient buildings in the town, and dates from A.D. 1182. To be allowed to erect a belfry was one of the earliest privileges obtained by the citizens of Ghent, hence they long regarded this tower as a monument of their power and wealth. The gilt dragon-weathercock on the top of it was a trophy brought from Bruges in 1382, on the conquest of that town by the men of Ghent under Philip van Artevelde.

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[1] Combien il fallait de peaux d'Espagne pour faire un *gant* de cette grandeur ?

Manufacture and trade.

The cotton manufacture is extensively carried on in Ghent, employing about L.1,800,000 of capital, engaging upwards of 20,000 persons, and annually producing about 1,000,000 pieces of plain and printed calicoes. Sugar-refining is also extensively carried on. The other important manufactures are common and table linens, flannels, serges, woollen cloths, silks, ribbons, lace, thread, hosiery, wax-cloth, oil, chemicals, armour, mathematical, physical, and surgical instruments, hardware, bronze and crystal, carriages, paper, tobacco, blue, starch, delft, &c. The important branches of trade are in corn, oil, seeds, Flemish linens, and wine. About 20,000 pieces of linen are exposed for sale every Friday, and the annual fairs are very numerously frequented, besides the horse fairs held in Mid-Lent and on 23d July. The great general fair is held in August. The governor of the province resides in Ghent, which is also the seat of a tribunal of first resort, as well as of a court of appeal, which has jurisdiction over all the province of Flanders. Ghent also gives title to a bishop, and is the headquarters of the first of the four divisions of the army of Belgium.

Government.

The Casino, whose destination is social, literary, and scientific, is a handsome building standing near the Coupure. The new theatre, in the corner of the Place d'Armes, is a fine erection, containing magnificent concert and ball rooms, and cost the town L.1,000,000. Besides these public buildings may be named, as worthy of notice, the Palais de Justice and the post-office. The modern citadel is situated on Mont Blandin, at the end of the elevated ground on which the western part of the city stands. It commands the course of the Scheldt and the Lys, and is one of the chain of fortresses defending the Belgian frontier. Ghent communicates with the sea by the Ternuzen Canal, a grand canal which enters the Scheldt at Terneuse. This confers on the city all the advantages of a seaport; vessels drawing seventeen feet water can unload in the basin under its walls; and at Sas van Gend, fifteen miles north of the city, there are sluices by means of which the whole country could be laid under water. The railways from Ostend to Liége and Brussels, and from Amiens to Amsterdam through Antwerp, pass through Ghent.

History.

The origin of Ghent is uncertain. Tradition ascribes it to the Vandals, who, in their irruption into Belgium, built a fort, named from them Vanda, afterwards changed into Ganda, whence Gandavum Castrum, which seems to be borne out by the existence of a fort on the left bank of the Scheldt, within Ghent, still bearing the name of Vandelaers Kasteel (Vandal's Castle). In the seventh century it is first mentioned as a town, but seems not to have acquired much importance till the twelfth, when its fortifications were completed, and it occupied only the space between the Scheldt and the Lys. At the end of the thirteenth century, however, it had become nearly as large as at present, so large indeed as in some measure to justify the pun of Charles V.—*Je mettrais Paris dans mon Gand* (gant). About 630 A.D., Dagobert sent St Amand to Ghent to convert its inhabitants from paganism. This saint founded two monasteries in honour of St Peter—one on St Peter's Mount, and the other near the Antwerp Gate. In process of time the second of these monasteries became richly endowed by some of the wealthier converts, among whom was one St Bavon, whose name became attached to this part of the city as well as to the abbey, of which some parts of the ruins may still be seen. Baldwin Ironarm, first Count of Flanders, built a fortress at Ghent, which was called 's Gravensteen (Count's Castle); and he as well as his successors encouraged persons skilled in manufactures, especially of linen and woollen. The Flemish nobles, about the end of the twelfth century, sold their possessions to their vassals in order to have the means of equipping themselves for the crusades. By this means the vassals became enfranchised; and the inhabitants of the Flemish towns, at the same time, having already become wealthy by their extending trade and improving manufactures, were enabled to purchase important commercial and political privileges, which were the foundation of the wonderful prosperity and liberty enjoyed by these communities during the middle ages. It was under these favourable circumstances that the "Men of Ghent" established their form of municipal government. They adopted a public seal, established a court of justice, elected sheriffs, joined the association of the Hanse Towns, and obtained the free navigation of the Rhine from the emperor Frederick I. In 1180 Ghent obtained a charter from Count Baldwin of Hainault, with great privileges, and became the capital of Flanders. Under these favourable circumstances so rapidly did Ghent increase in wealth and population, that by the end of the thirteenth century it surpassed the capital of France. At the commencement of the fifteenth century, in time of war, Ghent furnished 20,000 armed men, and had upwards of 40,000 engaged in the woollen manufactures alone. And many were the proofs furnished by the artizans and manufacturers of Ghent that these peaceful occupations in nowise diminished their valour. With increasing wealth and free institutions they waxed turbulent, and being led on by Jacques van Artevelde and his son Phillip (1332–1382), they raised frequent insurrections against the counts of Flanders, and during the succeeding century against the dukes of Burgundy. To this unfortunate spirit of turbulence and dissension, however, not only the city of Ghent but other large Flemish towns must trace their subsequent decline. Charles V. was born here in 1500, and eighteen years afterwards succeeded to the most extensive monarchy that had existed in Europe since the time of Charlemagne. The site of the palace in which he was born is now occupied by the Cour des Princes, a recently formed street. During his reign the city had a population of 175,000, inhabiting 35,000 houses. In 1557 Maria the sister of Charles V., who then governed the Netherlands, demanded from Flanders an extraordinary subsidy of 1,200,000 gold florins, of which Ghent was to raise one-third; but the inhabitants having already been heavily taxed in order to aid the emperor in his war with France, refused to comply with this new demand, and attempted resistance, but were immediately reduced to submission. The sad consequence of this ineffectual attempt on the part of the citizens was that Charles V. deprived them of all their valuable privileges, besides confiscating the property of many of the leaders in the revolt, and condemning others to death. Not only so, but above all this the citizens had to pay for the erection of a citadel to keep them in bondage. On the formation of the confederation for the expulsion of the Spaniards from the Netherlands, a congress was convened in Ghent; and the document known as "the Pacification of Ghent" was publicly signed by the confederates met in the Town-Hall, Nov. 8, 1576. Three days after, the Spanish garrison in the citadel capitulated to the citizens. Though this citadel was afterwards nearly destroyed (1584), yet parts of it may still be seen near the railway station towards the east of the city. But again, unfortunately, did Ghent submit to the Spanish dominion by signing the capitulation of Sept. 17, 1584. On this disastrous occasion one-third of the inhabitants left the town, and the citadel was rebuilt. The Belgian provinces in 1598 were severed from the dominion of Spain in favour of Isabella, daughter of Phillip II., wife of Albert, son of the emperor of Germany. After a siege of six days, Louis XIV., in 1678, took Ghent. Under the French, as well as afterwards during the campaigns of the Duke of Marlborough and the commotions of the French Revolution, it suffered much; but the advantages of its position, as well as the intelligence and industry of its citizens, seem to render it superior to all calamities. From 1792 till the overthrow of the power of Napoleon, Ghent was the capital of the department of the Scheldt. In 1814 Flanders became part of the kingdom of the Netherlands; and the same year the treaty of peace was signed here between Great Britain and the United States of North America, which put an end to the revolutionary war. In 1815, on the return of Napoleon from Elba, Louis XVIII. took refuge in Ghent; and in the revolution of 1830, this city with the rest of Flanders was comprised in the new kingdom of Belgium. The city seems now as prosperous as ever, and is increasing in population as well as in all the elements of wealth and power.

Ghent stands in Lat. 51. 3. 12. N., and Long. 3. 43. 51. E., at the intersection of the railways connecting Lille with Antwerp, and Ostend with Malines, from which towns it is respectively distant 42, 32, 38, and 33 miles. The population in 1851 was 106,704.

GHERIAH, a fortress of Hindustan, in the south of India, on a rocky promontory in the southern Concan, about one mile long, and a quarter of a mile broad. It is joined to the main land by a narrow neck of land; and lies about a mile from the entrance of a capacious harbour, formed by the mouth of a river which descends from the Western Ghauts. It was taken possession of by the Mahrattas in the seventeenth century; and in 1707 Conajee Angria had established an independent sovereignty here, and possessed a numerous piratical fleet. The depredations of these pirates drew on them the vengeance of the British; and in 1756 Angria's fleet was destroyed by Admiral Watson and Colonel Clive. Gheriah having surrendered, it was given up to the Peishwa under the treaty concluded in the same year with the Mahrattas; and upon the overthrow of that potentate in 1818 the place escheated to the British with the rest of his dominions. Distant south from Bombay 170 miles. Lat. 16. 32., Long. 73. 22. (E.T.)

GHIBELIN, the name of a celebrated faction in Italy, which was opposed to that of the Guelphs. Their origin is involved in some obscurity; but according to the generality of authors they arose about the year 1240, upon the excommunication of the emperor Frederick II. by pope Gregory IX. The Ghibelins were in favour of the emperor, while the Guelphs adhered to the pope. Authors are at variance respecting the precise date and cause of their origin. Maimbourg says that they arose in consequence of a quarrel between two ancient and illustrious houses on the confines of Germany—that of the Henris of Gibeling, and that of the Guelphs of Adorf. However this may be, their feuds long distracted Italy, so that the history of that country for the space of several centuries is little more than a detail of their mutual violence and slaughter. For further particulars see Italy, and Guelphs.

GHIBERTI, Lorenzo, an Italian sculptor, whose life marks an era in the history of modern art. He was a native of Florence, but it is not known in what year he was born. Vasari assigns his birth to the year 1380; but some original documents brought to light by Baldinucci place it two years earlier. While still very young, Ghiberti was taught drawing and the arts of modelling and casting metals by his step-father Bartoluccio, a goldsmith. The goldsmiths of Florence were at this time highly celebrated. He is believed to have afterwards received lessons in painting from Starnina, which he turned to account by painting a fresco in the Malatesta palace at Rimini, when compelled to leave Florence by the plague which devastated that city at the end of the fourteenth century. His success in this effort tempted him into the study of the pictorial art, when a circumstance occurred which gave him the opportunity of proving himself the first sculptor of his own day, and one of the most remarkable of all times. The Society of Merchants of Florence opened a competition for a pair of bronze doors for the Baptistery of St John's, to rival those erected about half a century before by the famous Andrea Pisano. Artists from all parts of Italy entered the lists, and seven were finally chosen to make trial of their skill, among whom were Brunelleschi, Donatello, and Ghiberti. Each of these artists was allowed a large fee and his expenses for an entire year, at the end of which period he was to present a panel of gilt bronze representing in bas-relief the sacrifice of Isaac. On the trial day the judges and competitors were unanimous in awarding the palm to Ghiberti, who, when he began his work, was invited by his employers to spare neither time nor expense in turning out a work worthy of his own genius and of the state. The gates, when finished, contained twenty panels, each with a relief representing some Scripture subject, and were pronounced by Michael Angelo as worthy to be the gates of Paradise. Some of the best of modern critics have denied that these gates are in all respects superior to those of Andrea Pisano, admitting indeed that they display greater invention and a higher skill, but pronouncing them inferior on the score of simplicity and correctness. Another objection is that the designs have been conceived rather in the spirit of painting than of sculpture, and that the artist's endeavour to represent perspective by various degrees of relief is wrong, in so far as the outermost figures cast shadows on those immediately behind them, though these inner figures are intended to be a considerable distance from the former. These defects, however, detract but little from the intrinsic merit of Ghiberti's masterpieces. These doors were set up in 1424; and four years later he received a commission to execute two others in a still richer style. This second engagement occupied eighteen or twenty years. It was not till 1446 that he completed his task. Some of Ghiberti's other bronzes are worthy of special notice, such as his statues of Saints John, Matthew, and Stephen in the church of Or-San-Michele at Florence, and the shrine of St Zenobius in the cathedral of that city. Ghiberti practised successfully some of the other branches of art, particularly that of painting on glass. Some of the finest windows in the cathedral and other churches of his native city were his handiwork. The exact date of Ghiberti's death is unknown. His will bears the date of 1455, and as he was at that time seventy-seven years of age, it is not likely that he long survived.

GHILAN, a province of Persia, lying along the S.W. shore of the Caspian Sea. It is bounded on the N.E. by the Caspian, S.E. by the province of Mazaunderan, S. by Irak-Ajemi, W. by Azerbijan, and N. by the Russian district of Talish. It is about 120 miles in length by 50 in breadth, being between 36. 25. and 37. 45. N. Lat., and between 48. 35. and 50. 47. E. Long: area, estimated at 5000 square miles. This is one of the most beautiful of the Persian provinces, being covered with lofty mountains and magnificent forests, forming a striking contrast to the parched plains of the rest of Persia. In many places, however, it is swampy and unhealthy. It is hemmed in on the S. and W. by the Elburz range of mountains, which rises to the height of from 6000 to 9000 feet, and can be crossed only by extremely steep and difficult passes. The interior and much of the coast line are intersected by morasses and thickly covered with forests of oak, boxwood, mulberry, and walnut trees. The only river of importance is the Kezil-Oozen, which descends from the Elburz mountains with the rapidity of a torrent, and flows with a meandering course through Ghilan to the Caspian. The soil is fertile, yielding abundantly rice, wheat, hemp, hops, and many kinds of fruit, as lemons, oranges, peaches, grapes, and pomegranates. Silk, however, is the most celebrated of the productions of this province, and constitutes the principal employment of the inhabitants. It is annually exported in great quantities to Irak, Fars, Kerman, and Russia. Ghilan was ceded by Persia to Russia in 1724, taken by Catherine in 1780, and restored to Persia in 1797.

GHIRLANDAIO. See Corradi, and Painting.

GHIZNI, an ancient and celebrated town and fortress of Afghanistan, on the western extremity of a range of hills running east and west, and rising a moderate height above the plain. As the plain itself lies very high, the site has an elevation of 7726 feet above the sea. The shape of the whole inclosed fortress is nearly an irregular square, and the total circuit is about a mile and a quarter. The face of the rock on which the walls are built is about 35 feet high and scarped nearly perpendicularly: the walls are about the same height, so that the parapet is 70 feet above the ditch. This wall is flanked by numerous towers, and surrounded by a *fausse-braye*. A wet ditch runs along the bottom of the steep on which the wall is built, and obtains a supply of water from the river of Ghizni, which flows round the western angle and is crossed by two bridges. The citadel in the north of the town is an irregular square, with a magazine in the west quarter, and a granary in the east. Three miles to the N.E. of Ghizni are the ruins of the old city, destroyed in the middle of the twelfth century by the prince of Ghoor. Amidst the destruction which overtook nearly all besides, the conqueror spared the tomb of the renowned Mahmood of Ghizni, the ruler of Persia, Turkestan, Afghanistan, and a considerable part of India. The tomb is a rude structure, consisting of an oblong chamber 36 feet long and 18 wide, with a mud cupola. The grave-stone is of marble, covered with inscriptions, and is highly polished—the result of being handled by numerous visitors during several centuries. The interior is hung with ostrich eggs, peacock feathers, and other trumpery. The apartment in which repose the relics of the mighty victor was, previously to the British invasion, closed by the gates which it is believed he triumphantly removed from the temple of Somnath in Guzerat. These gates, to which an undue importance has been attributed by Christian, Hindoo, and Mussulman, are of sandal wood, 18 feet high, each 5 feet broad and 3 inches thick, very beautifully carved in tasteful arabesques. As Mahmood is said to have removed these gates in 1024, they must, in this view, be above 800 years old, yet they are still in perfect preservation. In 1842, when the British under General Nott dismantled Ghizni, they carried off these gates with the view of restoring them to their original place in the temple at Pattan in Guzerat. Probably the earliest authentic notice which history affords of Ghizni is of the date 976, when it was made the seat of government by Abustakeen, an adventurer of Bokhara. He was, after a short interval, succeeded by Subuctageen, the father of the renowned Mahmood the destroyer. Few pursued the career of conquest with more perseverance or success than Mahmood, whose empire extended from the Tigris to the Ganges, and from the Indian Ocean to the Oxus. It fell to pieces on his death; and in 1151 his capital Ghizni was stormed by Allahudeen, Prince of Ghoor, who massacred the inhabitants on the spot, with the exception of those of rank, whom he conveyed to Ghoor, and there butchered, using their blood to moisten the mortar with which he constructed his fortifications. From that period Ghizni ceased to be independent; and at the time of the British invasion it was held by a garrison of 3000 men, under the command of Mahomed Hyder Khan, son of Dost Mahomed Khan. On the 23d of July 1839 it was stormed by the British army, amounting to 4863 men, commanded by Sir John Keane: 514 of the garrison were killed, 1500 prisoners taken, with a loss on the part of the captors of only 17 killed. In place of the tedious process of breaching, for which the assailants were but ill prepared, Captain Thomson, of the Bengal Engineers, undertook to blow in one of the gates with gunpowder. An opening was thus made for the entrance of the storming party, who after a severe struggle within the town succeeded in planting the British colours on the citadel. In 1842 Ghizni was surrendered by the British garrison to the Afghans; and shortly after, in the same year, it was retaken by the army under General Nott, by whom it was dismantled and immediately evacuated. Lat. 33. 34., Long. 68. 18. (E. T.)

GHOOR, Ghore, or Ghour, a large district of Afghanistan, situated between the 35th and 37th degrees of N. Lat., and the 67th and 69th degrees of E. Long. This was formerly one of the Persian governments; but in the 12th century its chiefs became independent, overturned the Ghiznian empire, and carried their arms as far as Benares. One of their slaves, named Cuttub, founded the Mohammedan kingdom of Delhi about 1206. This country was overrun in the 13th and 14th centuries by the armies of Genghis Khan and Tamerlane, and it is now in possession of the Usbec Tartars. The Ghory tribe, being of pastoral habits, have emigrated to the vicinity of Peshawur, and are now subdivided into three tribes. Its chief towns are Ghoor and Firoy Koh. Ghoor is the name of the capital, and was once the residence of a long line of sovereigns. It was taken by the king of Kharezm, and was subsequently sacked by the armies of Genghis and Tamerlane, from which it has never recovered, and is now scarcely known. Long. 67. 48. E., Lat. 35. 45. N.

GHOST. See Apparitions.

GIANNONE (in Latin Jannonius), Pietro, a celebrated Neapolitan writer and historian, was born at Ischitella, a small town in the province of Capitanata. Having acquired the elements of a liberal education under the paternal roof, he was sent by his father, at the age of eighteen, to Naples, there to complete his studies, and particularly to study jurisprudence. Being placed under the immediate tuition of the learned Dominico Aulisio, he applied himself with great ardour to the study of jurisprudence on philosophical principles, and soon gave proofs of his capacity for investigating and illustrating the sources of that science by several learned dissertations *De Originibus Juris*. His inquiries, however, having disclosed to him much respecting the origin and mutations of laws, and the vicissitudes of nations, which had escaped the penetration of ordinary jurisconsults, he conceived the design, with the approbation of Argento, of writing a civil history of the kingdom of Naples, comprehending an account of the origin and progress of its laws and government, and an exposition of the causes which led to the gradual abolition of ancient customs and institutions. But this work, interrupted from time to time by the affairs of the bar, was not completed until after the lapse of twenty years, and only appeared in 1723, under the title of *Istoria Civile del Regno di Napoli*, in four volumes 4to. Giannone took as his guide Angelo di Costanzo, whose history of Naples, which was then accounted the best, he almost entirely transfused into his work; but his distinguishing merit consists in the valuable expositions he has given relative to the ecclesiastical and civil constitution, and to the laws and customs of the kingdom. Although the style is neither correct nor elegant, the philosophical spirit, the erudition, and the profound research, which this history exhibits, secured it a high reputation. The freedom with which he treated ecclesiastics generally, and the boldness with which he discussed several topics relating to the origin of the papal power, raised a storm against him, which neither the authority of the viceroy, Cardinal Althann, nor the credit of the municipality of Naples, of which he had been elected advocate, could allay, or even mitigate. "I know not, indeed," said Argento, when speaking to him on this subject, "whether I should congratulate you or condole with you; for I very much fear lest the crown of laurel which now encircles your brows should become a crown of thorns." Having been several times insulted by the populace, and at length excommunicated by the archiepiscopal court, Giannone, seeing his work placed in the *index expurgatorius*, left Naples on the 29th of April 1723, and went to seek an asylum at Vienna. The Emperor Charles VI. regarded him at first with an unfavourable eye; but the protection of such men as Prince Eugene, the Chancellor Zinzendorf, the celebrated Count de Bonneval, and the Chevalier Garelli, first physician to the emperor, procured him a pension of a hundred florins on the secretaryship of Sicily. During his stay at Vienna, where he enjoyed the favour of the great and of men of letters, he laboured at a work entitled *Il Triregno, ossia del regno del Cielo, della Terra, e del Papa*, which occupied him nearly twelve years, and to which he only put the last touches at Geneva. This work, in which man is successively represented in the state of nature, under the law of grace, and under the temporal dominion of the popes, comprehends ten epochs, the first three of which extend to the ninth century; but the remainder has not been completed. Don Carlos having ascended the throne of Naples and of Sicily in 1734, Giannone lost his pension and all his hopes. Being constrained to quit Vienna, he retired to Venice, where he was received with every mark of distinction. He refused the appointment of counsellor of the republic, and the chair of Roman law in the university of Padua, ingenuously confessing that he was not in a condition to explain the laws in the Latin language, according to the usage of the schools. But the repose which he hoped to enjoy at Venice was not of long duration. Denounced as unfavourable to the pretensions of the republic over the Adriatic, he endeavoured to avert the storm by publishing a *Lettera intorno al dominio del mare Adriatico ed ai trattati seguiti in Venezia tra Papa Alessandro III. e l'Imperador Federigo Barbarossa*; but as the state inquisitors had taken umbrage at the prolonged visits paid by him to the ambassadors of France and Spain, his removal was decided on, and, in the night of the 23d September 1735, sbirri seized and conducted him in a small boat to the frontiers of the territory of Ferrara. The apprehension of still greater misfortunes now induced him to change his name to that of Antonio Rinaldo, under which be sojourned at Modena, Milan, and Turin, and arrived with his son at Geneva on the 5th of December. His reputation, which had preceded him in different cities, procured him in the last-mentioned place the most satisfactory reception on the part of Dr Turretin, the minister Vernet, and the bookseller Bousquet, who furnished him with the means of living at his ease. In 1736 he was preparing to print a volume of supplement to his history, when, having been conducted by a perfidious friend to pass Easter in a catholic village belonging to the king of Sardinia, he was arrested by order of that sovereign, and his manuscripts were seized and sent to Rome. He was himself conducted to the castle of Miolan, and thence to the fort of Ceva. Afterwards, his Sardinian majesty ordered him to be transferred to the citadel of Turin, where he passed twelve consecutive years in trouble and agitation. It was in this fortress that, giving ear to the persuasions of Father Prever of the Oratory, Giannone retracted, on the 4th April 1738, the maxims in his history which had been condemned. But this submission did not procure him his liberty; for he died in prison on the 7th of March 1758, aged seventy-two years. In 1760 his posthumous works were published at Lausanne, in one volume 4to, under the title of *Opere Postume in difesa della sua Storia civile del regno di Napoli, con la di lui professione di fede.* The History of Giannone was translated into French by Louis Bochat of Lausanne; and among the re-impressions of the work may be distinguished that which appeared with illustrations by the Abbé Cestari. It has been highly commended by Gibbon in his *Extraits de mon Journal* (Miscellaneous Works, vol. v., p. 413, 8vo ed.). "The candour, penetration, and freedom of this excellent lawyer," says he, "will ever ensure to this work the esteem of all wise men. But," he adds, "churchmen are not always of the number." In the number of the refutations which have appeared, it is only necessary to mention the *Riflessioni morali e teologiche sopra l'Istoria civile del regno di Napoli*, by Eusebio Filopatro (Father Sanfelice, a Jesuit), in two volumes 4to, an extract of which may be seen in the *Mémoires de Trevoux* for January 1730. (Fabroni, *Vitæ Italorum*, vol. xiii. v. *Petrus Jannonius—Biog. Univ.*) (J. B—E.)

GIANT, a person of extraordinary stature. The word is derived from *gigas*, the Latinized form of the Greek γίγας, which is probably made up of γινέσθαι and γῆ = γηγενής, thus signifying "the earth-born," in allusion to classical fable.

In the Old Testament the appellation of giant is bestowed upon various races of men; but it is generally supposed to have reference to violence and strength rather than to actual stature. It nevertheless seems evident that the Anakim and some other tribes denominated giants were also remarkable for their comparative stature, in the same way probably that particular races at the present day are distinguished from others by their superior strength and proportions. Of the existence of individual giants of great size, the particulars related of Og and Goliath leave no room for doubt; but such instances may properly be regarded as extraordinary deviations from the standard proportions, of which there have occurred examples more or less remarkable in all ages, even down to our own times. It is a current opinion in ancient authors generally that the primitive races of men greatly surpassed others in stature; and at an early period, under favourable circumstances, individuals and even tribes may have attained an unusual stature. It would seem that the possibility of a race of giants, comparatively speaking, cannot well be denied, since there is a known tendency in the human frame to perpetuate peculiarities which have been once evolved. The inhabitants of Potsdam, for example, who are descended to a great extent from the famous regiment of tall grenadiers which Frederick of Prussia took so much pains to bring together, are still remarkable, it appears, for exceeding the average height. But apart from such considerations, many things concur to show that the average size of the human race never differed materially from what it is at present. We have evidence of this in the remains of human beings found in tombs; and the mummies of Egypt attest that the people of that country two or three thousand years ago were not superior in size to its present inhabitants. To the same effect may be adduced the size of ancient armour, architectural dimensions, and the measures of length derived from the human form which have been transmitted to us from antiquity. Such ancient writers as are free from the influence of fable are found to give a concurrent testimony.

That great diversity as to height and size prevails in the human family is well known. The inhabitants of northern latitudes are below the ordinary standard, many of them scarcely exceeding four feet; while in temperate climates the height of the human race ranges from four feet and a half to six feet; and instances are not wanting of individuals who have measured eight or even nine feet. (See Prichard's *History of Mankind*, and Lawrence's *Lectures on Man.*)

Giant's Causeway.

Some writers, among whom is Maclaurin, have attempted to demonstrate mathematically the impossibility of the existence of giants exceeding certain dimensions, dependent on the limits of the strength of materials; but it is evident that arguments of this kind are not necessarily conclusive, because a great increase of stature might be attended with a proportional increase of strength in the constituent parts of the body. But again, the difference that does exist in this respect in the bones and other parts of animals, though considerable, is not found to be so great as to favour the supposition of the possibility of excessive deviation from the ordinary standard. Strabo makes mention of the skeleton of a giant sixty cubits in height, and Pliny tells us of another of forty-six cubits. The progress of comparative anatomy has done much to dispel the errors that have been propagated on the subject of giants; and there is now little danger of the bones of fossil elephants, whales, and other large animals being mistaken, as they so frequently have been, for those of human beings. It is a curious fact that Buffon, in his great work, has figured and described the bones of an elephant as human remains. In not a few instances have the dimensions of supposed giants been calculated from a single bone or a few teeth; and on such data the imagination would find little difficulty in rearing a superstructure sufficiently astounding. Kircher (*de Mundo Subterraneo*, viii. 4) exposes an instance of this kind with regard to the body of the giant so minutely described by Boccaccio as found in the fourteenth century in a cave near Trapani in Sicily. It was reported to be 200 cubits in length, and a single tooth was said to weigh 100 ounces; but when Kircher visited the place he was shown no other remains than the teeth, which probably were those of a mastodon. This author has given a comparative scale of five reputed giants, in which Goliath (whose height has been variously estimated from about 8 feet to 11) scarcely overtops the ankle of the giant of Trapani.

GIANT'S CAUSEWAY, a vast collection of columnar basalt in the county of Antrim, on the northern coast of Ireland. It is divided into the Little, the Middle, and the Large or Grand Causeways, divided from each other by whin-dykes, composed of amorphous basalt. The Grand Causeway consists of a most regular arrangement of innumerable polygonal columns of basalt, almost all of a hexagonal figure; one, however, has been found with only three sides, and several with nine. Though the polygons are somewhat irregular, the faces of the adjacent pillars are equal, and fit so compactly, that although perfectly distinct from top to bottom, no space is unoccupied, and water will lodge in the cavities until it evaporates, without any portion sinking between the columns. Each pillar is perfect in itself, consisting of articulations, the internodes of which vary from a few inches to some feet; sometimes the concavity, sometimes the convexity is uppermost, in some instances both ends are concave, in others both convex, but the joints of the separate portions of the columns are always accurately adjusted to each other. The diameter of the pillars is as various as their length and figure, but the general measurement is from 15 to 20 inches. The columns are of an unequal height and breadth; some of the highest, visible above the surface of the strand, and at the foot of the impending angular precipice, are about 20 feet. How deep they are fixed in the strand has not been discovered. This grand arrangement extends nearly 200 yards, visible at low water, but how far beyond is uncertain. The breadth of the principal causeway, which runs out in one continued range of columns, is in general from 20 to 30 feet; at one or two places it may for a few yards be nearly 40. In this account are not included the broken and scattered pieces of the same kind of construction which are detached from the sides of the Grand Causeway, as they do not appear to have ever been contiguous to the principal arrangement, though they have frequently been taken into account when estimating the width. The highest part of the causeway is the narrowest. The columns of this narrow part incline from the perpendicular a little to the westward, and form a slope on their tops, by which an ascent is made at the foot of the cliff, from the head of one column to the next above, *gradatim*, to the top of the great causeway, which, at the distance of half a dozen yards from the cliff, obtains a perpendicular position, and, lowering in its general height, widens to between 20 and 30 feet, and for nearly 100 yards is always above water. The tops of the columns for this length being nearly of an equal height, they form a grand and singular parade, rather inclining to the water's edge, but easily walked on. Below high-water mark the platform lowers considerably, and becomes more uneven, so that a firm footing can only be maintained with difficulty. At the distance of about 150 yards from the cliff it turns a little to the eastward for 20 or 30 yards, and then sinks into the sea. The Little Causeway is first approached from the sea, next comes the Middle Causeway, which is commonly called the Honeycomb by the local guides; but the chief object of attraction is the Grand Causeway, which is formed of the upper surface of the first or lowest range of columnar basalt laid bare. The ends of the pillars may be distinctly traced both on the east and west sides of the causeway resting on the ochre bed, upon a concave depression of which the whole causeway probably stands, so that in the centre only are the columns perpendicular to the horizon, those at the extremities leaning over towards the middle. The causeway, properly so called, consists of three piers or moles jutting out into the sea, the greater being visible to the extent of 300 yards at low water, the other two not more than half that distance.

The cliffs connected with the causeway, especially in the bay to the eastward, exhibit in many places the same kind of columns, shaped and jointed in all respects like those of the Grand Causeway. Some of them are seen near the top of the cliffs, which in general, in those bays to the east and west of the causeway, range from 140 to 390 feet in height; others again are observed about midway, and at different elevations from the strand. A very considerable exposure of them is seen in the very bottom of the bay to the eastward, about 100 roods from the causeway, where the earth has evidently fallen away from them upon the strand, and exhibits a most curious arrangement of many of these polygonal columns in a perpendicular position, supporting in appearance a cliff of different strata of earth, clay, rock, &c. to the height of about 130 feet or more above. Some of these columns are between 30 and 40 feet high, from the top to the sloping bank below them; and, being longest in the middle of the arrangement, and shortening on either hand, they have obtained the appellation of *organs*, from a rude likeness in this particular to the exterior or frontal tubes of that instrument. The most remarkable of these cliffs is the Pleaskin, the summit of which is covered with a thin grassy sod, under which lies the natural basaltic rock, having generally a hard surface, somewhat cracked and shivered. At the depth of 10 or 12 feet from the summit this rock begins to assume a columnar shape, and forms a range of massy pillars of basalt, which stand perpendicular to the horizon, presenting in the sharp face of the promontory the appearance of a magnificent gallery or colonnade, upwards of 60 feet in height. This colonnade is supported on a solid base of coarse black amygdaloid, nearly 60 feet thick, with many of the cavities empty; but though comparatively irregular, it may be plainly observed to affect a peculiar figure, tending in many places to run into regular forms, resembling the shooting of salts and many other substances during a hasty crystallization. Under this great bed of stone stands a second range of pillars between 40 and 50 feet in height, less gross and more sharply defined than those of the upper story; many of them, on a close view, emulating even the neatness of the columns in the Giant's Causeway. This lower range is borne on a layer of red ochre, which serves as a relief to show it to great advantage. These two admirable natural galleries, together with the adjacent mass of irregular rock, form a perpendicular height of 170 feet; from the base of which the promontory, covered over with rock and grass, slopes down to the sea for the space of 200 feet more, making in all a mass of nearly 400 feet in height, which, in beauty and variety of colouring, in elegance and novelty of arrangement, and in the extraordinary magnitude of its objects, cannot readily be rivalled by anything of the kind at present known.

In association with the scenery and natural curiosities of the Giant's Causeway, are the ruins of the castles of Dunseverick and Dunluce, situated high above the sea on insulated crags; the swinging bridge of Carrick-a-Rede, over a chasm of 80 feet deep, and connecting a rock, which is used as a salmon-fishing station, with the mainland. Fairhead, about 550 feet in height, is the highest promontory on this coast; it is composed of columnar greenstone, and some of the pillars exceed 200 feet in height, forming the finest object on the whole line of coast.

To the geologist, the mineralogist, or the observer of nature in her more singular and fantastic moods, the Giant's Causeway and its neighbourhood is of surpassing interest; but as remarked by Inglis, "The traveller who visits the Giant's Causeway, expecting to find nature in her most majestic form, and associating, as I did, with the name, something very sublime, will certainly be disappointed; but if he goes to see something very curious—something calculated to excite wonder and admiration, he will undoubtedly leave the Causeway fully satisfied."—Hamilton's *Letters from the Coast of Antrim;* Dubourdiew's *Statistical Survey of Antrim;* Dr Richardson's *Letter in the Transactions of the Royal Irish Academy*, &c. &c. (II. S—R.)

GIAOUR, a Turkish word signifying *dog*, used by the Turks to designate any unbeliever in Mohammedanism, but more particularly a Christian. Though originally an epithet of contempt, it is now often applied without any intentional insult.

GIAVENO, a town of Italy, kingdom of Sardinia and province of Susa, on a hill near the Sangone, 16 miles W.S.W. of Turin. It has manufactures of linen, cotton, and silk goods; several tanneries and iron forges; and some trade. Pop. (of commune) 8866.

GIBBET (Fr. *gibet;* Arabic, *gibel*, a mount or eminence), a gallows, or a machine in form of a gallows, on which notorious criminals are hung in chains, as spectacles *in terrorem*.

GIBBON, EDWARD, one of the most celebrated historians of any age or country, was also his *own* historian. He has left us one of the most piquant autobiographies ever written. In the following sketch the chief incidents of his life will be condensed from that authentic source: for more than *facts*, even for the *setting* of these, it would be unwise to trust to any man's autobiography—though Gibbon's is as frank as most. There are points on which vanity will say too much, and perhaps others on which modesty will say too little.

Gibbon was descended, he tells us, from a Kentish family, ancient, though not illustrious. His grandfather was a man of ability, an enterprising merchant of London; one of the commissioners of customs in the latter years of Queen Anne; and, in the judgment of Lord Bolingbroke, as deeply versed in the "finance and commerce of England" as any man of his time. He was not always wise, however, either for himself or his country; for he became deeply involved in the South Sea scheme, and lost the ample wealth he had amassed, at the explosion of that tremendous bubble (1720). As a director of the company, he was suspected of fraudulent complicity, was taken into custody, and heavily fined; but L.10,000 were allowed him out of the wreck of his L.60,000, and with this his skill and enterprise soon constructed a second fortune.[1] He died at Putney in 1736, leaving the bulk of his property to his two daughters—nearly disinheriting his only son, the father of the historian, for having married against his wishes. This son (by name Edward) was educated at Westminster and Cambridge, but never took a degree; travelled; became member of parliament, first for Petersfield, then for Southampton; joined the party against Sir Robert Walpole, and (as his son confesses, not much to his father's honour) was animated in so doing by "private revenge" against the supposed "oppressor" of his family in the South Sea affair. If so, revenge, as usual, was blind; for Walpole sought rather to moderate than to inflame public feeling against the projectors.

His celebrated son was born at Putney, Surrey, 27th of April 1737. His mother was the daughter of a London merchant. Gibbon was the eldest of a family of six sons and a daughter, yet was the only one who survived childhood; and his own life in youth hung by so mere a thread as to be a thousand times despaired of. His mother, between domestic cares and constant infirmities (which, however, did not prevent an occasional plunge into fashionable dissipation in compliance with her husband's wishes), did but little for him. His *true* mother, if the expression may be permitted, was his maiden aunt—Catherine Porten by name—who tenderly nursed his infancy, and, whenever his feeble health allowed, took care that his mind should not be neglected. "Many anxious and solitary days," says Gibbon, "did she consume with patient trial of every mode of relief and amusement. Many wakeful nights did she sit by my bedside in trembling expectation that each hour would be my last."[2] At seven he was committed for eighteen months to the care of a private tutor, John Kirkby by name, and the author, among other things, of a "philosophical fiction" entitled the *Life of Automathes*. The illustrious pupil speaks gratefully of his tutor, and doubtless truly, so far as he could trust the impressions of his childhood. Of the "philosophical fiction" he says, "The author is not entitled to the merit of invention, since he has blended the English story of *Robinson Crusoe* with the Arabian romance of *Hai Ebn Yokhdan*, which he might have read in the Latin version of Pococke. In the *Automathes* I cannot praise either the depth of thought or elegance of style; but the book is not devoid of entertainment or instruction."[3]

At nine (1746), during a "lucid interval of health," he was sent to a school at Kingston-on-Thames; but the usual breaks of sickness intervened, and his progress, by his own confession, was slow and unsatisfactory. "My timid reserve was astonished by the crowd and tumult of the school; the want of strength and activity disqualified me for the sports of the play-field. . . . . . . By the common methods of discipline, at the expense of many tears and some blood, I purchased the knowledge of the Latin syntax; and not long since I was possessed of the dirty volumes of *Phædrus* and *Cornelius Nepos* which I painfully construed and darkly understood."[4]

In 1747 his mother died, and he was taken home. After a short time his father removed from Putney to the "rustic solitude" of Buriton, and young Gibbon accompanied him. There probably his health was benefited, and his mind certainly received its first decided stimulus. In these early years, under the care of his devoted aunt, he first acquired, he tells us, that passionate love of reading "which he would not exchange for all the treasures of India." He read at will; and there are minds to which it is the best possible schooling. To be turned loose to graze in the free mountain pasture, to "browse" at pleasure—as Charles Lamb expresses it—in a library of wholesome literature, tends more than anything else, if not to discipline, to stimulate their powers; and often not only tinctures, but determines their whole future. It was so with Gibbon. After detailing the circumstances which "unlocked" for him the door of his grandfather's "tolerable library," he says, "I turned over many English pages of poetry and romance, of history and travels. Where a title attracted my eye, without fear or awe I snatched the volume from the shelf."[1] In 1749, in his twelfth year, he was sent to Westminster, still residing, however, with his aunt, who, unwilling to live a life of dependence, had opened a boarding-house for Westminster School. "In the space of two years (1749–50), interrupted by danger and debility, I painfully climbed into the third form; and my riper age was left to acquire the beauties of the Latin and the rudiments of the Greek tongue."[2] The continual attacks of sickness which had retarded his progress induced his aunt, by medical advice, to take him to Bath; but the mineral waters had no effect. He then resided for a time in the house of a physician at Winchester; the physician did as little as the mineral waters; and, after a further trial of Bath, he once more returned to Putney, and made a last futile attempt to study at Westminster. Finally, it was resolved that he would never be able to encounter the discipline of a school; and casual instructors, at various times and places, were provided for him. The snatches of his youth that could be given to mental effort were doubtless pretty well filled up by himself, and, for the reasons already assigned, perhaps not unpropitiously, in relation to the peculiar character of his intellect and the requirements of his subsequent career.

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[1] No less than three of the family intermarried with the Actons of Shropshire. "I am thus connected," says Gibbon, "by a triple alliance with that ancient and loyal family of Shropshire baronets. It consisted about that time of seven brothers, all of gigantic stature; one of whom, a pigmy of six feet two inches, confessed himself the last and least of the seven; adding, in the true spirit of party, that such men were not born since the Revolution."—*Memoirs*, vol. i., p. 10.

[2] *Ib.*, p. 19.

[3] *Ib.*, p. 21, 22.

[4] *Ib.*, p. 22.

Towards his sixteenth year he tells us that all his infirmities suddenly vanished. "Nature," as he frigidly expresses it, "displayed in my favour her mysterious energies." His education was now resumed under the roof of Francis, the translator of Horace; of whose negligence as a tutor the historian speaks most strongly. "The translator of Horace," says he, "might have taught me to relish the Latin poets had not my friends discovered in a few weeks that he preferred the pleasures of London to the instruction of his pupils."[3]

Gibbon was then sent to *finish* his education (before it had been properly *begun*) at Oxford, where he matriculated as gentleman commoner of Magdalen College, April 1752. His description of his intellectual condition at that time is curious enough:—"I arrived there with a stock of erudition which might have puzzled a doctor, and a degree of ignorance of which a schoolboy might have been ashamed." It was natural. He had read extensively, though at random; and, his memory being tenacious, he had amassed much knowledge, though of a very miscellaneous character. It seems, however, that during the three previous years his youthful mind had received a determinate direction, either from its own secret tendencies, or from the class of works on which he accidentally lighted, or more probably from both causes. His taste was already fixed where it never afterwards wavered—on *history*.

His list of the books which, during the previous three years of self-prompted and wandering study, he had more or less devoured, is amazingly miscellaneous; but we have no space to give it. The reader may find it in the *Memoirs*. Many of them, both for their extent and dryness, would have been repulsive enough to most lads of his age. Most of the classical historians accessible in translations, not forgetting a "ragged *Procopius*" which chanced to fall in his way, and "many crude lumps," as he oddly expresses it, of the most voluminous modern historians, as Davila, Rapin, Father Paul, Machiavel, were hastily gulped—giving in those days, doubtless, but little trouble in the digestion. "I devoured them," he says, "like so many novels; and I swallowed with the same voracious appetite the descriptions of India and China, of Mexico and Peru."[4] At the same period his fancy kindled with the first glimpses into oriental history, the wild "barbaric" charm of which he never ceased to feel. India, China, Arabia, and especially the career of Mohammed, successively attracted his attention. Ockley's book on the Saracens "first opened his eyes" to this last subject; and with his characteristic ardour of literary research, he forthwith plunged into the French of D'Herbelot, and the Latin of Pococke's version of *Abulfaragius*—sometimes "guessing," and sometimes understanding—now swimming, now wading up to his chin, and now plunging out of his depth altogether. His first introduction to the historic scenes which afterwards formed the passion of his life took place at the same period. In 1751 he notes his "discovery" of a "common book"—Echard's *Roman History*.[5] "To me," he says, "the reigns of the successors of Constantine were absolutely new; and I was immersed in the passage of the Goths over the Danube, when the summons of the dinner bell reluctantly dragged me from my intellectual feast."

He seems even then to have adopted the plan of study he followed in after-life and recommended in his *Essai sur l'Etude*; that is, of letting his subject rather than his author determine his course; of suspending the perusal of a book to reflect, and to compare the statements with those of other authors; so that he often read portions of fifty volumes while mastering one. Where the mind has vigour and perseverance to adopt this course, it is, without doubt, the most profitable of all modes of reading. A man rarely forgets what he has taken so much trouble to acquire. The chase itself, too, and the variety of forms in which knowledge is presented, afford a thousand links by which association aids memory.

But Gibbon's huge wallet of scraps stood him in little stead at the trim banquets to which he was invited at Oxford; and the wandering habits by which he had filled it absolutely unfitted him to be a guest. He was not well grounded in any of the elementary branches which are essential to university studies, and to all success in their prosecution. It was natural, therefore, that he should dislike the university, and as natural that the university should dislike him. Many of his complaints of the *system* were certainly just; but it may be doubted whether *any* university system would have been profitable to him, considering his antecedents. He complains of his tutors, too, and in one case with abundant reason; but, by his own confession, they had equal reason to complain of him, for he indulged in gay society, and kept late hours. His observations, however, on the defects of our university system in general, are acute and well worth pondering, however little relevant to his own case. Many of these defects, in the case of our own universities, have been removed since his time, and some very recently. He remained at Magdalen about fourteen months. "To the University of Oxford," he says, "I acknowledge no obligation; and she will as cheerfully renounce me for a son as I am willing to disclaim her for a mother. I spent fourteen months at Magdalen College;

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[1] *Memoirs*, vol. i., p. 25.

[2] *Ib.*, p. 27.

[3] *Ib.*, p. 28.

[4] *Ib.*, p. 30.

[5] *Ib.*, p. 30.

they proved the fourteen months the most idle and unprofitable of my whole life."[1]

But little as he did as a student, he already meditated authorship. In the first long *vacation*—"during which," he says, (whimsically enough,) "his taste for books began to *revive*"—he resolved to write a treatise on *The Age of Sesostris*;[2] in which (and it was characteristic) his chief object was to investigate the probable epoch of that semi-mythical monarch's reign. "Unprovided with original learning, unformed in the habits of thinking, unskilled in the arts of composition, I resolved to write a book." He long afterwards (Nov. 1772), but wisely, no doubt, "committed the sheets to the flames."

Literary ambition almost uniformly displays its early energy in some such crude project, and Gibbon was no exception to the rule.

This period of his life was also signalized by another premature attempt to solve difficulties beyond the age of sixteen. He read Middleton's *Free Inquiry*; and this, strange to say, *repelled* him from Protestantism, and gave him a bias towards Rome; he read Bossuet's *Variations of Protestantism*, and *Exposition of Catholic Doctrine*, and these completed his conversion; "and surely," he adds, "I fell by a noble hand." In this notable victory, however, of the Bishop of Meaux over a youth of sixteen, there is nothing wonderful; nor was Bossuet the only champion of Rome who helped to lay him low, for he attributes not a little to the perusal of the works of Parsons, the Jesuit. But the inexperience, perhaps waywardness, of youth, and impatience to have doubts hushed and quelled, if not removed, had probably more to do with this transient conquest than all the above controvertists put together.

No sooner converted, than he confessed. He certainly practised none of the *reserve* of the Jesuit to whom he had been so much indebted. On June 8th, 1753, he records that he "privately abjured the heresies" of his childhood before a Catholic priest in London, and announced the same to his father in a somewhat grandiloquent effusion which his spiritual adviser much approved, and in which it is probable he had some share. "Gibbon," says Lord Sheffield, "described the letter to his father, announcing his conversion, as written with all the pomp, the dignity, and self-satisfaction of a martyr."[3]

His father heard with indignant surprise of this act of juvenile apostacy; and indiscreetly giving vent to his wrath, the authorities at Oxford dismissed the neophyte. It is curious to read Gibbon's rather complacent estimate in after-life of this "sacrifice of self-interest to conscience." It is expressed in terms which might almost tempt one to think that he scarcely contemplated his subsequent changes with equal satisfaction. Yet he also seems to have felt that the infirmities of reason which this escapade implied needed some apology, and that the applause of conscience hardly compensated for the reflections on his logic. He therefore justifies his apostacy by the parallel vacillations of Chillingworth and Bayle. "He could not blush," he says, "that his *tender* mind was entangled in the sophistry which had seduced the acute and manly understandings of a Chillingworth or a Bayle;"[4] of whom he takes care to inform us that the latter was *twenty-two*, and the former of the "ripe age" of twenty-eight years, when caught in the meshes of Romanism.

In short, he attaches rather too much importance to the fluctuations of sixteen. As a fact in the history of his own mind, however, it is of interest; in any other light, of no importance whatever. "To my present feelings," he tells us in his *Memoirs*, "it seems *incredible* that I should ever believe that I believed in transubstantiation;" that is, if he were interpreted rigorously, "he could not *believe* that he could ever *believe* that he *believed* in transubstantiation." If that were his meaning, he had certainly cured himself of all superfluous facility of belief.

It was now high time that his education, so nearly finished in name, should be begun in earnest. But as one chief object of his father was to secure in the course of it his reconversion to Protestantism, he was consigned (1753) to the care of a Calvinist minister at Lausanne—a M. Pavilliard, of whom Gibbon speaks in strong terms of affection and esteem, and who appears to have deserved them. There was one slight obstacle, to be sure, to the intercourse of tutor and pupil; M. Pavilliard appears to have known little of English, and young Gibbon knew nothing of French. But this difficulty was soon removed by the pupil's diligence; the very exigencies of his situation were of service to him, and he studied the language with such success, that at the close of his five years' exile he declares that he "spontaneously thought" in French rather than in English, and that it had become more familiar to "ear, pen, and tongue." It is well known that in after years he had doubts whether he should not compose his great work in French; and it is certain that his familiarity with that language, in spite of considerable efforts to counteract its effects, tinged his style to the last.

Under the judicious regulations of his new tutor a systematic course of study was marked out, and was most ardently prosecuted; the pupil's progress was proportionably rapid. With the systematic study of the Latin and Greek classics he conjoined that of French literature, which he read largely though somewhat indiscriminately.

Nor was the object his father primarily had at heart less effectually attained.

To his large reading of the classics he added a diligent study of logic in the prolix system of Crousaz, and further invigorated his reasoning powers, as well as enlarged his knowledge of metaphysics and jurisprudence, by the perusal of Locke, Grotius, and Montesquieu. He also read about this time Pascal's *Provincial Letters*, and at sixty he declares he had reperused them almost every year with new pleasure. It is one of the "three books" which, by his own confession, probably contributed, in a "special sense, to form the historian of the *Roman Empire*." From Pascal, he flatters himself, he "learned to manage the weapon of grave and temperate irony, even on subjects of ecclesiastical solemnity:" a grand mistake as regards both the adroitness with which he used and the subjects on which he employed the weapon. There is as much difference between the light grace of Pascal's irony and the heavy, laboured movement of Gibbon's, as between an Arab courser and a Flanders war-horse.—He also studied mathematics to some extent, though purely in compliance with his father's wishes. He advanced as far as the conic sections in the treatise of L'Hôpital. He assures us that his tutor did not complain of any inaptitude on the pupil's part, and that the pupil was as happily unconscious of any on his own; but here he broke off. He adds, what is not quite clear from one who so frankly acknowledges his limited acquaintance with the science, that he had reason to congratulate himself that he knew no more. "As soon," he says, "as I understood the principles, I relinquished for ever the pursuit of the mathematics; nor can I lament that I desisted before my mind was hardened by the habit of rigid demonstration, so destructive of the finer feelings of moral evidence, which must, however, determine the actions and opinions of our lives."[5]

There is no doubt that the sort of evidence with which the future historian was called to deal has to do with probabilities and not "rigid demonstration;" but whether he would not have sometimes computed its elements with more impartiality and precision if he had had a little further training in the exact sciences, may be a question.

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[1] *Memoirs*, vol. i., p. 34.

[2] *Ib.*, p. 41.

[3] *Ib.*, p. 46.

[4] *Ib.*, p. 47.

[5] *Ib.*, p. 66.

Under the new influences which were brought to bear on him, he resumed in less than a twelvemonth his Protestantism. "He is willing," he says, to allow M. Pavilliard a "handsome share in his reconversion," though he stoutly avows that it was principally due "to his own solitary reflections." He particularly congratulated himself on having discovered a "philosophical argument" against "transubstantiation." It was, "that the text of Scripture which seems to inculcate the real presence is attested only by a *single* sense—our sight; while the real presence itself is disproved by *three* of our senses—the sight, the touch, and the taste."[1] It is possible that the unconscious influence of the threats of disinheritance, and the exchange of his "handsome apartments at Magdalen" for the meanness and discomforts of his Swiss home, may have been quite as efficacious as this curious enthymeme. Thus was he converted to Romanism in his sixteenth year, and recanted his recantation in his seventeenth. The changes were doubtless important to him, and it was natural that he should give them some prominence in his "autobiography;" but relatively to the great questions they involve, the oscillations of such a youthful mind, however intelligent, are of as little moment as the transfer of a cypher from one side of an equation to the other.

Two circumstances specially signalized his residence at Lausanne—he saw Voltaire, and he fell in love. "*Virgilium vidi tantum*," says he; but his admiration of Voltaire's writings was great, and exerted a rather equivocal influence on his poetic tastes. It led to an excessive estimate of the French drama, and abated, he scruples not to declare, his "idolatry for the gigantic genius of Shakspeare." Voltaire's writings also probably gave him a false bias in matters of infinitely more importance than those of literature.

His love affair—his first and only one—was transient enough. The young lady, in the bloom of sixteen, the daughter of a Swiss pastor, was Mademoiselle Curchod, afterwards the wife of the celebrated M. Necker. She was, as Gibbon declares (and we know it on better testimony than a lover's eyes), beautiful, intelligent, and accomplished. Her charms, however, do not seem to have made any indelible impression on our young student, whose sensibility, to say the truth, was never very profound. On his father's expressing his disapprobation, he surrendered the object of his affection with as little resistance as he had surrendered his Romanism. "I sighed," he says, "as a lover, but obeyed as a son." It would be invidious to institute comparisons as to the merit of "faithful love" and filial devotion; but, if the one be unrewarded by fortune, and the other stimulated by menaces, it is a difficult choice, no doubt, for any but a hero; and Gibbon neither then nor afterwards was a hero. "Without my father's consent," he plaintively says, "I was destitute and helpless."

Unwearied application to study was the best "*remedium amoris*," if indeed he stood in need of any remedy. In any case, his diligence was most commendable, and no one can read the account of the three last years he spent at Lausanne, and especially the all but incredible toils of the last eight months, without perceiving that the foundations of that vast erudition which the *Decline and Fall* demanded, were effectually laid; or hesitate to give our student a worthy place with the Scaligers, Huets, and Leibnitzes, of the preceding century. Though there may be a little unconscious exaggeration in his statement of the achievements of these miraculous eight months, we are tempted to give it in a note for the encouragement or despair of other youthful students.[2]

In 1758 he returned to England, and was kindly received at home. But he found a stepmother there; and this apparition on his father's hearth at first rather appalled him. The cordial and gentle manners of Mrs Gibbon, however, and her unremitted study of his happiness, won him from his first prejudices, and gave her a permanent place both in his esteem and affection. He seems to have been much indulged, and led a very pleasant life of it; he pleased himself in moderate excursions, frequented the theatre, mingled, though not very often, in society; was sometimes a little extravagant, and sometimes a little dissipated, but never lost the benefits of his Lausanne exile; and with the exception of a few transient youthful irregularities, settled into a sober, discreet, calculating epicurean philosopher, who sought the *summum bonum* of man in temperate, regulated, and elevated pleasure. The two years after his return to England he spent principally at his father's country seat at Buriton, in Hampshire, only nine months being given to the metropolis. He has left an amusing account of his employments in the country, where his love of study was at once inflamed by a library rich enough to make him contrast its treasures with the poverty of Lausanne, and checked by the necessary interruptions of his otherwise happy domestic life. After breakfast "he was expected," he says, "to spend an hour with Mrs Gibbon—read the paper to his father in the afternoon—was often called down to entertain idle visitors—and, worst of all, was periodically compelled to return the visits of their more distant neighbours." He says he dreaded the "recurrence of the full moon," which was the period generally selected for the more convenient accomplishment of such formidable excursions.

His father's library, though large in comparison with that he commanded at Lausanne, contained, he says, "much trash," which he gradually weeded out, and transformed it at length into that "numerous and select" library which was "the foundation of his works, and the best comfort of his life both at home and abroad." No sooner had he returned home than he began the work of accumulation, and records that, on the receipt of his first quarter's allowance, a large share was appropriated to his literary wants. "He could never forget," he declares, "the joy with which he exchanged a bank note of twenty pounds for the twenty volumes of the *Memoirs of the Academy of Inscriptions*." It may not be unprofitable here to remark that the principles on which he selected his admirable library are worthy of every student's attention. "I am not conscious," says he, "of having ever bought a book from a motive of ostentation; every volume before it was deposited on the shelf was either read or sufficiently examined." The account he gives of his *mode* of study is also deeply instructive, but there is not space for it here.

In London he seems to have seen but little select society—partly because his father's habits opened to him but little that he cared for—partly from his own reserve and timidity, increased by his foreign education. This had made English habits unfamiliar and the very language in some degree strange. And thus it was that he draws that interesting picture of the literary recluse among the crowds of London: "While coaches were rattling through Bond Street, I have passed many a solitary evening in my lodging with my books. My studies were sometimes interrupted with a sigh, which I breathed towards *Lausanne;* and on the approach of spring I withdrew without reluctance from the noisy and extensive scene of crowds without company, and dissipation without pleasure."[1] He became acquainted, however, with Mallet—by courtesy called the "poet"—and through him gained access to Lady Hervey's circle, where a congenial admiration, not to say affectation, of French manners and literature, made him a welcome guest. In one respect Mallet gave him good counsel. He advised him to addict himself to an assiduous study of the more idiomatic English writers—Swift and Addison, for example—with a view to unlearn his foreign idiom, and recover his half-forgotten vernacular;—a task, which he never perfectly accomplished. Much as he admired these writers, Hume and Robertson were still greater favourites, as well from their subject as for their style. Of his admiration of Hume's style—of its nameless grace of simple elegance—he has left us a strong expression, when he tells us that it often compelled him to close the historian's volumes with a feeling of despair.

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[1] *Memoirs*, vol. i., p. 58.

[2] He says in his *Journal*, December 4, 1755,—"In finishing this year, I must remark how favourable it was to my studies. In the space of eight months, from the beginning of April, I learned the principles of drawing; made myself complete master of the French and Latin languages, with which I was very superficially acquainted before, and wrote and translated a great deal in both; read Cicero's Epistles *Ad Familiares*, his *Brutus*, all his Orations, his Dialogues *De Amicitiâ* and *De Senectute*; Terence, twice; and Pliny's Epistles. In French, Giannone's *History of Naples*, and l'Abbé Bannier's *Mytholoyy*, and M. De Bochat's *Mémoires sur la Suisse*, and wrote a very ample relation of my tour. I likewise began to study Greek, and went through the grammar. I began to make very large collections of what I read. But what I esteem most of all, from the perusal and meditation of De Crousaz's *Logic*, I not only understood the principles of that science, but formed my mind to a habit of thinking and reasoning I had no idea of before."—*Memoirs*, p. 61.

In 1761 Gibbon, after many delays, and with many flutterings of hope and fear, gave to the world, in French, his maiden publication, composed two years before. It was partly in compliance with his father's wishes, who thought that the proof of some literary talent might introduce him favourably to public notice, and "secure the recommendation of his friends." But in yielding to paternal authority, Gibbon frankly owns that he complied, "like a pious son,—with the wish of his own heart."

The subject of the *Essai sur l'Etude de la Littérature* was suggested, its author says, by a refinement of vanity—"the desire of justifying and praising the object of a favourite pursuit." Partly owing to its being written in French, partly to its character, the essay excited more attention abroad than at home. Gibbon has criticised it with the utmost frankness, not to say severity; but after every abatement, it is unquestionably a surprising effort for a mind so young, and contains many thoughts which would not have disgraced a thinker or a scholar of much maturer age. The account of its first reception and subsequent history in England, deserves to be cited as amongst the curiosities of literature. "In England," he says, "it was received with cold indifference, little read, and speedily forgotten: A small impression was slowly dispersed; the bookseller murmured, and the author (had his feelings been more exquisite) might have wept over the blunders and baldness of the English translation. The publication of my history *fifteen years afterwards* revived the memory of my first performance, and the essay was eagerly sought in the shops. But I refused the permission which Becket solicited of reprinting it: the public curiosity was imperfectly satisfied by a pirated copy of the booksellers of Dublin; and when a copy of the original edition has been discovered in a sale, the primitive value of half-a-crown has risen to the fanciful price of a guinea or thirty shillings."[2]

Just before the publication of the essay, Gibbon entered a new, and, one might suppose, a very uncongenial scene of life. He became a captain in the Hampshire militia; and for more than two years led a life of march and countermarch in the southern counties of England. Hampshire, Kent, Wiltshire, and Devonshire, formed the successive theatres of what he calls his "bloodless and inglorious campaigns." He, nevertheless, justly describes it as a life of "military servitude," as the term of service was prolonged far beyond the period he had contemplated, and the mode of life utterly alien from all his pursuits as a scholar and a student. "In the act," says he, "of offering our names and receiving our commissions, as major and captain in the Hampshire regiment (June 12th, 1759), we had not supposed that we should be dragged away, my father from his farm, myself from my books, and condemned during two years and a half (May 10, 1760 to December 23, 1762), to a wandering life of military servitude."[3] He has left us an amusing account of the busy idleness in which his time was spent; but, considering the circumstances, so adverse to study, one is rather surprised that our military student should have done so much, than that he did so little;[4] and never probably before were so many hours of literary study spent in a tent. In estimating the comparative advantages and disadvantages of this wearisome period of his life, he has summed up with the sagacity of a man of the world, and the impartiality of a philosopher. Irksome as were his employments, grievous as was the waste of time, uncongenial as were his companions, solid benefits were to be set off against these things; his health became robust, his knowledge of the world was enlarged, he wore off some of his foreign idiom, got rid of much of his reserve; he adds,—and perhaps in his estimate it was the benefit to be most prized of all,—"the discipline and evolutions of a modern battalion gave me a clearer notion of the phalanx and the legion, and the captain of the Hampshire grenadiers (the reader may smile) has not been useless to the historian of the Roman Empire." In 1762, while the new militia was forming, he "enjoyed two or three months of literary repose," and flew to his books with an appetite sharpened by his long fast. In pursuing a plan of study at this period, he hesitated between the prosecution of mathematics and Greek; it was but for a moment. As might be anticipated, Homer carried the day against Newton and Leibnitz.

Nothing can better illustrate the intensity of Gibbon's literary ambition—his only strong passion—than the number of literary projects with which his mind was teeming even in camp. He enumerates amongst others a history of the expedition of Charles VIII. of France; the crusade of Richard the Lion-hearted; the wars of the barons; and lives of the Black Prince, Sir Phillip Sydney, Sir Walter Raleigh, and Montrose. These are only a portion of the subjects he revolved with the same view. They show by their number how strong was the impulse to literature, and by their character, how determined the bent of his mind in the direction of history.

The militia was disbanded in 1763, and he joyfully shook off his bonds; but his literary projects were still to be postponed. Following his own wishes, though with his father's consent, he had projected a continental tour as the completion "of an English gentleman's education." This had been interrupted by the episode of the militia. He now resumed his purpose and left England in 1763. Two years were "loosely defined as the term of his absence," which he exceeded by half a year—returning June 1765. He first visited Paris, where he saw a good deal of D'Alembert, Diderot, Barthelemy, Raynal, Helvetius, Baron d'Holbach, and others of the same set; and was often a welcome guest in the saloons of Mesdames Geoffrin and Du Deffand.[1] Voltaire was at Geneva, Rousseau at Montmorency, and Buffon he neglected to visit; but the above names are enough to justify the suspicion that the hostility he afterwards evinced towards Christianity may in part be attributed to the influence of such society. How well he liked Paris is evident from his own statement: "Fourteen weeks insensibly stole away; but had I been rich and independent, I should have prolonged and perhaps have fixed my residence at Paris."[2]

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[1] *Memoirs*, vol. i., p. 81.

[2] *Ib.*, p. 90.

[3] *Ib.*, p. 95.

[4] The notes of his *Journal* at this period are worth reading, as curiously illustrative of his indomitable literary industry. "My example," he says, "might prove that in the life most averse to study some hours may be stolen, some minutes may be snatched. Amidst the tumult of Winchester camp I sometimes thought and read in my tent; in the more settled quarters of the Devizes, Blandford, and Southampton, I always secured a separate lodging, and the necessary books."—*Ib.*, p. 104.

From France he proceeded to Switzerland, and revisited his friends at Lausanne; thence to Italy in 1764. The account of his feelings on approaching Rome—how like in intensity to those of Luther on a similar occasion, and yet of how different a character!—is deeply interesting. His emotions, he says, were not "enthusiastic," and yet became, he confesses, almost "uncontrollable." While here, his long yearning for some great theme worthy of his historic genius was gratified. The first conception of the *Decline and Fall* arose as he lingered one evening amidst the vestiges of ancient glory; but his precise words cannot be omitted in any sketch of Gibbon, however brief:—"It was at Rome," says he, "on the 15th of October, 1764, as I sat musing amidst the ruins of the Capitol, while the barefooted friars were singing vespers in the temple of Jupiter, that the idea of writing the decline and fall of the city first started to my mind." M. Suard fancifully attributes to the combination of circumstances under which the conception of the work arose, some of that inveterate hatred of Christianity which pervades it. "Struck with a first impression," he says, "Gibbon, in writing the *Decline and Fall of the Empire*, saw in Christianity only an institution which had placed vespers, bare-footed friars, and processions, in the room of the magnificent ceremonies of Jupiter, and the triumphs of the Capitol."

Others attributed it in part to the *conservative* quality of his politics, which led him to regard Christianity as a "daring innovation." It seems probable that his tendencies and habits of mind, which were eminently favourable to scepticism, and the society in which he had early moved (and especially of late in the saloons of Paris), had much more to do with the result than either of these causes.

About five years after his return home his father died (1770). This is the period of his life which he says he passed with the least enjoyment, and remembered with the least satisfaction. He attended "every spring the meetings of the militia at Southampton,—and rose successively to the rank of major and lieutenant-colonel;" but was each year "more disgusted with the inn, the wine, the company, and the tiresome repetition of annual attendance and daily exercise." From his own account, however, it appears that other and deeper causes produced his *ennui*. Sincerely attached to his home, he yet felt the anomaly of his position. At thirty, still a dependent, without a settled occupation, without a definite social *status*, he often regretted that he had not embraced some profession: "From the emoluments of a profession," he says, "I might have derived an ample fortune, or a competent income, instead of being stinted to the same narrow allowance, to be increased only by an event which I sincerely deprecate."[3] Doubtless the secret fire of a consuming, but as yet ungratified, literary ambition also troubled his repose.

He still "contemplated at awful distance" *The Decline and Fall*: and, meantime, revolved other subjects. Hesitating between the revolutions of Florence and Switzerland, he consulted M. Deyverdun, a young Swiss with whom he had become intimate during his first residence at Lausanne, and decided in favour of the land which was his "friend's by birth" and "his own by adoption." He executed the first book in French; it was read as an anonymous production before a literary society of foreigners in London, and condemned. Gibbon sat and listened to their strictures. It never got beyond that rehearsal; and though Hume encouraged him to proceed, Gibbon declared the sentence just, and declined.

In 1767, he joined with M. Deyverdun in starting the *Mémoires Littéraires de la Grande Bretagne*. But its circulation was limited, and only two volumes had appeared when Deyverdun went abroad. The materials already collected for a third volume were suppressed. It may be interesting to the reader to know that in the first volume is a review by Gibbon of Lord Lyttleton's *History of Henry II.*

The next appearance of the historian made a deeper impression. It was the first distinct print of the lion's foot. "*Ex ungue leonem*" might have been justly said, for he attacked, and attacked successfully, the redoubtable Warburton. Of the many paradoxes in the *Divine Legation*, none is more extravagant than the theory that Virgil in the sixth book of his Æneid intended to *allegorize*, in the visit of his hero and the sybil to the shades, the initiation of Æneas, as a lawgiver, into the Eleusinian mysteries. This theory Gibbon completely exploded in his *Critical Observations* (1770); no very difficult task, indeed, but achieved in a style, and with a profusion of learning, which showed that its author was capable of far greater things. Warburton never replied, and few will believe that he would not, if he had not thought silence more discreet. Gibbon, however, regrets that the style of his pamphlet was too acrimonious; and this regret, considering his antagonist's slight claims to forbearance, is creditable to him. "I cannot forgive myself the contemptuous treatment of a man who, with all his faults, was entitled to my esteem."[4]

At length, after fifteen years from the date of his maiden *Essai*, and five from his father's death—an event which left him the free use of his time—appeared the *first* volume of the history which has immortalized his name. His preparations for this great work were vast. The classics, "as low as Tacitus, Pliny the Younger, and Juvenal," had been long familiar. He now "plunged into the ocean of the Augustan history," and "with pen almost always in hand," pored over all the remains, Greek and Latin, between Trajan and the last of the western Cæsars. "The subsidiary rays of medals and inscriptions, of geography and chronology, were thrown on their proper objects; and I applied the collections of Tillemont, whose inimitable accuracy almost assumes the character of genius, to fix and arrange within my reach the loose and scattered atoms of historical information."[4] The Theodosian Code, with Godefroy's Commentary; the Christian Apologists, with the testimonies of Lardner; *The Annals and Antiquities* of Muratori, collated with "the parallel or transverse lines" of Sigonius and Maffei, Pagi and Baronius, were all critically studied. Such was a portion of the formidable apparatus employed by this great historical genius. His maxim as a student had always been *multum legere potius quam multa*. The reader will probably think, even from this imperfect enumeration of his studies, that he read both *multum* and *multa*; but the general accuracy of his investigations was commensurate with their variety. It appears from his own confession that he long brooded over the chaos of materials before light dawned upon it. At the commencement, he says, "all was dark and doubtful;" the limits, divisions, even the *title* of his work were undetermined; the first chapter was composed three times, and the second and third twice, before he was satisfied with his efforts. But this prolonged meditation on his design and its execution was well repaid by the result; so methodical did his ideas become, and so readily did his materials shape themselves, that (with the above exceptions) the original MS. of the entire six quartos was sent *uncopied* to the printers. He also says that not a sheet had been seen by any other eyes than those of author and printer. This last statement must be taken with a small deduction; or rather we must suppose that a few chapters had been submitted, if not to the "eyes," to the "ears" of others; for he elsewhere tells us that he was "soon disgusted with the *modest* practice of reading the manuscript to his friends."

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[1] This lady, though blind—"l'aveugle clairvoyante," as Voltaire happily calls her—recognised with exquisite tact the self-betraying solicitude of Gibbon to catch the exact tone of French manners and society. She thus speaks in a letter to Walpole, "He sets too much value on our talents for society (*nos agréments*), shows too much desire of acquiring them; it is constantly on the tip of my tongue to say to him, 'Do not put yourself to so much trouble; you deserve the honour of being a Frenchman.'"

[2] *Memoirs*, p. 117.

[3] *Ib.*, p. 132.

[4] *Ib.*, p. 139.

[5] *Ib.*, p. 140.

Such, however, were his preliminary difficulties, that he confesses he was often "tempted to cast away the labour of seven years." He persevered, and in February 1776 the first volume was published. The success was instant, and, for a quarto, probably unprecedented. The entire impression was exhausted in a few days. The author might almost have said, as Lord Byron after the publication of *Childe Harold*, that "he awoke one morning and found himself famous." In addition to public applause, he was gratified by the more select praises of Robertson and Hume, and declares that the complimentary letter of the last "overpaid the labours of ten years." Hume applauds, as may be supposed, the "prudent temperament" of the historian in the treatment of the delicate subjects of the "celebrated chapters." Nevertheless, he predicted "clamour;" and formed a much more correct notion of the effects on the public mind than Gibbon had done. He admits the nation's reverence for Christianity, though he calls it "superstition;" Gibbon believed, or affected to believe, that England sympathized with the indifferentism of France.

Two years before the publication of this first volume (1774) Gibbon was elected member of parliament for Liskeard. His political duties did not suspend his prosecution of his history, except on one occasion, and for a little while. In the year 1779 he undertook a task on behalf of the ministry, which, if well performed, was, it must be confessed, well rewarded. The French government had issued a manifesto preparatory to a declaration of war, and Gibbon was solicited by Chancellor Thurlow, and Lord Weymouth, Secretary of State, to answer it. This produced his able *Mémoire Justificatif*, composed in French, and delivered to the courts of Europe. He was rewarded with a seat at the Board of Trade and Plantations,—little more than a sinecure in itself, but with a very substantial salary of nearly L.800 per annum. His acceptance displeased his political associates, and he was accused of "deserting a party in which," he declares, "he had never enlisted." A note of Fox, however, on the margin of a copy of Gibbon's history, records a very distinct remembrance of the historian's previous vituperation of the ministry; and this could not but make his political services look venal. He is *said* to have said that "there would be no hope for England except by taking off the heads of six of the cabinet, and exposing them as an example in parliament." Yet in a fortnight he accepted place. Lord Sheffield says his friend never intended the words to be taken *literally!* No doubt, but it sufficiently shows what he thought of the *deserts* of the ministry he yet consented to serve. But who can read the life and works of Gibbon and imagine him a martyr, whether for love, politics, or religion?

At the general election in 1780, he lost his seat for Liskeard, but was subsequently elected for Lymington. The ministry of Lord North, however, was tottering, and soon after fell; the Board of Trade was abolished, and Gibbon's salary vanished with it;—no trifle, for his expenditure had been for three years on a scale somewhat disproportionate to his private fortune. He did not like to depend on statesmen's promises, which are proverbially uncertain of fulfilment; he as little liked to retrench; and he was wearied of parliament, where he had never given any but silent votes. Urged by such considerations, he once more turned his eyes to the scene of his early exile, where he might live on his decent patrimony in a style which was impossible in England, and pursue unembarrassed his literary studies. He therefore resolved to fix himself at Lausanne.

A word only is necessary on his parliamentary career. Neither nature nor acquired habits qualified him to be an orator; his late entrance on public life, his natural timidity, his feeble voice, his limited command of idiomatic English, and even, as he candidly confesses, his literary fame, were all obstacles to success. "After a fleeting, illusive hope, prudence condemned me to acquiesce in the humble station of a mute. . . . I was not armed by nature and education with the intrepid energy of mind and voice—'Vincentem strepitus et natum rebus agendis.' Timidity was justified by pride, and even the success of my pen discouraged the trial of my voice." His repugnance to public life is strongly expressed in a letter to his father of a very early date. He prays that the money which a seat in parliament would cost may be expended in a mode more agreeable to him. Gibbon was eight-and-thirty when he entered parliament; and the obstacles which even at an earlier period he would have had to encounter were hardly likely to be vanquished then.

Nor had he much political sagacity. He was better skilled in investigating the past than in divining the future. While Burke and Fox, and so many great statesmen, proclaimed the consequences of the collision with America, Gibbon saw nothing but colonies in rebellion, and a paternal government justly incensed. His silent votes were all given on that hypothesis. In a similar manner, while he abhorred the French revolution, he seemed to have had no apprehension, like Chesterfield, Burke, or even Horace Walpole, of its approach, or that it had had anything to do with the philosophic coteries in which he had taken such delight.

In 1781 he published two more quartos of his history. They excited less controversy, and were therefore less talked about. This seems to have extorted from him a half murmur "about prejudice and neglect." The fact is, there was less room for discussion and complaint; the volumes, however, were read with silent avidity, and deserved it. Though less exciting than the first, they were written with a deeper judgment, and were more free from the taint of infidelity.

Having sold all his property except his library—to him equally a necessary and a luxury—Gibbon repaired to Lausanne in Sept. 1783, and took up his abode with his early friend Deyverdun, now a resident there. Perfectly free from every engagement but those which his own tastes imposed, easy in his circumstances, commanding just as much society, and that as select, as he pleased, with the noblest scenery spread out at his feet, no situation can be imagined more favourable for the prosecution of his literary enterprise;—a hermit in his study as long as he chose, and the most delightful recreation always ready for him at the threshold. "In London," says he, "I was lost in the crowd; I ranked with the first families in Lausanne, and my style of prudent expense enabled me to maintain a fair balance of reciprocal civilities. . . . Instead of a small house between a street and a stable-yard, I began to occupy a spacious and convenient mansion, connected on the north side with the city, and open on the south to a beautiful and boundless horizon. A garden of four acres had been laid out by the taste of M. Deyverdun; from the garden a rich scenery of meadows and vineyards descends to the Leman Lake, and the prospect far beyond the lake is crowned by the stupendous mountains of Savoy."[1] In this enviable retreat, it is no wonder that a year should have been suffered to roll round before he vigorously resumed his great work,—and with many men it would never have been resumed in such a paradise. We may remark *en passant* that the retreat was often enlivened, or invaded, by friendly tourists from England, whose "frequent incursions" into Switzerland our recluse seems half to lament as an evil. What would he have said fifty years later? Among others, Mr Fox gave him two "welcome days of free and private society" in 1788. Differing as they did in politics, Gibbon's testimony to the genius and character of the great statesman is highly honourable to both: "Perhaps no human being," he says, "was ever more perfectly exempt from the taint of malevolence, vanity, or falsehood."

When once fairly reseated at his task he proceeded in this delightful retreat leisurely, yet rapidly, to its completion. The fourth, fifth, and sixth volumes were all in manuscript before he thought of printing. On the 27th of June 1787, he was "free"—if freedom can be predicated of that condition, so profoundly natural, which Gibbon has as naturally delineated. "I have presumed," says he, "to mark the moment of conception: I shall now commemorate the hour of my final deliverance. It was on the day, or rather night, of the 27th of June 1787, between the hours of eleven and twelve, that I wrote the last lines of the last page in a summer house in my garden. After laying down my pen, I took several turns in a *berceau* or covered walk of acacias, which commands a prospect of the country, the lake, and the mountains. The air was temperate, the sky was serene, the silver orb of the moon was reflected from the waters, and all nature was silent. I will not dissemble the first emotions of joy on the recovery of my freedom, and, perhaps, the establishment of my fame. But my pride was soon humbled, and a sober melancholy was spread over my mind by the idea that I had taken an everlasting leave of an old and agreeable companion; and that whatsoever might be the future date of my history, the life of the historian must be short and precarious."[2] Sad that the *Consolations of Philosophy* should have offered nothing better than this!

Taking the manuscript of the last three volumes with him, Gibbon, after an absence of four years, once more visited London. The arrangements for publishing volumes so heralded by their predecessors, were soon effected, and the printing proceeded apace; but after it was completed, a little trait of characteristic egotism for a while delayed the publication. The great event was to synchronize with the author's fifty-first birthday, and the *two* great events were celebrated by Mr Cadell, the publisher, by a third great event—no less than a literary dinner in the author's honour;—where, says Gibbon, "I seemed to blush while they read an elegant compliment from Mr Hayley." Assuredly it ought to have been no *seeming* blush with which the historian listened to the fulsome hyperboles of the verses with which this *mediocre* Pindar regaled him; and if he did not blush for himself, he ought to have done so for the Muse.

The last volumes of the work were eagerly read, but much criticised; and while the same religious objections were taken, and justly, the author was found more fault with for the indecency of his notes. Gibbon professes that he never could understand this charge; and it is very likely (though very lamentable) that he spoke the simple truth. In his defence, he says he had wrapped up the offensive matter in the learned languages; but then, to how many thousands of those who read his book were those languages familiar! The question is as to the *necessity* of such citations and comments as those in which he has indulged, and few will contend for it, in the majority of cases, to any legitimate purpose of history. He also says that he had been equally free, though less censured, in the earlier volumes. This would be nothing to the purpose even if true; but it is hardly true; for it would be easy to point out in the later volumes more than one instance in which Gibbon has gone completely out of his way to introduce impurities which none but a mind too accustomed to revolve such ideas would wish to suggest to the minds of others; and *one* instance, at least, in which he has chosen to improvise a ludicrous *varia lectio* of a passage for the very purpose of conveying a most gross obscenity. As a writer in the *Quarterly Review* has very justly remarked, "the critical scrupulosity with which he investigates the most nauseous details, sifting them with the pertinacity and relish of a duck filtering the filthiest mud for its meal," "his sly inuendos, his luxurious amplifications," disclose a gross and prurient mind. Many other men, equally sceptical, would have shrunk from this kind of pollution; he plunges into the filth with all the *gout* and relish of a congenial sensuality.

He returned to Switzerland in July 1788; but the death of his friend Deyverdun, and the *ennui* resulting from the loss of his great occupation, which had been as a daily companion for so many years, had divested his retreat of its chief charms; while the premonitory mutterings of the great thunderstorm of the French revolution, which reverberated in hollow echoes even through the quiet valleys of Switzerland, further troubled his repose. At length public events, seconded by motives of friendship, drove the historian to his island home. He arrived in England 1793. He appears to have amused himself during the latter part of his stay at Lausanne with his *Memoirs*, which, with his correspondence and miscellaneous pieces, it was reserved for his friend Lord Sheffield to give to the public.

His life was now drawing to a close. He had fondly anticipated, from the "laws of probability, so true in general," but, alas! "so fallacious in particular," fifteen years of life. They proved in his case to be "fallacious in particular," for he survived for scarcely a fourth of the hoped-for period. He died January 16th, 1794, about nine months after his return to England. Singularly enough, he had been for years afflicted by the disease which at last proved fatal, but had been insensible to its importance, and had declined, from false delicacy, to seek medical aid. It was an element of the "probabilities" which he had not calculated.

Just before his death he was in full possession of his senses, and is said to have died with much composure; but he was evidently unconscious of the stealthy step of the Destroyer till the curtain was suddenly drawn, and the blow struck.

The character of Gibbon presents much that is personally and socially estimable. Of a frigid temperament,—he had not in his composition one particle of the qualities which constitute moral greatness in any one of its many forms; but it would be unjust to deny that he was amiable and good tempered, and capable of feeling and inspiring a firm, though not very enthusiastic, friendship. It must be added that his friendships were such as did not involve any severe strain on patience, self-denial, or generosity, or on his characteristic equanimity. That equanimity, it must be allowed, was very little tried in any way; he practised his philosophy cheaply. Born to competency, and at length possessed of fortune—always fully sensible of the advantages which fortune brings in her train—

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[1] *Memoirs*, p. 166.

[2] *Ib.*, p. 170.

provided with pleasures and occupations he intensely loved —successful in the great object of his literary ambition, which was his only strong passion, and the gratification of which, as his *Memoirs* show, afforded him intense delight—he seems, if we but suppose this world to be *all*, to have whiled away his time here as pleasantly as any wise epicurean could, and to have computed the sum of his enjoyments at the close with a sufficiently complacent, but not erroneous, arithmetic.[1] "M. d'Alembert relates," says he, "that as he was walking in the gardens of *Sans Souci* with the King of Prussia, Frederick said to him, 'Do you see that old woman, a poor weeder, asleep on that sunny bank? She is probably a more happy being than either of us.' The king and the philosopher may speak for themselves; for my part I do not envy the old woman."[2]

But with good nature and social amenity the praise of his personal character almost ends. No traits, so far as we can find, of self-denial, generosity, magnanimity, nobility of mind, mark his history. M. Vaillant even charges him with "*insensibility* to all lofty and generous *sentiments*." This is too strong; at least, if the *expression* of "lofty" sentiments (a cheap way, it must be admitted, of manifesting the more arduous virtues) may be taken as a key to character where we cannot appeal to the better test of action. Of such *sentiments* of sympathy with magnanimous virtue, there is no lack in his *Decline and Fall*,—if we except two subjects. "His reflections," says Porson, "are just and profound; he pleads eloquently for the rights of mankind and the duty of toleration, nor does his *humanity ever slumber*—unless when women are ravished, and Christians persecuted." The exceptions, it must be confessed, cut deep, and may remind us a little of the indignant virtue of the Irishwoman who challenged her accusers to say, *barring* theft, lust, and drunkenness, what they could have to allege against her. Vanity he had in abundance, as appears in his *Memoirs;* indeed, without it, would any man ever write his autobiography? Yet it is accompanied in Gibbon with much candour. Less indulgence can be given to the contemptuous arrogance with which he treats opponents.

His conversation though, as might be expected, full of information, seems to have been, if not tinged with pedantry, yet too formal. He talked much as he wrote, and this prevented his attaining the ease and grace of the best colloquial style. "His conversation," says M. Suard, "never carried one away. Its fault was an artificiality which never permitted him to say anything unless well,"—that is, well in his estimate; and so, in books, and notes, and conversation, his diction was apt to be *recherché*, and his sentences a mosaic.

Gibbon's genius was singularly adapted to the task he undertook. He ironically observes, in his *Memoirs*, that since "philosophy has exploded all innate ideas and natural propensities," fortuitous causes in early life must be alleged to account for the invincible bent of his mind to *history*. But he distinctly intimates his convictions to the contrary in another part of his *Memoirs:* "After his oracle Dr Johnson, my friend Sir Joshua Reynolds denies all original genius, any natural propensity of the mind to one art or science rather than another. Without engaging in a metaphysical or rather verbal dispute, *I know* by experience that from my early youth I aspired to the character of an historian."[3] No just philosophy is likely to explode "innate" aptitudes or fundamental peculiarities of mind, whether generic or individual; and to these, at least as strongly as to education or accident, must we attribute each special bias of genius. Not that these last have little to do with the character of intellect, which is finally the result of two *variables*—certain original tendencies of mind, and the discipline to which the mind has been subjected. It is a departure perhaps from ordinary language to speak of some one distinct endowment of mind, or *congeries* of endowments, and call it an *historic* genius, in the same way we speak of a philosophical or poetical genius; but if the phrase be ever allowable, it is assuredly in the case of Gibbon. It may be more proper to say, however, that he had in large measure all those separate endowments which, in conjunction, best fit a man for this department of composition; some of them hardly compatible at all, and scarcely ever seen united. In him all were possessed in a harmony and perfection seldom equalled, perhaps never surpassed; a most retentive memory, the most active powers of acquisition, indomitable industry; a mind capable equally of ascending to the most comprehensive, and of descending to the most minute surveys; of appreciating the beautiful and sublime in classic literature, and yet of delighting in the verbal criticisms, the tedious collations, and dry antiquarian research by which the text is established or illustrated; of celebrating the more imposing events of history with congenial pomp of description, and of investigating with the dullest plodder's patience and perseverance the origin of nations, the emigrations of obscure tribes, and the repulsive yet instructive problems which ethnology presents. Accordingly, the widest deductions of historic philosophy alternate in his pages with attempts to fix the true reading of an obscure passage or a minute point of chronology or geography. It may even be said that in these last investigations he took almost as much delight as in depicting the grander scenes of history, and surrendered himself as absolutely for the time to the migrations of the Goths and Scythians as to the campaigns of Belisarius or the conquests of the Saracens. It must be added that never has any historian evinced greater logical sagacity in making comparatively obscure details yield important inferences, or held with a firmer hand the balance in the case of conflicting probabilities; none who has exhibited sounder judgment or self-control (always excepting Christianity) in cases where it is so easy for learned enthusiasm to run into fanciful hypotheses. To these qualities must be added a singular skill in marshalling for effect the diversified and multifarious matters of his history, and often much richness of imagination and great graphic art in investing their more picturesque features with the brilliant tints and colours, the due light and shade, which belong to historic painting.

Of the many high qualities which characterize his history, perhaps none is more marked than the manner in which he has managed to manœuvre, so to speak, the vast array of facts which crowd its pages. It is the amplest historic canvas ever spread, the largest historic painting ever executed, by a single hand. The history of Rome is, for the many centuries which Gibbon treats, the history of the world; and it is astonishing that he should have been able to work with so much ease such vast and incongruous materials into so much unity of design; that he should have been able (so to speak) to exhibit the many-coloured nations of all varieties of costume, habits, languages, and religions in one tolerably consistent *tableau*. This history is a sort of moving panorama of the nations; and as tribe after tribe, nation after nation, Celt, Goth, Saracen, and Sarmatian, appear on the scene from the obscurity of their original seats, they blend with grace in the picturesque narrative. His history is like the Indus or the Mississippi, swelling and still swelling by a thousand tributary floods, which augment its volume, and tinge its waters, but without destroying the identity or the pervading character of the stream.

The style of Gibbon has great merits, mixed with some not trivial defects. The "luminous Gibbon" was a phrase of Sheridan in his speech on Hastings' trial, with which

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[1] *Memoirs*, pp. 182–4.

[2] *Ib.*, p. 183.

[3] *Ib.*, p. 106.

Gibbon was much delighted; but which the malicious wit afterwards playfully denied, and said he must have meant the "*vo*luminous Gibbon." Yet the epithet may well stand. The diction is precise, energetic, massive; splendid, where the pictorial demands of the narrative require it, as that of Livy; and sometimes, where profound reflections are to be concisely expressed, as sententious and graphic as that of Tacitus. Less can be said for the *sources* of his diction; it is not sufficiently idiomatic English, and bears everywhere the traces of his early addictedness to French. The Gallicisms are in many places amusingly perverse. Thus, for example, his constant use of "prevents" in the old sense of "anticipate," sometimes leads to ludicrous apparent contradiction, as when he tells us that "The prefect had signalized his fidelity to Maximin by the alacrity with which he had obeyed, and even *prevented*, the cruel mandates of the tyrant;" or, again, that "the fortunate soil assisted and even prevented the hand of cultivation."

The *structure* of his style is open to still greater objections than his *diction*. Harmonious as it often is, it is too frequently set and formal; deficient in flexibility. It is apt to pall on the ear by the too frequent recurrence of the same cadence at equal intervals, and the too unsparing use of antithesis. It is not veined marble, but an exquisite tesselation; not the fluent naturally-winding stream, but a stately *aqueduct*, faced with stone, adorned with wooded embankments, or flowing over noble arches, but an aqueduct still. It is a just criticism of Sir James Mackintosh that probably no writer ever derived less benefit from his *professed* models. Pascal, Voltaire, Hume, were his delight, and he acknowledges (as so unsuccessful a pupil well might) that he often closed the pages of the last with a feeling of despair. Addison and Swift he read for the very purpose of improving his acquaintance with idiomatic English, yet, as the above critic remarks, "with so little success, that in the very act of characterizing these writers, he has deviated not a little from that beautiful simplicity which is their peculiar distinction."

The irony of Gibbon, on which he evidently plumed himself, is in him no pleasant feature, not merely because in *history* it can seldom be in place if much indulged, but because it is especially distasteful to the great majority of his readers when applied to those deeply serious themes on which he usually exercises it. He flattered himself, as already seen, that Pascal's *Provincial Letters* had taught him to use this weapon gracefully; as little, it may be retorted, as Addison and Swift had taught him the use of idiomatic English. The difference between an innocent smile and a sardonic grin is scarcely greater than that between the irony of Pascal and the irony of Gibbon; the one speaks with a sweet *riant* air, as with the consciousness that what is ridiculed *is* ridiculous; the other with a cautious, stealthy, Guy Faux look, as if conscious of a sinister purpose. Gibbon's irony almost always wears a sneer, and seldom provokes the smile of the reader, even where the subject does not repel it. Not only so; it is so elaborate as to lose much of its grace even where innocent; in other cases it is often *so* masked as to leave the reader (Pascal is never thus chargeable) in doubt whether the author meant what he seemed to mean, or whether he is not meditating, by the very form of expression, a pusillanimous escape from the inferences that may be legitimately founded on it.

We have expressed ungrudging admiration of the great merits of this astonishing work. It has, nevertheless, one pervading blemish, of which we shall speak with similar impartiality. That blemish is, of course, the treatment of Christianity.

If the Christian public had given itself time to reflect, it would have been seen that Gibbon's attack really afforded little cause for alarm. The purpose of the assassin-like stroke from behind the curtain of his irony is plain enough; but it is really a *brutum fulmen*. Gibbon himself has provided for his own defeat by his very mode of conducting the assault. If he meant, as he seemed to *insinuate* rather than *affirm* (or, to speak more accurately, insinuated while in words he expressly affirmed the contrary), that his "five secondary causes" gave a probable *natural* solution of the *origin* and early triumphs of Christianity,—then the whole thing was a ludicrous instance of ὕστερον πρότερον, or, as our proverb has it, of "the cart before the horse." The story begins all too late; the "causes" require as much to be accounted for as the "effects;" or rather, they are among the very *effects* to be accounted for. According to this mode of explaining the *origin* of Christianity, causes are assigned which implied not only its existence, but its activity; in other words, the hypothesis assigns Christianity *itself* as a cause of *itself*, and its success as a ground of its success. Thus, for example, if he is to be supposed (as he evidently wishes the reader to infer) to be accounting for the purely human origin and triumphs of Christianity,—the most potent secondary causes he assigns are the zeal, morality, virtue, unity,[1] and so forth, of the Christian church; meanwhile, the very thing that demands explanation is just the sudden apparition in the world of this singular phenomenon, the Christian church, with this bright retinue of virtues; how it was that a system from which the Jews have recoiled more than any other nation for the last eighteen hundred years should have sprung up in their bosom, in spite of all their national antipathies; how it was that a system which was scarcely less odious from its origin, its character, its doctrines (in a word, everything), to all other nations, should nevertheless have found its proselytes so rapidly in every part of the Roman empire; and in a few centuries, not only gained a sphere for the exercise of that marvellous "virtue" and "zeal" which *it* indeed might cause, but which could hardly cause *it*, but dethroned all the deities of Olympus, and became the established religion of the empire! *That* was the problem; and Gibbon takes it up long after Christianity had made good its footing, and assigns, if he means what he seems to mean, causes for its origin and success which already presuppose both origin and success! It is as though a man were seeking the source of the Nile, and ascending no higher than the cataracts, avows that he finds its fountain there. Such is the value of Gibbon's hypothesis, *supposing* he intended his secondary causes to *account* for the origin and triumphs of Christianity; but, as before said, he made a provision for his retreat, by nominally granting the "truth of the doctrine and the providence of God" to be *the* great cause of the success of Christianity. Seriously, one would imagine, (if we did not know his manner), that he meant all this; for in his *Vindication*, in reply to Davis, where he takes occasion briefly to mention Watson's *Letters*, and to excuse himself from reply, he appeals to this very concession as a reason for silence! He says,—"The remarks of Dr Watson consist more properly of general argumentation than of particular criticism. He fairly owns that I have expressly allowed the full and irresistible weight of the *first* great cause of the success of Christianity; and he is too candid to deny that the five *secondary* causes, which I had attempted to explain, operated with *some* degree of active energy towards the accomplishment of that great event. The only question which remains between us relates to the *degree* of the weight and effect of those secondary causes; and as I am persuaded that our philosophy is not of the dogmatic kind, we should soon acknowledge that this precise degree cannot be ascertained by reasoning, nor perhaps be expressed by words."[1] This language, on the supposition that Gibbon was still really *ironizing*, greatly aggravates the disingenuousness of the "celebrated chapters." But either he meant what he said, or he did not; if he did, it of course formally surrenders the argument which infidelity has founded on the supposed sufficiency of his "secondary" causes; if he did *not* mean it, he of course evades the very question which his antagonist (and every other discreet antagonist) would contest with him, by ironically affecting agreement.

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[1] As to his *third* secondary cause, "miracles," the same may be said as of his ironically conceded primary cause. He either meant that miracles had been performed, or not; if he did, he of course concedes the main point; if he did not, then he is giving a *nothing* (by a new name) to account for the success of Christianity. If it be said that what he *meant* was the *pretension* to miracles, though miracles there were none, it is very likely; but then it is easy to reply that though such pretensions have been often of service when a religion has *already become accredited*, there is no example (unless he choose to *beg the question* by assuming it of the Jewish and Christian religions) of a religion successfully *founding itself* on such hazardous assumptions, while there are many examples of failure in such attempts; that is, Gibbon's cause, as usual, comes too late.

It may be further remarked, not only that the *Christian* feels that the "secondary causes" of Gibbon do not touch the principal problem,—but that infidelity has confessed, in the most significant way, a similar mistrust, by laboriously constructing other, and often reciprocally destructive hypotheses, to account for the intractable phenomena. That of Strauss is one, which, unlike that of Gibbon, professes to track the origin of Christianity to its cradle; but faithfully represents that of Gibbon and many more, in one respect, that it is ephemeral. It is even now fast losing its transient *prestige*. These shining exhalations from the bog of scepticism glimmer, flicker, and vanish. Fortuitous myth, deliberate fiction, deep fraud practising on simplicity, deep fanaticism practising on itself,—have all under various modifications been resorted to, as the contradictory bases of infidel theories, and have been successively abandoned. The problem of the origin of *such* a system as Christianity under *such* circumstances, and with *such* results, within a given century, still presents the ancient difficulty. Meanwhile, it may now be safely asserted, that the chief hypotheses have been exhausted; and we have reason to infer, therefore, that the vast majority who examine Christianity will be, as they have hitherto been, of Butler's opinion, that nothing but the truth of the gospel will *harmonize the facts*.

But still further; it is a special weakness in Gibbon's theory that so far from his "secondary causes" being sufficient to account for the origin, they do not even account for the *progress* of the gospel; they are, when closely investigated, quite as often opposed to that progress; sometimes must have been far greater hindrances than helps. Nothing can be more infelicitous than some of his suppositions. For example, he imagines that the "intolerant zeal" of Christianity—which expressed the most open and derisive contempt of all the gods, consecrated by the classic mythologies—was a mysterious advantage to it! That the austere virtue—with which, be it recollected, it not only recoiled from the too welcome laxity of a jovial heathenism, but enlarged the circle of moral duties by adding the demands of the most diffusive and refined *spiritual* purity—would somehow attract votaries! That its visions of immortality—of a heaven so unalluring—of a hell so terrible—would be of magnetic force! Surely these are problematic *auxiliaries.* Similarly, some of the facts he assumes are purely imaginary; he attributes the zeal of proselytism manifested by the Christians to a Jewish origin, forgetting that the *zeal* of the Jews was just of the opposite kind; that Judaism was as exclusive as Christianity is catholic. There may be, no doubt, zeal for freedom and zeal for slavery; but because each is *zeal*, it would be odd to derive one from the other. Another cause to which he attributes much, was, alas! too often non-existent, and its effects were at least neutralized by opposite causes. It is the *unity* of the early church; its close compacted organization! Surely a singular topic of compliment, and even at a very early period a doubtful source of strength. The divisions, jealousies, and quarrels of Christians, were from the very first their weakness and their shame; and must have been at least as influential to retard, as ever their union was to advance, the progress of the gospel.

In conclusion, Christians may take some encouragement from Gibbon's failure. If ever man could hope to be the historic champion of infidelity with success, it was he. His work has such prodigious merits in nearly everything but its treatment of Christianity, as to have procured it almost universal perusal; it has now been published for the greater part of a century; and what, relatively to Christianity, have been its effects? Quite inappreciable. His management of this high argument is generally considered as the great blot of the work; as a sufficient, or even plausible account of the *origin* and early *triumphs* of Christianity, it is for the most part abandoned by infidels themselves.

The New Testament, somehow, still manages to impress the bulk of mankind who examine it, with an indelible conviction that it is the fruit of neither imposture, fiction, nor fanaticism, and that the *facts* connected with the propagation of the religion it embodies are historic verities. Since men have persisted in this belief, in spite of the efforts of such men as Bolingbroke, Voltaire, Hume, and Gibbon, to disabuse them, it is not probable that the enterprise in which such champions have failed will be successfully achieved by other hands. Hence it may be inferred, that *if* Christianity be false, it will, nevertheless, *not* be exploded.

The manner in which Gibbon prosecutes his object affords, no doubt, great facilities for exciting *prejudices* against Christianity, and ample scope for his cherished sneer. Christianity does not enter on the scene till it had degenerated in some degree from its primitive purity, and had contracted many pollutions. The foibles and follies of its adherents, of course, afford a very easy triumph to the satirist.

The Christian religion, once originated, and having achieved an initial success, was left to struggle with all the corrupting influences of the world, and, as might be expected, did not come off uninjured. Brought into contagious contact with false philosophies and degrading superstitions, and gathering converts from those who were but partially reclaimed from either, no wonder that its purity was blemished. But all this, which is favourable to Gibbon's satire, is anything but favourable to his argument: for the characteristics of Christianity to which, one moment, he would fain assign such wonderful efficacy, are anon exhibited in a very different light; are alternately, as the exigencies of his argument or the gratification of his malignity may dictate, the objects of respect or contempt. Thus the zeal and the purity of manners which are now so potent a cause of success, are now transformed, the one into bigotry and fanaticism, the other into austerity and grimace. But *velis et remis;* if Christianity may but be discredited, the historian seems but little troubled by his own inconsistencies. Thus, to give other instances of this blind animosity: sometimes the Christians are, nearly all, poverty-stricken wretches, the very dregs of society; presently, they have plenty of riches among them, and the mere prodigality of their benevolence is no inconsiderable bait for proselytism: at one time the early Christians, for a certain purpose, are too obscure to attract the attention of the Roman great; then, for another purpose, it is suddenly *remarkable* that illustrious men like Tacitus and Seneca could have been so insensible to its existence, or have regarded it with such apathy!

The historian, in short, has greatly diminished the pernicious effect of his attack, by the *animus* he everywhere be-trays. It is that of inveterate prejudice, of resolute hostility. On this one topic he is never moved to generous or noble emotion. The excellence of the Christian ethics, indeed, is coldly conceded; but even Gibbon could hardly deny that.

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[1] *Miscellaneous Works*, vol. iii., p. 362. The italics are the author's own.

The sixteenth chapter is in some respects worse than the fifteenth; for in his anxiety to depreciate the numbers and heroism of the Christian martyrs, he forgets what is due to his professed maxims of toleration, and becomes, if not the apologist, the palliator of the most odious persecution. But his conduct here has been rebuked by one whose eminently calm and judicial spirit, and exemption from all suspicion of religious fanaticism, render his testimony particularly impressive. "The sixteenth chapter," says Sir James Mackintosh, "I cannot help considering as a very ingenious and specious, but very disgraceful extenuation of the cruelties perpetrated by the Roman magistrates against the Christians. It is written in the most contemptibly factious spirit of prejudice against the sufferers. . . . . Dr Robertson has been the subject of much blame for his zeal or supposed lenity towards the Spanish murderers and tyrants in America. That the sixteenth chapter of Mr Gibbon did not excite the same or greater disapprobation, is a proof of the unphilosophical and indeed fanatical animosity against Christianity which was so prevalent during the latter part of the seventeenth century."[1] It is also well observed by M. Guizot, that there is scarcely anything in his history that does not move Gibbon more than Christianity and its fortunes. The achievements of a vigorous barbarism—the sanguinary conquests, even the odious cruelties of a Bajazet or a Tamerlane—are described with more animation than the moral conquests of Christianity. One would have imagined that at least the prodigious influence of Christianity, true or false, on the world's history and its civilization would have been a tempting theme for the philosophical historian's speculation. Yet, as the above writer has observed, it is a topic almost unappreciated by him. A single sentence from M. Guizot's article in the *Biographie Universelle* well expresses the above traits. "Après s'être efforcé de rebaisser le courage héroïque des martyrs Chrétiens, il prend plaisir à célébrer les féroces exploits de Tamerlan et des Tartares: la grandeur matérielle, si on peut le dire, le frappe beaucoup plus que la grandeur morale; et les élans d'une vertu sublime ne pénètrent point jusqu' à son ame, tandis que les écarts d'une force barbare séduissent son imagination et égarent son jugement."

It is difficult, as several critics have remarked, to account for Gibbon's extreme injustice to Christianity. Some have fancied, and himself in his later days would fain countenance the fancy, that it was partly due to his "conservative politics;" because he regarded Christianity as he would a "modern innovation," and yearned, with desperate fidelity to antiquity, over the old heathenism it supplanted; because he felt much as he did at seeing the throne of France menaced by revolutionary fury! A remarkable passage to this effect occurs in one of his latest letters to Lord Sheffield, dated 1790. He says, "Burke's book is a most admirable medicine against the French disease, which has made too much progress even in this happy country. I admire his eloquence, I approve his politics, I adore his chivalry, and I can forgive even his superstition. The primitive church, which I have treated with some freedom, was itself at that time an innovation, and I was attached to the old Pagan establishment."[2] To most this has appeared an *after thought*, and justly. For was ever any argument more suicidal? When *he* wrote, Christianity, right or wrong, *was in possession;* and to attempt to destroy it was to do that very work of destruction which he professed to deprecate; yet he had the effrontery to say in his *Memoir*, on the breaking out of the French revolution,—"I have sometimes thought of writing a dialogue of the dead, in which Lucian, Erasmus, and Voltaire, should mutually acknowledge the danger of exposing an old superstition to the contempt of the blind and fanatic multitude."[3] Assuredly he should have made himself a *fourth* interlocutor in the dialogue, and confessed that *he* was the greatest culprit, in this kind, of his whole generation. Christianity, which, even if according to him a "superstition," could plead the hoary prescription of nearly two thousand years, he did his best to undermine, because so many centuries ago it had dethroned poor Jupiter! On the same principles, had he lived in the age of Augustus, he ought to have exemplified his zeal against innovation by being jealous of the upstart of Olympus, pleaded for the restoration of Saturn, or even gone back to the more "primitive tradition" of "Chaos and Old Night!"

It would have been well if the contemporaries of Gibbon had adopted that moderate estimate of his attack on Christianity which experience has now justified us in forming. As it was, the public took fright, and numberless hasty replies were published,—some of them insolent and abusive, most of them very inadequate in point of learning and logic, and none of them, if we except those of Watson and Lord Hailes, of much value. That of Watson alone touched the real points of the controversy, and showed that Gibbon's sophistry left the great problem as it was. It is a pity that Gibbon, instead of replying, evaded it by that disingenuous feint of agreement on the main point at issue, to which reference has been already made.

The only adversary whom he honoured with distinct refutation was Davis, whose unworthy attempt to depreciate the great historian's learning, and captious, cavilling, acrimonious charges of petty inaccuracies and discreditable falsification, gave Gibbon an easy triumph. It was, as he said, "a sufficient humiliation" to vanquish such an adversary. At the same time it must be confessed, that he selected his adversary discreetly.

The charges of inaccuracy against Gibbon in the citation of his authorities have often been repeated, but they are not, except to a very limited extent, substantiated in the estimate of the most recent and competent of his editors. In his treatment of Christianity, his inveterate and resolute prejudices may account for his partial evidence and perverted logic without accusing him, as Davis did, of ignorance, which *cannot* be suspected, or of deliberate *suppressio veri*, which one *would* not suspect.

It is impossible to enumerate here the various editions of Gibbon's works, or to enter into the voluminous literature they have evoked. It may be well to mention, however, the beautiful edition of the *Decline and Fall* recently put forth in eight volumes 8vo, under the editorship of Dr W. Smith, and which embodies the notes of Professor Milman and M. Guizot.

He who would obtain a full insight into the character and genius of Gibbon, would do well to consult not only the *Memoir*, but the Letters and Journals; his life was emphatically that of a student and scholar, and these remains as vividly illustrate it as the *Memoir* itself. (H. R.)

GIBBONS, Grinling, a celebrated English woodcarver, was born at London in the latter half of the 17th century. His parents have been generally represented as Dutch by descent. He early displayed great cleverness and ingenuity in his art, on the strength of which he was recommended by Evelyn to Charles II., who commissioned him to execute the ornamental carving for the chapel at Windsor. The subjects which Gibbons selected are taken chiefly from the Bible, and consist of doves, pelicans, palm-trees, and other emblematic devices. He also executed the foliage and festoons in the choir of St Paul's, the baptismal fonts in St James's, and an immense quantity of ornamental work at Burleigh, Chatsworth, and other aristocratic mansions. The finest of all his productions in this style, however, is believed to be the ceiling which he devised for a room at Petworth. He sometimes wasted his ingenuity on trifling subjects. He is said, for instance, to have carved feathers and pens that were mistaken for real ones; and many of his flowers used to move on their stems like their natural prototypes when shaken by a breeze. Some of Gibbons' works, such as his statue of Charles II. at the Bank, and of James II. at Whitehall, sufficiently prove that had he chosen to cultivate the more difficult walks of art he might have attained a high rank among the sculptors of England. Even as it is, he has been called by some critics the English Cellini, and the title is perhaps not wholly undeserved.

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[1] Mackintosh's Life, vol. i., p. 245.

[2] Gibbon's Works, vol. i., p. 214.

[3] *Ib.*, p. 181.

GIBBOUS, protuberant, swelling, of a convex form. It is particularly applied to the moon, when more than half full or illumined.

GIBEON, an ancient city of Palestine, frequently mentioned in the Old Testament, though not occurring in the New. It is identified with El-Jib, which is a moderately sized village, seated on the summit of a hill, five miles north by west from Jerusalem. The houses stand very irregularly and unevenly, sometimes almost above one another. They seem to be chiefly rooms in old massive ruins, which have fallen down in every direction. One large building still remains, probably a former castle or tower of strength. Towards the east the ridge of the hill sinks a little, and here, a few roods from the village, just below the top of the ridge towards the north, is a fine fountain of water. It is in a cave, excavated in and under the high rock, so as to form a large subterranean reservoir. Not far below it, among olive trees, are the remains of an open reservoir, about 120 feet in length by 100 in breadth. It was doubtless designed to receive the superfluous waters of the cavern, and there can be little question but that this was "the Pool of Gibeon" mentioned in 2 Sam. ii. 13; and, in the whole, we find the "Great waters that are in Gibeon" of Jer. xli. 12.

GIBRALEON, anciently *Ossonoba*, a secular town of Spain, in the modern province of Huelva, in Andalucia, on the left bank of the Odiel, here navigable, and 7 miles from the town Huelva. It is rather well built, and contains two churches, a town-house, a public school, a nunnery, and the buildings of two monasteries; and it has also the remains of two forts. Gibraleon has an annual fair, and carries on some trade in fruit, wool, corn, and wine. Pop. (1855) about 4000.

GIBRALTAR, a British town and fortress in Andalucia, the most southerly province of Spain. It stands on the extremity of a small peninsula, washed on the east side by the Mediterranean, and on the west by the Bay of Gibraltar. This peninsula is connected with the mainland by a low sandy isthmus called the "Neutral Ground," which reaches from the rock of Gibraltar northwards to the ancient Spanish lines, a distance of a mile and a half; its breadth is about three-fourths of a mile.

Gibraltar was known to the ancient Phœnicians by the name of Alube, which was corrupted by the Greeks into Calpe. Over against it, on the African shore, stood Abyla (called by the English Apes' Hill); and these two mountains formed the renowned Pillars of Hercules, and for many centuries the extreme limits of maritime enterprise among the seafaring men of the ancient world. Its importance in a strategic point of view was first discovered by the Saracens, who, when they crossed over from Africa into Spain in 711, built a fortress on it, in order to keep up their communication with the other side. From the name of their leader, *Tarik*, or *Tarif*, they called the rock *Gebel Tarik*, the hill of Tarik, whence the modern name of the mountain is said to be derived. An ancient tower, the sole relic of the castle built by the Berber chief, is still standing. The rock remained in possession of the Arabs till the year 1309, when it was retaken by Guzman the Good, who commanded the Spanish armies for Ferdinand IV., the king of Castile and Leon. In 1333, however, the Moors once more made themselves masters of it, through the treachery of the Christian governor, and retained it till 1462, when they were driven out of it by Henry IV., king of Castile. It was finally incorporated with the Spanish crown in 1502. The arms of the town were from this time forth a castle with a key hanging from its gate, typifying its command over the straits. Great efforts were made by the Spaniards to strengthen the natural defences of the place, and they succeeded so well that throughout Europe Gibraltar was regarded as impregnable. In 1704, however, it was taken by a combined English and Dutch fleet under Sir George Rooke and the Prince of Hesse Darmstadt. The Spaniards made desperate efforts to recover it, but their attempts were invariably defeated, sometimes with immense loss. The peace of Utrecht in 1713 confirmed the possession of it to the English. In 1720 the Spaniards determined once more to take it if possible by a *coup-de-main;* but their intention became known to the garrison, and the plan was abandoned for a time. Seven years after this a much more formidable attack was organized. The Spaniards had made vast preparations, and surprised the garrison before reinforcements could be sent for from England. The result of the siege was still doubtful, when the news of a general pacification brought it to a close. But the most memorable siege of Gibraltar, indeed one of the most memorable of all sieges, was that which it sustained from the combined land and sea forces of France and Spain during the years 1779–1783. The grand attack on the place was made on the 13th September 1782, and all the resources of power and science were exhausted by the assailants in the fruitless attempt. On the side of the sea they brought to bear against the fortress forty-six sail of the line, and a countless fleet of gun and mortar boats. But their chief hope lay in their floating batteries. These celebrated engines of destruction had been planned by D'Arçon, an eminent French engineer, and built at the cost of half a million sterling. They were so constructed as to be impenetrable by the red-hot shot which they foresaw the garrison would employ; and such hopes were entertained of their efficiency that they were styled *invincible.* The Count d'Artois (afterwards Charles X.) hastened from Paris to witness the capture of the place. He arrived in time to see the total destruction of the floating batteries, and a considerable portion of the combined fleet, by the English fire. In writing home on the subject he found it convenient to hide his chagrin under a wretched joke: "La batterie la plus effective," said he, "était ma batterie de cuisine." Despite this disaster, however, the siege continued till brought to a close by the general pacification, February 2d, 1783. The history of this famous siege is fully detailed in the work of Captain Drinkwater, who himself took part in the defence, and in the *Life* of its gallant defender Sir Gilbert Elliott, afterwards Lord Heathfield, whose military skill and moral courage place him among the best soldiers and noblest men whom Europe produced during the eighteenth century. In nothing did his true nobility of character show itself more clearly than when it became his duty to animate his little garrison, whose spirits often flagged under the combined influences of disease and impending famine. When victory at length crowned his arms, the small remnant of 400 men that were saved from the wreck of the hostile fleets owed their lives to his humanity. His conduct at the opening of the siege, when called upon by the

Spanish commander to deliver up the keys of the fort, is a worthy parallel to that of Leonidas at Thermopylæ, when ordered by the Persian king to lay down his arms. This scene has supplied to Reynolds the subject of one of the noblest portraits ever put on canvas. Since this memorable siege everything that the science of the engineer could do has been done to render Gibraltar, humanly speaking, impregnable. The east and north sides are naturally so steep as to be wholly inaccessible. At the north-west corner, where "the Lines" intervene, a narrow gorge, leading down to the neutral ground, is flanked by the most formidable batteries. Europa Point, the southern extremity of the rock, is almost equally precipitous; but to make assurance doubly sure, powerful batteries have been erected there also. The top of the Point is now surmounted by a fine lighthouse. In the neighbourhood are the "Flats," an open sandy space where the soldiers of the fort are drilled and exercised. On the western side the hill slopes down gradually to the sea. On this slope stands the town of Gibraltar, flanked by the old and new moles. It was almost entirely destroyed during the great siege, but has been rebuilt on an enlarged and improved plan. The houses are, for the most part, tolerably well built, but the curious intermixture of English and Spanish architecture, and the large number of mean public houses painted in flaring white, are not calculated to impress the visitor very favourably. The town is connected with the isthmus by a narrow causeway, on the defence of which science has exhausted its resources. The most remarkable of the defences commanding this part of the town are the "galleries," two excavations cut out of the solid rock with great difficulty, and at an immense expense. Their aggregate length is between two and three miles, and their breadth is sufficient to let a carriage pass. At intervals of 12 yards port-holes have been cut out in the face of the rock commanding the neutral ground and the bay, and so contrived that the gunners in the galleries are quite safe from the shot of any possible assailants. These galleries are so scarped as to be inaccessible, and their safety is further secured by the batteries that bristle on every height above. The rock of Gibraltar itself is composed chiefly of gray primary marble, lying in strata which vary in thickness from 20 to 40 feet. As seen from the sea it presents a bare and uninteresting aspect, as if wholly devoid of trees, plants, or verdure of any kind. It possesses, however, some wooded and grassy little glens, shaded from the scorching heat in the nooks of the mountains. In the crevices of the rock itself are found the asparagus, the caper plant, the palmita, and various sorts of succulent herbs, such as the aloe, and some species of cactus. Kelaart in his *Flora Calpensis* describes upwards of 400 flowering plants and ferns as indigenous to Gibraltar, and about fifty as introduced. The rock shelters rabbits, partridges, pigeons, and woodcocks, which are never shot at; and is remarkable as the only spot in Europe where the ape is found wild. The species is the Barbary ape, of a dark fawn colour. They inhabit the high ground on the east of the rock, and never approach the dwellings of men unless driven into the low ground by the cold winds from the N.E. They then do a little damage to the orchards; but they have always enjoyed perfect impunity for these occasional depredations; and it is as grave an offence to kill one of them as it was in Egypt in ancient times to destroy an ibis, or as it is now in Holland to injure a stork. The rock is honey-combed in many places with caverns, some of them of great size. The largest of all is that of St Michael on the S.W. side, the entrance of which is about 1000 feet above the sea-level. On entering, one sees a spacious but gloomy hall hung round with massive stalactites, from which the visitor descends through a succession of caves of the same sort to a depth of about 500 feet below the entrance. The foulness of the atmosphere has hitherto prevented any one from penetrating further; but at this depth it is said that the waves of the sea may sometimes be heard roaring through the caverns below. Among the rocks, chiefly in the fissures filled with calc-sinter, are to be found many interesting fossils, among others the bones of various animals, intermixed with helices and fragments of spar.

The climate of Gibraltar is temperate, and, on the whole, healthful, the only exception being in the case of children cutting their first teeth. To them it seems to be peculiarly fatal. In summer the African heat is tempered by a refreshing sea-breeze, which blows from about 10 A.M., and ceases before sunset. During the other seasons, however, fogs and mists are common. The easterly winds, or levanters, sweeping the Mediterranean, bring with them the unhealthy season, which lasts from July till November. During the prevalence of these winds, wounds are said to become aggravated, acute diseases arise, and many convalescents relapse and perish. The west winds on the other hand are clear and refreshing, and blow directly on the town. The rains set in with great violence in the end of September, and continue to fall at intervals, though much more lightly, till May. The drought which then follows is very intense. The heavy dews and thick fogs of autumn are as disagreeable as they are insalubrious. Much discussion exists as to the nature and origin of the Gibraltar fever, which scourges the rock periodically at intervals of about twelve years. It is believed to arise from the filthy habits of some of the alien residents, and to be fostered by the defective sewerage. Probably also the structure of the English parts of the town is calculated to make the infection spread. These houses, which are built on the English model, and furnished in the English style with carpets, curtains, and other appliances which prevent the free circulation of air, are singularly ill adapted either for the hot or the cold weather of Gibraltar, and the fever is consequently peculiarly fatal to British subjects. The means that have been taken to diminish the amount of disease by enforcing a strict quarantine on foreign ships visiting the port do not seem to have contributed materially to that end. There is a magnificent tank for supplying the navy. It generally contains from 9000 to 11,000 tons of good water, which is that which falls on the mountain in the rainy season. The houses are so constructed that all the rain which falls on their roofs is led into under-ground tanks. There are no springs on the rock itself, and those on the neutral ground yield but a scanty supply of bad water. Provisions are supplied cheaply and abundantly from Africa. The soldiers of the garrison used formerly to be fed on salt meats sent out from England. This diet was found to be productive of very fatal dysenteries and inflammations; but since 1840, when a different dietary was introduced, the amount of sickness and mortality among the troops has greatly diminished.

Gibraltar contains a motley population of from 15,000 to 20,000 (exclusive of the troops in garrison), chiefly English, Jews, Spaniards, and Moors. Stringent measures are adopted by government to prevent any increase in the number of permanent residents. No person is allowed to remain on the rock who cannot find some one to stand security for his good behaviour. *Permis de séjour* are issued by the police magistrate for ten, fifteen, or twenty days, at the end of which period they require to be renewed. The officers of the garrison have the privilege of introducing a stranger for a month.

Justice is administered at Gibraltar according to the law of England, which is not found to meet thoroughly the emergencies that are constantly occurring among a population so heterogeneous as inhabits the rock. The judge-advocate settles disputes that arise between debtor and creditor; but appeal is open from his decision to that of the governor, whose verdict is final in all cases where the value of the contested property is below L.300. If it exceed that amount the parties may appeal to the privy-council in England.

The utmost tolerance exists in Gibraltar in all matters pertaining to religion. Nearly every known form of worship is celebrated; but that which reckons by far the greatest number of adherents is the Roman Catholic. Next in number are the Jews, who have four synagogues; and after them the Protestants, chiefly members of the Church of England. The least numerous are the Mohammedans. Two bishops representing the Romish and English Churches reside permanently at Gibraltar. There are three excellent libraries on the rock, the oldest and best of which is that which owes its origin to Colonel Drinkwater, the historian of the siege. It numbers about 20,000 volumes.

Gibraltar is a free port; and though its trade and commerce have of late years declined considerably, they are still extensive and important. It is the great resort of the *contrabandistas* or smugglers, who purchase nearly all the goods that find their way into the south of Spain. The smuggling of tobacco, which is manufactured in large quantities at Gibraltar, is a source of constant fretting and ill-will between the governments of Spain and this country. The quantity of this commodity that finds its way into Spain without paying duty is between six and eight millions of pounds annually, employing in its manufacture about 2000 hands. The loss and affront endured by the Spanish crown through the continuance of this trade, are all the more keenly felt, as tobacco is a monopoly of the government, and a considerable source of its income. Inquiry, however, has shown that the success of the smugglers is chiefly due to the incapacity or dishonesty of the Spanish officials, whose duty it is to put an end to their trade. The only chance that these personages have of making fortunes is to accept the presents which procure their connivance. In 1852 the declared value of British and Irish produce and manufactures exported from the United Kingdom to Gibraltar was L.510,889.

Gibraltar was long an ill-managed and most expensive colony. It has now been thoroughly reformed, and not only defrays its own expenses, but even pays over a small surplusage to the home government. The total amount of the revenue is a little above L.30,000; the expenditure is rather under that sum. The sources of income are the customs, port and quarantine dues, land revenue, rents, auction dues, stamps and licences, &c. The outlay is caused by the salaries in the civil, judicial, ecclesiastical, and municipal services, by allowances to some of these departments, and by office contingencies.

GIBRALTAR, *Bay of*, or, as it is sometimes called, ALGECIRAS BAY, is bounded by the rock of Gibraltar on the one side, and the headland of Cabrita on the other. Its greatest length is about eight miles from N. to S., its greatest width about five miles from E. to W., and its circuit nearly forty miles. Its depth in the centre is about 110 fathoms. In spring tides the water rises in the bay about four feet. Algeciras, from whose name the bay is sometimes called, is a fortified Spanish town on the W. side of the bay, over against Gibraltar. Near it is the beautiful little island called Isla Verde, or Green Isle.

GIBRALTAR, *Straits of*, the narrow channel which separates the south of Spain from the north of Africa. The width at the narrowest part, between Cabrita Point and the opposite shore, is thirteen miles. We have an excellent chart of the straits by Don Vincente Tefino de San Miguel, with the additional observations of Captain H. W. Smyth, R.N., from which it appears that there is a continual current flowing from the ocean in the middle of the straits, which has a velocity varying from three to six miles per hour, and is three and a half miles in breadth. There are two lateral currents, which have a mean breadth each of two and a half miles; but they change their direction with the changes of the tide. At the time of ebb these lateral currents have a velocity equal to that of the central one. The depth of the strait in the meridian of Cape St Vincent is 100 fathoms; but in passing upwards the channel regularly and rapidly deepens, until, opposite to Europa Point at Gibraltar, the depth of water is 1000 fathoms. It is remarkable, that though the oceanic current at the straits, and that of the Bosporus at the Dardanelles, continually pour their waters into the Mediterranean, its level is not raised. But Dr Halley long ago showed the evaporation from its surface was fully equal to maintain it at the same level, notwithstanding those additions, and that of the rivers it received. The current is sufficiently strong to be dangerous to vessels sailing into the Atlantic, and can only be overcome by a brisk wind from the Levant.

GIBSON, EDMUND, D.D., author of the *Codex Juris Ecclesiastici Anglicani*, was born at Bampton in Westmoreland in 1669. His parents were persons of humble fortune, but sensible enough to give their son the best education within their reach. After distinguishing himself at the local schools, young Gibson was sent to Oxford, where he made himself known by publishing at the early age of twenty-two a Latin translation of the *Saxon Chronicle*, with notes, indexes, &c. This work is held in high esteem among historians, as it throws light on many points of early English history on which the Latin chronicles are silent. Gibson's version of the work was welcomed by the antiquarians of England, many of whom volunteered their aid for the edition of Camden's *Britannia*, on which it soon became known that he was engaged. This latter work appeared in 1695, and was republished in 1722. Its editor's next production was also antiquarian in its nature, being an edition of some historical remains left by Sir Henry Spelman, and published by Gibson under the title of *Reliquiæ Spelmannianæ*. In virtue of these and other works Gibson attracted the notice of Tenison, archbishop of Canterbury, who made him his private chaplain, and afterwards rector of Lambeth and archdeacon of Surrey. In the discussions which subsequently arose relative to the convocation of the clergy, Gibson took a very active part, and warmly upheld in a series of pamphlets the rights of the archbishop as president of that assembly. This controversy suggested to him the idea of those researches which resulted in his *Codex Juris Ecclesiastici Anglicani*, a work which discusses more learnedly and comprehensively than any other the legal rights and duties of the English clergy, and the constitution, canons, and articles of the English Church. In 1715 Gibson was presented to the see of Lincoln, whence he was translated five years after to that of London. Here he exercised an immense influence in the affairs of the church, over whose integrity he watched with the most jealous care. Sir Robert Walpole used to consult him on all church matters, and allowed his power to become so great that Sir Robert was once reproached for tolerating a pope in England. "And a very good pope he is," was the minister's reply. Gibson's overscrupulous regard for the clerical prerogative finally lost him Walpole's favour; and his fearless denunciation of the licentious masquerades, then highly popular at court, brought him into disgrace with the king.

In his church politics Gibson was a thorough conservative, yet he respected the various forms of dissent, and checked all attempts to prevent them from worshipping in the manner and on the principles which they preferred. In practical life his generosity and charity are well attested by numerous and striking examples. He died in 1748, having reached his eightieth year. The only work of Gibson which need be particularized here, in addition to those already mentioned, is his *Pastoral Letters*, intended as a reply to Collins and other assailants of Christianity.

GIDEON (*destroyer*), surnamed JERUBBAAL or JERUBBESHETH, fifth judge in Israel, and the first whose history is circumstantially narrated. He was the son of Joash, of the tribe of Manasseh, and resided at Ophrah in Gilead beyond the Jordan.

The Midianites, in conjunction with the Amalekites and other nomade tribes, invaded the country every year, at the season of produce, in great numbers, with their flocks and herds. They plundered and trampled down the fields, the vineyards, and the gardens; they seized the cattle, and plundered man and house, rioting in the country, after the manner which the Bedouin Arabs practise at this day. After Israel had been humbled by seven years of this treatment, the Lord raised up a deliverer in the person of Gideon.

Gideon having delivered Israel from the most afflictive tyranny to which they had been subject since they quitted Egypt, the grateful people, and particularly the northern tribes, made him an offer of the crown for himself and his sons. But the hero was too well acquainted with his true position, and with the principles of the theocratical government, to accept this unguarded offer.

The remainder of Gideon's life was peaceable. He had seventy sons by many wives, and died at an advanced age, after he had "ruled Israel" (principally the northern tribes and those beyond the river) for forty years—1249 to 1209 B.C. He is mentioned in the discourse of Samuel (1 Sam. xii. 11), and his name occurs in Heb. xi. 32, among those of the heroes of the faith.

GIEN, a town of France, capital of a cognominal arrondissement in the department of Loiret, on the right bank of the Loire, here crossed by a handsome stone bridge, thirty-seven miles E.S.E. of Orléans. It has manufactures of serge, leather, and earthenware, and some trade in corn and wine. Pop. (1851) 6036.

GIESSEN, a town of Germany, capital of the province of Upper Hesse, in the grand duchy of Hesse, at the confluence of the Wieseck with the Lahn, and on the railway from Frankfort to Cassel, thirty-three miles N.N.W. of the former city. The fortifications which formerly surrounded Giessen have been destroyed, and their site converted into promenades. The town itself is old and generally ill built, but contains some good edifices, as the castle, now the seat of the provincial government, the university buildings, arsenal, town-hall, and the new town church. The university was founded in 1607, and has a library of 40,000 volumes, a botanic garden, observatory, museum of natural history, &c. Its school of organic chemistry has become famous under Professor Liebig, and is frequented by students from all parts of Europe. Pop. 9049.

GIFFORD, WILLIAM, a distinguished critic, satirist, and dramatic annotator, was born at Ashburton, in Devonshire, in April 1757. Although his immediate ancestors had at one time possessed considerable property in their native county, and been there accounted gentlemen, yet a series of indiscretions had deprived them of the greater part of their substance. The elder Gifford, whose roving propensities had driven him to sea, and also led him "to wander in some vagabond society," as his son informs us, established himself after his marriage as a plumber and glazier at South Molton. But his habits were unsettled and desultory; he went again to sea, and once more returned without having acquired any wisdom from his misfortunes; and he died at last, "of a decayed and ruined constitution, before he was forty." When this event happened, his son William had not completed his thirteenth year. He had been sent to school to read, write, and cipher; but, according to his own account of himself, he there made "a most wretched progress." In less than twelve months after the death of his father, his mother followed her husband to the grave; and after various vicissitudes young Gifford was sent on board a coasting vessel, by the person under whose guardianship he had been placed. This individual, who was his godfather, and into whose hands the effects of Gifford's parents had fallen, recalled him from his nautical pursuits, principally, it would appear, on account of the outcry which the people of Ashburton raised against him for the manner in which he had treated his young charge. Gifford was now sent to school, where he made great progress, especially in arithmetic; but from this he was in a short time withdrawn, and apprenticed to a shoemaker. He was now in his fifteenth year, and he was articled to serve until he was twenty-one. But he thoroughly hated his new craft, and whenever leisure afforded him opportunities, he prosecuted his favourite study of mathematics. He also began to write verses, though not at this period for amusement, but only when he wanted money for his mathematical pursuits. But his devotedness to his studies seems to have rendered him indifferent to the concerns of his master, whose indignation was accordingly roused. He desired young Gifford to give up his books and papers; and this being refused, he proceeded to the garret of the delinquent, which he thoroughly sacked. Being now deprived of his sole means of improvement, almost of enjoyment, Gifford began to display a degree of sullenness, reserve, and discontent, which made him an object of dislike to his fellow-workmen. However, he had the good fortune to attract the notice of Mr Cookesley, a surgeon, who interested himself deeply in behalf of Gifford, and set on foot a subscription to purchase his freedom from the latter part of his indentures, and to pay for his education; a scheme which completely succeeded.

After having passed two years at school, Gifford was pronounced fit for the university; and by the active benevolence of Mr Cookesley, was enabled to proceed to Oxford, where he was appointed Bible reader in Exeter College. Whilst at this place, he undertook a translation of Juvenal. A subscription for publishing it was set on foot; but during the progress of this undertaking his benefactor died; a circumstance which ultimately, and perhaps fortunately, prevented him from publishing a translation of the great Roman satirist, at least for a time. By an accidental occurrence, however, he became known to Lord Grosvenor, who invited him to his house. He accordingly quitted Oxford, and took up his residence with that nobleman, under whose hospitable roof he prosecuted the translation of Juvenal, until called upon to accompany the son of his patron to the Continent. With this young nobleman he spent, in two successive tours, many years, "of which," he says in his autobiography, "the remembrance will always be dear." Although Gifford was principally engaged upon his translation of Juvenal, its publication was preceded by several other productions, by which at the time he obtained great popularity. The first was the *Baviad*, a paraphrase on the first satire of Persius. This production appeared in 1794, and was levelled at a class of poetasters who deluged the daily prints of the time with their maudlin and inflated effusions. The satire had the effect of completely extinguishing this tuneless tribe. Gifford's next production, which appeared the following year, was entitled the *Mæviad;* an imitation of Horace, and directed against the corruptions of the drama. This work was only partially successful, for the malady which it was intended to cure had its seat in public manners rather than in the affectation of individuals. In 1800 he published his *Epistle to Peter Pindar*, an attack which brought him little else but disquietude; the laughter of the one satirist being quite as formidable as the gall of the other. Soon after this Gifford became acquainted with Mr Canning, who had resolved to establish a weekly paper for the purpose of exposing the political agitators of the time. This print was called the *Anti-Jacobin*, and Gifford became its editor. The ministerial connection thus formed was of some use to him, as by it he obtained the paymastership of the band of gentlemen pensioners; and at a subsequent period he was made a double commissioner of the lottery. In 1802 appeared his English version of Juvenal, a work which may be said to have engrossed the greater part of his life. It was ushered into the world with every possible advantage, headed by a dedication to Earl Grosvenor, and with the translator's autobiography prefixed to it. The translation is able and spirited, although it is occasionally diffuse and inharmonious, and not unfrequently coarse in its diction. In 1805 Gifford published an edition of the Plays of Massinger in four volumes; and in 1816 the Works of Ben Jonson, in nine volumes. In his annotations upon both these dramatic poets he displays great acuteness and industry; but in exposing the blunders of previous commentators he shows not a little of his characteristic acrimony. In 1821 he published a version of Persius; and since his death his editions of the dramatic works of Ford and Shirley have been given to the world, accompanied with able and acute notes.

It was, however, as editor of the *Quarterly Review* that Gifford became most generally known. The success of the *Edinburgh Review*, in advocating liberal principles in politics, suggested to the opposite party the idea of a counterpoise in the shape of the journal above named, which was accordingly carried into effect in 1809, and Gifford entrusted with its management. The scheme completely succeeded; and this success was in no small measure due to the skill and ability with which Gifford fulfilled his duties as editor. No man possessed a finer tact in discerning the weak and bad points of an author, when his object was to turn him into ridicule; none could hold them up to laughter with more felicitous acrimony. From the time of his taking the charge of the *Quarterly Review* until his death, few circumstances of any moment occurred in the life of Gifford, except the publication of the works already mentioned. He continued the editorship until about two years before his death, which took place on the 31st of December 1826.

From the prominent position which Gifford occupied in the literary world, his character has been the subject of severe animadversion by one party, and of exaggerated eulogy by another. Of his great talents there can be no doubt. His sagacity and quickness of apprehension were striking, and the rapidity with which he acquired knowledge is proved by his having prepared himself for the university after being only two years at school. His wit was distinguished for caustic severity rather than for brilliancy, and he dealt more in invective than in polished repartee. As a poet he cannot be said to rank very high; but that he had a keen perception of the beauties of poetry, and could point them out with great felicity, when political feelings did not intervene to pervert his judgment, is proved by his many admirable criticisms, and by the confidence which Lord Byron and others reposed in his opinions. In private life Gifford was modest and unassuming; and amongst the numerous parties, poetical, political, or religious who occasionally suffered by his castigations, none of them ever ventured to recriminate by attacking the moral character of the editor of the *Quarterly Review*. The memoir of himself, which he prefixed to his version of Juvenal, is an interesting and instructive autobiography. It is written with ability and manly feeling, as well as with unaffected modesty and apparent candour. (J. F. S.)

GIFT, in *English Law*, in its general sense, is a conveyance that passes either lands or goods. But when restricted to things immovable, it is applicable only to lands and tenements given in tail.

New Year's Gifts. The custom of giving presents on the first day of the year is very ancient, the origin of it among the Romans being referred to Tatius king of the Sabines, who reigned at Rome conjointly with Romulus, and who, having considered as a good omen a present of some sprigs of vervain gathered in a wood consecrated to Strenia, the goddess of strength, which he received on the first day of the new year, authorized this custom afterwards, and gave to these presents the name of *strenæ*. But however this may be, the Romans on New Year's Day gave one another presents of sweetmeats, and of copper coins stamped with the double head of Janus, to whom this day was specially dedicated. Clients, that is to say, those who were under the protection of the great, carried presents of this kind to their patrons, adding to them a small piece of silver. Under Augustus, the senate, the equestrians, and the people presented such gifts to the emperor, and in his absence deposited them in the Capitol. Of the succeeding emperors, some adopted this custom, others did not; but it always continued among the people. The early Christians condemned it as a relic of paganism, and a species of superstition; but when it began to have no other object than that of being a mark of regard and esteem, the church ceased to disapprove of it.

GIGG, or JIG (Ital. *giga*), a lively dance-tune in $\frac{6}{8}$ time, of two sections, each composed of eight measures.

GIGLIO, the ancient *Igilium*, an island of the Mediterranean, lying off the coast of Tuscany, and comprised in the Tuscan province of Siena. It is about six miles in length by four in breadth, and is mountainous. Its chief products are timber, wine, marble, and fish. Pop. about 1600, chiefly inhabiting the small town of the same name.

GIGUELA, a river of Spain, in New Castile. It rises on the western slope of the Sierra de Cuenca, flows circuitously S.S.W., and after a course of nearly 100 miles, joins the right bank of the Guadiana, 36 miles N.E. of Ciudad-Real. Its chief affluents are the Cencara on the left, and the Rianzares on the right.

GIJON, a seaport-town of Spain, province of Oviedo in Asturias, on the Bay of Biscay, and 20 miles from Oviedo. The town is built on a slope, of which the upper part is occupied by the old town, partly surrounded by ancient walls; the more modern portion extends to the beach, and both are defended by a fortress and several batteries. In general the houses are good and commodious; the streets are wide, paved, and clean. There are in the town a parish church, many chapels, several primary schools, nautical school; a town-house, a prison, hospital, economic society, custom-house, triumphal arch; a glass and bottle manufactory, and a cigar manufactory employing 1400 hands. Besides, there is some coasting trade in coals, paving-stones, grain, cider, and colonial produce. Fishing and fish-curing are carried on to a considerable extent. The harbour is safe, with good anchorage, though rather difficult of access. The number of vessels visiting the port yearly is about 1000, aggregating 60,000 tons burthen. The coal existing in the vicinity is not wrought. Pop. nearly 7000.

GIL, SAN, or ST GILES, a town of New Granada, province of Scorro, 64 miles S.W. of Pamplona, on an affluent of the Suarrez, here crossed by a stone bridge. San Gil was founded in 1690, and has manufactures of cotton fabrics and tobacco, with an extensive trade in agricultural produce. It contains several schools and a college. Pop. nearly 7000.

GIL VICENTE, the Portuguese Plautus, was born about the year 1482. It is known that he belonged to a family of rank, and that he studied law at the university of Lisbon, in compliance with the wish of his family; but his legal studies he soon relinquished, and devoted himself entirely to the dramatic art. We know not whether he was pensioned as a writer to the court; but he was most indefatigable in furnishing the royal family, as well as the public, with dramatic entertainments suited to the taste of the age. He constantly resided at court, where his poetic talents were held in permanent requisition for the celebration of spiritual as well as temporal festivals; and no dramatic writer in Europe was more admired and esteemed than Gil Vicente.

The success of Juan de la Encina, who had recently produced before distinguished audiences in Spain a style of pastoral dialogue till then altogether unknown in the peninsula, excited Gil Vicente to his first attempts in the dramatic art.[1]

In the reign of Emmanuel the Great, his first productions were performed with approbation at court; but additional lustre was added to his fame in the reign of John III., who did not scruple in his youth to perform characters in the dramas of his favourite author. Not only was Vicente a great dramatic writer, but he seems also to have possessed all the requisite qualifications for a theatrical manager. He was himself an actor, and the tutor of the most brilliant actress of his age—his own daughter Paula, maid of honour to the Infanta Maria, a poetess, an amateur performer on several instruments, and celebrated for every accomplishment except beauty.

Gil Vicente's diction, as well as his poetic style, belongs to the fifteenth century; and to the latest period of his life he continued faithful to the old national manner. In the conflict with the new style introduced by Saa de Miranda's school, Gil Vicente appeared as the representative of the yet enduring national taste, which even at court preserved an authority equal to that of the party whose adherents were most honourably distinguished.

At the command of the king, Gil Vicente was engaged during his declining years in the collection of his works for publication. But he did not live to complete the task. Barbosa states that he died before the year 1557 at Evora, where he was in attendance upon the court. This was the year in which John III. died. Hence we may conclude that Barbosa's date is a misprint for 1537. For when Gil Vicente wrote from Santarem to the king, in 1531, he thought himself at death's door (*mui visinho da morte*), and the *Garden of Errors*, his last composition, bears the date 1536. It is not then unreasonable to suppose that he died in 1537, not 1557. Besides, this is much strengthened when we find that Barros in his *Dialogue*, a pamphlet which forms part of a miscellaneous volume, printed in 1539–40, seems to speak of him as of one already dead. He was buried in the cloisters of St Francis, and an epitaph written by himself was engraven on his tomb, but without a date. Whatever may have been the date of his death, however, we know for certain that the license for the first impression of his collected writings was granted by Queen Catharine, as regent for her grandson Sebastian, to the poet's daughter Paula so late as Sept. 3, 1561, and that they were first published in 1562 by his son Luiz, and dedicated to king Sebastian, who was then only eight years old, and though so young, took particular pleasure in the works of Gil Vicente—"He read them and delighted to see them performed."

The dramatic pieces of Gil Vicente which have been preserved are 42 in number. In the first volume of the *Obras de Gil Vicente* (published by J. V. Barreto Feio e Jose Gomez Monteiro, Hamburgo, 1834) are contained twelve "Devotional Autos," called *Obras de Devoção*. The second volume contains four comedies, and ten tragi-comedies; the third, twelve farces, besides a few miscellaneous addenda in prose and verse. This classification to modern taste seems capricious; for, more than one of the *Autos* might with equal propriety be placed among the farces, so much more does the humour appear than the devotion. But however questionable, or even indefensible, may be the taste of dramatizing sacred subjects, it is not our business here to discuss the morals of ancient moralities, or the religion of miracle-plays. We take Gil Vicente's as we find them, and as they were exhibited in the sixteenth century to a splendid court—one of the most orthodox in Europe, in a country whose pride it was to be the "most faithful" champion of Christianity, and even in the presence of that zealot boy-king who was nurtured up to be the very "knight-errant of the Faith," and who was so early to perish, with all his chivalry, on the battle-field of Alkázer-Kebír.

About one-fourth of these plays are in the Spanish language, about one-half of them in the Portuguese, and the remainder in Portuguese and Spanish intermixed.[2] The first three religious "autos" already noticed are in Spanish. In the *Auto da Fe*—a title suggestive of the horrors of the Inquisition, but literally meaning "an act of faith," for the Inquisition, so long before established in Spain and France, was not yet admitted into Portugal[3]—the awkward swains who receive instructions in the rudiments of the creed, and are most obtuse learners, express their admiration and perplexity in low Spanish; while the Faith alone, their teacher, speaks good Portuguese—a capital stroke of patriotism in the author. Though this piece, as well as some others, has no date attached, it may be supplied from the *Auto* itself; for one of the peasants asks how many years ago the Messiah was born, and Faith answers, "fifteen hundred and ten years."

The best critical account of Gil Vicente and his works yet published is that contained in the *Quarterly Review*, vol. lxxix., pp. 168—202; and the best edition of his works is that already mentioned—*Obras de Gil Vicente*, Hamburgo, 1834. A copy of the 1562 edition of Gil Vicente's plays is still preserved in the university library of Göttingen. It is entitled: *Compliaçam de todalas obras de Gil Vicente, &c.—Empremiose em a muy nobre e sempre leal cidade de Lisboa*, anno 1562, in folio. In p. 87 of Dieze's Velasquez, the complete title may be found. In this edition the text of the dramas is printed in Gothic characters; but the introduction which precedes each piece is printed in modern Roman type, and is written chiefly in the Portuguese language. A reprint in 4to appeared also at Lisbon in 1586, but much disfigured by the Inquisition. These are among the rarest and most curious books in modern literature. The Hamburg edition of 1834 is in 3 vols. 8vo, and particularly valuable as being chiefly according to the Göttingen folio. Consult also *Crónica de Don Manoel*, parte i., cap. 62, from which it appears that the first secular dramatic exhibition in Portugal took place June 8, 1502. (A. F. F.)

GILA, a river of New Mexico, United States of North America. It is supposed to rise about N. Lat. 33., W. Long. 109.; and after a course, first southerly and then westerly, it falls into the Colorado in N. Lat. 32. 44., W. Long. 114. 30.

GILBERT, or GILBERD, WILLIAM, an eminent physician and experimental philosopher, was born at Colchester in 1540, and became famous in consequence of his discovery of several of the properties of the loadstone. He was a strenuous advocate for the inductive mode in philosophical matters, and was the first who proposed the theory of the great central magnet in the earth, afterwards applied by Halley to the explanation of the variation and dipping of the needle in the mariner's compass. Gilbert died in 1603.

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[1] Garcia de Resende, who was brought up at the court of King Emmanuel, seems decisive on this point. In his *Miscellanea*, a most curious poem illustrative of customs and occurrences of which he had been witness, he says, speaking of the pomps and pleasures of his master's court,—

E vimos singularmente
Fazer representaçoens,
D'estilo mui novas invençoens,
E feitas por Gil Vicente.
Elle foi que inventon
Isto cá, e o uson
Com mais graça e mais doutrina;
Posto que Joam del Encina
O Pastoril começou.

i.e., "We also saw singularly curious representations, in style right eloquent, and quite new inventions, by Gil Vicente. He it was that introduced the dramatic pastoral here, using it with more grace and more skill than Juan de la Encina, who, however, commenced it."

[2] To write in Spanish was a fashion of the time easily accounted for; hence it is not surprising that Gil Vicente should have often adopted it when writing for the court. Two of the three wives of Emmanuel the Great were princesses of Castile, and the third was sister of the Emperor Charles V. The wife of John III. was also a Castilian.

[3] The Bull for the establishment of the Inquisition in Portugal was sent to John III. by Pope Clement VII., and is dated "*Anno Incarnationis Dominicæ* 1531."

Gilbert, *Sir Humphrey*, a celebrated English navigator of the sixteenth century, was born in 1539 in the county of Devon. By his mother's side, he was half-brother to Sir Walter Raleigh, who resembled him in many points of his character, and whose early life was chiefly guided and influenced by his example. He was educated first at Eton and afterwards at Oxford, and, embracing the military career, was sent to Ireland, where he contributed so powerfully to put down the rebellion raging there that in 1570 he was made a knight, and rewarded with the government of Munster. The idea of a north-west passage to Cathay and the Indies at this time occupied the thoughts of men, and in 1576 Gilbert published a treatise to prove the possibility of it. A perusal of this book induced Frobisher to set out on his first voyage to solve the mystery of the frozen north. In 1578 Gilbert was furnished with letters patent by the queen to take possession of the N.E. coast of America, and establish factories there. He was singularly unfortunate in his first setting out, having hardly set sail when a storm obliged him to return with the loss of one of his ships. In 1583, however, he again set out, and on the 5th August landed at St John's Bay, of which he took possession in the name of the English queen. On his way his fleet was assailed by a terrific storm, and the little vessel on board of which he was sailing went down, with all on board. Gilbert was one of those high-souled and adventurous men of whom the Elizabethan era was so prolific. There was almost no region of human thought or experience through which they did not pass. They were "soldiers, scholars, Christians, discoverers, and 'planters' of foreign lands, geographers, alchemists, miners, Platonic philosophers; many-sided and high-minded men, not without fantastic enthusiasm," an enthusiasm which led them on to enterprises that posterity, though reaping the benefit of them, has too often affected to pity as Quixotic, or sneer at as downright ridiculous. Tardy justice is now being done to these heroic souls, and there is even a prospect that Sir Humphrey Gilbert will at length find that recognition which has been denied him since his death. (Haklnyt's *Collection*, *Biog. Univ.; North British Review*, No. 45; *Edin. Review*, vol. lxxi., &c.)

GILBERTINES, a religious order founded by Gilbert lord of Sempringham, in the county of Lincoln, about A.D. 1148. The monks observed the rule of St Augustin, and were accounted canons; the nuns observed that of St Benedict. The founder erected a kind of double monastery, in which the monks were separated from the nuns by a very high wall. St Gilbert founded thirteen monasteries, viz. four for men, and nine for men and women conjointly. At the dissolution there were about 25 houses of this order in England and Wales.

GILD, or Guild. See Guild.

GILDAS, surnamed the "Wise," and also "Badonius," from the battle of Badon (Bath), which happened soon after his birth, said by some to have taken place 493 A.D., and by others in 511. He was the son of the British prince Caw who emigrated to North Wales in order to avoid submission to the Anglo-Saxons; was a pupil of Iltutus, abbot of Morgan, and became a monk of Bangor. After visiting Ireland, France, and Italy, he returned to his native country, where he became eminent as a preacher. In his journeys he visited the monastery of Llancarvan, then recently founded by a nobleman of South Wales, whose example Gildas urged others to imitate. He is supposed to have died at Bangor about 590 A.D., though some date his death 20 years earlier. He is the most ancient historian of Britain; but his only complete work now extant is *Epistola de Excidio Britanniæ et Castigatione Ordinis Ecclesiastici*, in which he graphically depicts and mourns over the total ruin of his country, as well as the revolting profligacy of manners then prevailing. This work was first published by Polydore Virgil in 1525; but the best edition is that of Gale, in the first volume of his *Historiæ Britannicæ, Saxonicæ, etc., Scriptores quindecim*, London, 1691, folio. Gildas also wrote several letters and pieces, of which only extracts remain. An excellent edition of his *Excidio Britanniæ* has been published under the care of the English Historical Society, by Jos. Stevenson, London, 1838, 8vo, and it has been translated into English by J. A. Giles, LL.D., London, 1841, 8vo. It had previously been translated by T. Habington, and published in London so early as 1638.

GILDING, the art of spreading or covering gold, either in leaf or in liquid, over the surface of a body for the purpose of ornament. The art of gilding was not unknown among the ancients. According to Herodotus, the Egyptians were accustomed to gild wood and metals; and gilding by means of gold plates is frequently mentioned in the books of the Old Testament. Pliny informs us that the first gilding seen at Rome was after the destruction of Carthage, under the censorship of Lucius Mummius, when the Romans began to gild the ceilings of their temples and palaces; the Capitol being the first place on which this enrichment was bestowed. But he adds, that luxury advanced on them so rapidly, that in a little time you might see all, even private and poor persons, gild the walls, vaults, and other parts of their dwellings.

We need not doubt that they had the same method as ourselves of beating gold, and reducing it into leaves; though it should seem that they did not carry it to the same extent, if it be true, as Pliny relates, that they only made 750 leaves of four fingers square out of an ounce. Indeed he adds that they could make more; that the thickest were called *bracteæ Prænestinæ*, by reason of a statue of the goddess Fortune at Præneste gilt with such leaves; and that the thinner sort were called *bracteæ questoriæ*.[1]

The modern gilders also make use of gold leaves of different thickness; but there are some so thin as not to exceed $\frac{1}{250,000}$th of an inch in thickness. The thicker sorts are used for gilding on iron and other metals, and the thinnest on wood. But we have many advantages over the ancients in the manner of using or applying the gold. The secret of water gilding, discovered of late ages, furnishes us with means of gilding works capable of enduring all the injuries of time and weather, which to the ancients was impracticable. They had no method of laying on the gold on bodies so as to endure the fire; their method was to attach it by means of the albumen of eggs or size; but as this will not resist the action of moisture, they could only gild in such places as were sheltered.

The Greeks called the composition on which they applied their gilding on wood *leucophæum* or *leucophorum;* which is described as a sort of glutinous compound earth, serving in all probability to make the gold stick and bear polishing. But antiquaries and naturalists are not agreed as to the particulars of this earth, its colour, and ingredients.

The lustre and beauty of gold have led to several inquiries and discoveries concerning the different methods of applying it to different substances. Hence the art of gilding is varied, and involves several distinct processes.

Gilding is chiefly of two kinds, entirely distinct from each other, according as the material to be gilded is wood or metal. Gilding on wood is also of two kinds, known as *burnish-gilding* and *oil-gilding*. In burnish-gilding the following are the processes for a plain picture-frame. The gilder procures from the joiner a bevelled moulding twelve feet in length. He prepares this for gilding by a number of coats of priming; the first coat consisting of hot size and whiting, and called *thin white*. This is prepared by melting the size in an earthen pipkin, stirring in the size in a fine powder in small portions at a time. When the first coat is dry the surface is examined, and holes and irregularities are filled up with a putty formed of whiting and size. Four or five successive layers of *thick white* are then laid on. This is prepared in a manner similar to the thin white, only of greater consistence, and time is allowed for the work to dry between every two coats. To prevent the fine work of the moulding from being filled up, opening tools such as crooks, chisels, gouges, &c., are used while the thick white is wet, and in some cases two thick whites are laid on, one almost directly after the other, and are worked into the shape of the mouldings by means of hard stones of the required shape, which are used in conjunction with the opening tools. The whiting may now be from $\frac{1}{16}$th to $\frac{1}{12}$th of an inch in thickness, the edges are trimmed even, and the surface is smoothed with pumice-stone of the required form, the work being slightly wetted to promote the smoothing effect. The final polish is given with glass paper. Gold size is now put on in from four to eight coats, with dryings between. The size consists of pipe-clay, red chalk, black lead, suet, and bullock's blood; a portion of this is melted with thin clear size, and is laid on slightly warm with a brush.

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[1] See Beckmann, *History of Inventions*, the Chapter on Gilding.

The tools used by the gilder consist of the *cushion*, the *knife*, and the *tip*. The cushion is a flat board eight inches by six, covered with layers of woollen cloth or flannel, over which is strained a piece of leather. Along one of the short sides, and reaching half round each of the long sides, is a rim or border of parchment three inches high, which serves to prevent the gold-leaf from being blown about. The knife used for cutting gold-leaf has a straight smooth edge, ending in a well-defined point. The tip used for laying on the gold is a row of camel's hairs fastened between cards, and projecting from one inch to two inches and a half. The gold-leaf is supplied to the gilder in books, each containing 25 leaves. The gilder supports the cushion on his left hand by means of a leathern loop, and with the tip, the knife, and a camel's-hair pencil between the fingers of his left hand, he opens the book of leaf-gold with his right, and blows a number of leaves sufficient for his work upon the cushion; then taking one leaf he spreads it out upon the leather by a few dexterous manipulations with the knife, assisted by the breath. He next cuts it into strips suited to the width of the moulding; then wetting a few inches thereof with the camel's-hair pencil, he applies the tip to a slip of gold, which slightly adheres to the hairs, and enables him to transfer it to the moulding. Should the tip fail to take up the gold, the hairs are rubbed briskly across the face, or against the palm of the hand, and the friction, probably exciting the hairs electrically, enables them to take up the gold. The leaf being laid on, the gilder blows forcibly upon it, and uses a dry camel's-hair pencil to press down such parts as do not adhere. Another portion of the moulding is next wetted, and another piece of gold-leaf is laid on so as slightly to overlap the former. The whole moulding being in this way covered, it is set aside to dry.

The next process is *burnishing*, which is done with pieces of agate set in sticks; and these being rubbed over the surface greatly increase the brilliancy of the gold, an effect which is promoted by the yielding foundation of gold-size and whitening. The parts which are to be in *dead* or *matt* gold are left unburnished; a thin clear size is passed over them, and when dry, the gold is wiped with cotton wool, and defective places are restored with pieces of leaf-gold. When dry, the whole is finished by wetting the matt parts with a pencil dipped in clear finishing size. The moulding is now passed to the frame-maker, who cuts it up and forms the pieces into a frame. It is then returned to the gilder, who stops up nail-holes, and paints the sides of the frame yellow.

In oil-gilding the moulding is whitened as in the former case, and is at once made up into a frame. Composition ornaments are then put on, and the gilder now proceeds first by washing the frame to remove oil, &c. He next gives it two or three coatings of thin white, with additional coatings to the parts intended to be burnished. Two or three coats of a moderately strong size called *clear-cole* are laid on, after which the oil gold-size is applied, which consists of a mixture of boiled linseed oil and ochre. After some hours, the gilding is performed as before, except that no water is used, the partially dried oil serving the purpose. For deep ornaments, the gold is pressed in with cotton wool, and has to be repeated to get rid of those irregular fractures called by the gilders "spiders' legs." The work has at first a ragged appearance, but it is now carefully gone over with the brush, smoothed, and any defective part restored. This is called *skewing*, and the superfluous gold removed during the process is known as *skewings*. The parts to be burnished are next worked, and the frame is lastly sized with clear size, and yellowed on the outside.

The method of applying gold to metals is entirely different from the above, and is done in various ways. One of these is by previously forming the gold into a paste or amalgam with mercury, for which purpose the gold must first be reduced to thin plates or grains, which are heated red hot, and thrown into mercury previously heated, till it begins to smoke. Upon stirring the mercury with an iron rod, the gold totally disappears. The proportion of mercury to gold is generally as six or eight to one. When the amalgam is cold it is squeezed through chamois leather for the purpose of separating the superfluous mercury; the gold, with about twice its weight of mercury, remains behind; it is a yellowish silvery mass of the consistence of butter, and with this amalgam the surface of the metal to be gilded is to be covered; then a sufficient heat is to be applied to evaporate the mercury; and, lastly, the gold is to be burnished with a bloodstone.

This method of gilding by amalgamation is chiefly used for gilding copper, or an alloy of copper with a small portion of zinc, which more readily receives the amalgam; and it is also preferable for its colour, which more resembles that of gold than the colour of copper. When the metal to be gilt is wrought or chased, it ought to be covered with quicksilver before the amalgam is applied, that this may be more easily spread; but when the surface of the metal is plain, the amalgam may be applied directly to it. It is to be observed that the use of the bloodstone is now generally abandoned, and a steel burnisher substituted for it. The steel burnisher is case-hardened and then polished; and the clearer the polish is, the brighter will the metal be burnished. The quicksilver or amalgam is made to adhere to the metal by means of a little aquafortis, which is rubbed on the metallic surface at the same time, and by which such surface is cleansed from any rust or tarnish that might prevent the union or adhesion of the metals. The nitrous acid also facilitates the application of the amalgam to the surface by dissolving part of the mercury of the amalgam; and when this solution is applied to the copper, the latter metal, having a stronger affinity for nitrous acid than the mercury has, precipitates the mercury upon its surface, in the same manner as a polished piece of iron precipitates copper upon its surface from a solution of blue vitriol. When the metal to be gilt is thus covered over with a thin precipitated coating of mercury, it readily receives the amalgam. The amalgam being equally spread over the surface of the metal to be gilt, by means of a brush, the mercury is then to be evaporated by a heat just sufficient for that purpose; for if it be too great, part of the gold may also be expelled, and part of it will run together, and leave some of the surface of the metal bare. Whilst the mercury is evaporating, the work should be from time to time taken from the fire, that it may be examined, that the amalgam may be spread more equally by means of a brush, that any defective parts of it may be again covered, and that the heat may not be too suddenly applied to it; and when the mercury has evaporated, which is known by the surface having entirely become of a dull yellow colour, the metal must then undergo other operations, by which the fine gold colour is given to it. First, the gilded surface is rubbed with a scratch brush of brass wire, until its surface be smooth; then it is covered over with a composition called *gilding wax*, and again exposed to the fire until the wax be burnt off. This wax is composed of bees'-wax, mixed with some of the following substances, viz., red ochre, verdigris, copper scales, alum, vitriol, borax; but, according to Dr Lewis, the saline substances alone are sufficient, without any wax. By this operation the colour of the gilding is heightened; and the effect seems to be produced by a perfect dissipation of some mercury remaining after the former operation. The dissipation is well effected by this equable application of heat. The gilt surface is then covered over with a saline composition, consisting of nitre, alum, or other vitriolic salt, ground together, and mixed up into a paste with water or urine. The piece of metal thus covered is exposed to a certain degree of heat, and then quenched in water. By this method its colour is further improved, and brought nearer to that of gold, probably by removing any particles of copper which may happen to lie on the gilded surface. Lastly, some artists think that they give an additional lustre to their gilt work by dipping it in a liquor prepared by boiling some yellow materials, as sulphur, orpiment, or turmeric. The only advantage of this operation is, that a part of the yellow matter, as the sulphur or turmeric, remains in some of the hollows of the carved work, in which the gilding is apt to be more imperfect, and to which it gives a rich and solid appearance.

In the gilding of iron and steel it is difficult to prevent the oxidation of the metal during the volatilization of the mercury; and the temper of the metal in sword-blades, daggers, &c., is liable to be injured in the process. In ornamenting iron and steel, however, a solution of mercury in nitrous acid, called *quicksilver-water*, is used; the acid attacks the iron, and deposits in its place a thin coating of mercury, which unites with the gold amalgam after it is applied. By this method a bright durable gilding cannot be obtained.

By another method a solution of sulphate of copper is applied by a camel's-hair pencil, after which an amalgam of gold is laid on, and the mercury is driven off by heat. It is, however, more usual to burnish down the gold-leaf upon the steel with the assistance of heat.

By another process a solution of gold is made with nitro-muriatic acid; about twice the quantity of ether is then cautiously added in a large vessel; the liquids are agitated and allowed to rest, when the ether will separate and float on the surface of the acid. The whole mixture is then poured into a funnel with a small aperture, and allowed to rest for some time, when the acid is run off and the ether separated. The ether has taken up all the gold from the acid, and may be used for gilding iron or steel, for which purpose the metal is polished with the finest emery and spirits of wine. The ether is then applied with a small brush, and as it evaporates it deposits the gold, which can now be heated and polished. For small delicate figures a pen or a fine brush may be used for laying on the ether.

What is called cold gilding on silver is performed by a solution of gold in aqua-regia, applied by dipping a linen rag into the solution, burning it, and rubbing the black and heavy ashes on the silver with the finger or a piece of leather or cork.

Fine instruments of brass are sometimes gilt in order to preserve their surface, for which purpose a saturated solution of gold is evaporated until crystals begin to form; these are dissolved in water, into which the articles to be gilded are immersed. Washing and burnishing complete the process.

In the drying off or removing the mercury by volatilization the health of the workpeople is seriously injured by the fumes of the mercury; so much so, as formerly to make this the most unhealthy of employments, to say nothing of the loss of mercury. Various contrivances, by Dr Lewis and others, have done much to remedy the evil. In the modern gilding furnace buttons and similar small articles are put into a wire cage within a furnace, constructed so as to preserve and condense the fumes of mercury by carrying them with the draught through a kind of labyrinth containing water, the centre of the labyrinth communicating by an inclined pipe with the chimney, which discharges the smoke almost entirely free from metallic fumes.

The grand improvement which has been made of late years in the art of gilding metals has been the application of galvanism or voltaic electricity, founded on the fact that when a voltaic current is passed through a metallic solution decomposition takes place; the metal in a revived form attaches itself to the negative pole or electrode, while the acid or alkali goes to the positive pole. In the process of electro-gilding a gold solution is formed by dissolving gold in nitro-muriatic acid, which is digested with calcined magnesia, and the gold is precipitated as an oxide; this is boiled in strong nitric acid, washed, and dissolved in cyanide of potassium, which forms cyanide of gold and potassium. This solution is used at a temperature of at least 130° Fahr.

The positive electrode of the battery is of gold, the negative of iron or of copper. The articles to be gilt are cleansed by boiling in an alkaline ley and other solutions, and they are then hung on wires and suspended from the wire which crosses the mouth of the vat or gilding vessel from the negative pole. A small article may be gilt in three or four minutes. In gilding articles of iron, tin, or lead, a thin coating of copper is first deposited upon them, and upon this the gilding is deposited. The gilding solution usually contains from $\frac{1}{2}$ to 1 oz. of gold in the gallon; but for small articles, such as rings, thimbles, &c., a weaker solution is used. The durability of the article depends, of course, on the quantity of gold deposited; but the appearance of gold (or colour, as it is called) may be given by a few grains to a very large surface. A very thin layer of gold upon silver will be of a light colour. For articles not exposed to wear, a mere blush of gold will give them a very ornamental appearance; but for watch-cases, pencil-cases, chains, &c. the coating should be thick. Mr Napier states that an ordinary-sized watch-case should have from 20 grains to 1 pennyweight of gold—a covering that will last 5 or 6 years. Small silver chains should have 12 grains, pencil-cases from 3 to 5 grains, and a thimble from 1 to 2 grains. The springs and works of chronometers are sometimes electro-gilt; and we have known a coat of gold to be deposited on plates intended for etching, instead of the usual varnish, and through this delicate layer the design has been traced and afterwards bitten in.

The beauty and durability of gold, and its unchanging nature, have led to its employment on various domestic articles, such as those of porcelain. For this purpose the gold is dissolved in aqua-regia, and the acid is driven off by heat, or the gold may be precipitated by means of sulphate of iron. In this pulverulent state the gold is mixed with $\frac{1}{12}$th of its weight of oxide of bismuth, together with a small quantity of borax and gum-water. The mixture is applied to the articles with a camel's-hair pencil, and after passing through the fire the gold is of a dingy colour, but the lustre is brought out by burnishing with agate and bloodstone, and is lastly cleaned with vinegar or whitelead.

The art of gilding is of extensive application in ornamenting the covers of books. The parts intended to be gilt are covered with a thin layer of ovalbumen or white of egg called *glaire*, and then with a film of leaf-gold; on pressing upon this a heated brass tool containing the letter or device intended to be impressed, the gold becomes permanently fixed, and the superfluous portion is wiped off with a rag. The whole of the lettering and ornaments on the back and sides of a book-cover are commonly impressed at one operation, in what is called a blocking-press, for which purpose the pattern is cut out in a thick plate or block of brass attached to the upper bed of the press. In this upper bed is a cavity containing a row of gas jets for keeping the block at the proper temperature. The cloth book-cover, previously covered with gold-leaf at the parts intended to be ornamented, is placed within a metal gauge in the lower bed, when by means of a lever the upper bed is brought down, and the heated block is firmly pressed against the cover. In this way a large number of cloth covers are quickly ornamented. In leathern binding, however, the gold-lettering and ornaments are usually applied after the cover is on by the process of gold or hand-tooling.

GILEAD, a group of mountains connected with Lebanon by means of Mount Hermon. It begins not far from the latter, and extends southward to the sources of the brooks Jabbok and Arnon, thus inclosing the whole eastern part of the land beyond the Jordan. This was also the name of a large district beyond the Jordan, continually mentioned in the Scriptures in contradistinction to, or apart from, Bashan; though, to judge from its geographical position (as given in Num. xxxii. 26; Deut. iii. 12), it must have comprised the entire possessions of the two tribes of Gad and Reuben, and even the southern part of Manasseh. The cities Ramoth, Jabosh, and Jazer, are usually designated as lying in Gilead. This region was distinguished for its rich pastures and aromatic simples; from which latter different sorts of balsam were prepared—facts confirmed by modern travellers (Seetzen, Burckhardt, &c.)

GILENA, a small town of Spain, in the province and archbishopric of Sevilla. It is situated in a plain sweeping from the southern flank of the Sierra de Estepa, where a fine fountain of crystalline water rises, and is called the "Eye of Gilena." This excellent spring is so copious that it irrigates the plain, and supplies water-power to several grain mills. Gilena consists of several pretty regular but ill-paved streets, generally lined by low badly-built houses. It has two elementary schools, a parish church, and a courthouse; and it has a small trade in corn and oil. Pop. in 1855, nearly 3000.

GILGIT, a small independent and unexplored territory of Central Asia, on the southern declivity of the Hindu Koosh; having Little Tibet on the E., and Chitral on the W. It consists principally of one large valley, through which flows the river Gilgit, afterwards falling into the Indus in Lat. 35. 28. N., Long. 74. 28. E. There is also a village of the same name on the right bank of the stream in Lat. 35. 35. N., Long. 74. 15. E.

GILL, JOHN, an eminent Baptist minister and Rabbinical scholar, was born at Kettering in 1697. In consequence of the limited means of his parents, he was compelled to educate himself. Nevertheless, he became an eminent scholar in all the branches of knowledge required for the elucidation of Scripture, to which he devoted much of his long and useful life. After receiving baptism according to the usual forms in Nov. 1716, he began to preach, and officiated at Higham Ferrers, as well as occasionally at his native place in Northamptonshire, until the beginning of 1719, when he became pastor of the Baptist congregation at Horselydown in Southwark, where he continued during fifty-one years. In 1728 he published his *Exposition of the Song of Solomon*, in which he strongly contends against Whiston for its authenticity. In the same year he published also *The Prophecies of the Old Testament respecting the Messiah Considered*. This work was intended to refute *Collins' Scheme of Literal Prophecy*. His *Treatise on the Doctrine of the Trinity* was issued in 1731; and in 1735 and following years he published his *Cause of God and Truth*, in 4 vols. 8vo, containing a defence of the Calvinistic against the Arminian views on election, original sin, predestination, &c. But his great work was an *Exposition of the Bible*, in 10 vols. 4to. For this he had formed a large collection of Hebrew and Rabbinical books and MSS., and spent many years in a careful study of them, at the same time reading and collating the *Targums*, the *Mishna*, and the *Book of Zohar*. Of this work, the New Testament appeared first, in 3 vols. folio, 1746–48, in which year he received the degree of D.D. from Marischal College, Aberdeen. The volumes on the Old Testament were published in succeeding years. He published in 1767 a *Dissertation on the Antiquity of the Hebrew Language—Letters, Vowel Points, and Accents;* and in the same year he collated the various passages of the Old Testament quoted in the *Mishna*, in the Jerusalem and Babylonian *Talmuds*, and in the *Rabbath;* besides extracting the variations in them from the modern printed text, which he sent to Dr Kennicot, who very handsomely acknowledged the obligation in his work published in 1767. In 1769 Dr Gill's *Body of Doctrinal Divinity* was published, in 2 vols. 4to; and in 1770 a *Body of Practical Divinity.* The next year, 1771, October 14th, he died at his house in Camberwell.

GILL, a measure of capacity, containing a quarter of an English pint, or 8·665 cubic inches.

GILLIES, JOHN, the historian of ancient Greece, was born in 1747, at Brechin, in Forfarshire. He distinguished himself greatly at the University of Glasgow, and at the age of twenty officiated for a short time as professor of Greek. From a dislike to public teaching, however, he resigned this office and went to London, intending to study science there. On returning from a short scientific tour on the Continent, he accepted an engagement as tutor in the family of Lord Hopetoun, a Scottish nobleman, who rewarded Gillies' services to his sons with a pension for life. He travelled with his pupils for some years on the Continent; and in 1784 returned home to complete his principal work, which he published two years later under the title of *History of Ancient Greece, its Colonies and Conquests*, in 4 vols. 8vo, or 2 vols. 4to. This work was chiefly valuable as giving a fair picture of the various states of Greece, and the progress of each in literature and the arts. The different parts of this picture are well distributed, and presented always in a lucid and sometimes in an interesting form. The learning displayed in the work is considerable, but the author's reflections never rise above mediocrity, and his style, though ambitious, is far from being effective. The book, however, enjoyed a great popularity in its day, and was translated into most of the living tongues of Europe. It was long a favourite text-book for schools, and lingered there after it had ceased to be used elsewhere, but it is now completely superseded. On the death of the illustrious Robertson, Gillies was appointed historiographer royal for Scotland, but he failed to preserve to that office the éclat thrown around it by his predecessor. Of his subsequent works, the best known are his *View of the Reign of Frederick II. of Prussia, with a Parallel between that Prince and Philip II. of Macedon;* and the *Translation of Aristotle's Ethics and Politics;* and afterwards, of his *Rhetoric; History of the World from Alexander to Augustus;* &c. None of these works, however, are likely to preserve his name. In his old age Gillies retired to Clapham in Surrey, where he died in 1836, in the ninetieth year of his age.

GILOLO, or HALMAHERA, one of the Molucca or Spice Islands in the Indian Archipelago, lying principally between

1. S. and 2. N. Lat., and 127. 30. and 128. 30. E. Long. It is of a very irregular form, consisting of a common centre from which four peninsulas extend to the N., N.E., E.S.E., and S., respectively. It has an area of about 6600 square miles, and is for administrative purposes divided into two parts, the greater being under the sultan of Ternate, and having about 19,000 inhabitants; the smaller portion has only about 4000 inhabitants, and is nominally under the sultan of Tidor. Gilolo is of volcanic origin, and is covered with mountains, some of which (particularly in the N. and N.E. peninsula) attain a great height. Some parts of it are densely wooded. Its chief products are sago, cocoa-nuts, spices, fruits, edible birds'-nests, pearls, and gold-dust. Horses, horned cattle, and sheep, are abundant. Trade is carried on chiefly with the Dutch East Indian settlements, whence are imported manufactured goods, opium, china-ware, and iron.

GILPIN, Bernard, rector of Houghton, distinguished for piety and hospitality, was descended from an ancient family in Westmoreland, and born at Kentmire, in 1517. Being bred in the Roman Catholic religion, he for some time defended it against the Reformers, and at Oxford held a disputation with Hooper, afterwards Bishop of Worcester, and a martyr for the Protestant faith; but he was staggered in another disputation with Peter Martyr, and began seriously to examine the contested points by the best authorities. Accordingly, being presented to the vicarage of Norton, in the diocese of Durham, he soon resigned it, and went abroad to consult eminent professors on both sides; and, after three years' absence, returned a little before the death of Queen Mary, satisfied with the general doctrines of the Reformation. He was kindly received by his uncle Dr Tonstall, Bishop of Durham, who soon afterwards gave him the archdeaconry of Durham, to which the rectory of Effington was annexed. When repairing to his parish, though the persecution was then at its height, he boldly preached against the vices, errors, and corruptions of the times, especially among the clergy; on which a charge, consisting of thirteen articles, was drawn up against him, and presented in form to the bishop. But Dr Tonstall found a method of dismissing the cause in such a manner as to protect his nephew without endangering himself, and soon afterwards presented him to the rich living of Houghton-le-Spring. He was a second time accused to the bishop, and again protected; but his enemies, enraged at this second defeat, laid their complaint before Dr Bonner, Bishop of London, who immediately gave orders to apprehend him. Upon this, Gilpin prepared for martyrdom; and having ordered his house-steward to provide him a long garment, that he might make a decent appearance at the stake, he set out for London. Providentially, however, he broke his leg on the journey, which protracted his arrival until the news of the queen's death freed him from all further apprehension. Being immediately set at liberty, he returned to Houghton, where he was received by his parishioners with the most sincere joy.

Upon the deprivation of the Roman Catholic bishops, he was offered the see of Carlisle, which he declined; and confining his attention to his rectory, he discharged all the duties of his office in the most exemplary manner. He employed much of his time in endeavouring to improve the minds of the young of his parish, suffering none to grow up in ignorance of their duty, but pressing it as the wisest part to unite religion with labour, and amidst the cares of this life to have a constant eye upon the next. He attended to everything which might be of service to his parishioners, and was assiduous in preventing lawsuits among them. His hall is said to have been often thronged with people who came to him about their differences. He was not indeed much acquainted with law, but he could decide equitably, and that satisfied them; nor could his sovereign's commission have given his decisions greater weight or authority than his own character secured.

His hospitable manner of living was the admiration of all. He spent in his family every fortnight forty bushels of corn, twenty bushels of malt, and an ox; besides a proportional quantity of other kinds of provisions. Strangers and travellers found a cheerful reception. All were welcome who came; and even their horses had so much care taken off them, that it was humorously said, if a horse were turned loose in any part of the country, it would immediately make its way to the rector of Houghton.

Every Sunday, from Michaelmas till Easter, was a public day with him. During this season he expected to see all his parishioners and their families. For their reception, he had three tables well covered; the first being intended for gentlemen, the second for husbandmen and farmers, and the third for day-labourers. This piece of hospitality he never omitted, even when losses or scarcity made its continuance rather difficult. He considered it was his duty, and that was a decisive motive.

But notwithstanding all his painful industry, and the large scope he had for it in so extensive a parish, Mr Gilpin thought the sphere of his benevolence too confined. It grieved him extremely to see everywhere, in the parishes around him, so great a degree of ignorance and superstition, occasioned by the shameful neglect of the pastoral cure among the clergy. The bad consequences resulting from this induced him to supply, as far as he could, what was wanting in others. For this purpose, he used every year regularly to visit the most neglected parishes in Northumberland, Yorkshire, Cheshire, Westmoreland, and Cumberland; and that his own parish might not in the mean time suffer, he was at the expense of a constant assistant. In each place he stayed two or three days, instructing the people in as plain a way as possible.

The value of Gilpin's rectory was about L.400 a-year; an income at that time very considerable, yet in appearance very disproportionate to the generous things he performed with it; indeed he could not have done these unless his frugality had been equal to his generosity. His friends, therefore, could not but wonder to find him, amidst his many great and continual expenses, entertain the design of building and endowing a grammar-school; a design, however, which his exact economy soon enabled him to accomplish, though the expense of it amounted to upwards of L.500. His school was no sooner opened than it began to flourish; and so great a number of young people flocked to it, that in a little time the town was not able to accommodate them. He put himself, therefore, to the inconvenience of fitting up, for that purpose, a part of his own house, where he seldom had fewer than twenty or thirty children. Some of these were the sons of persons of substance, whom he boarded at small rates; but the greater part were poor children, whom he educated, clothed, and maintained at his own charge. He was at the expense likewise of boarding in the town many other poor children.

He not only placed in his school able masters, whom he procured from Oxford, but he himself likewise constantly inspected it. One method used by him to fill his school was singular. Whenever he met a poor boy upon the road, he would try his capacity by a few questions, and if he found it such as to please him, he would provide for his education. And besides those whom he sent from his own school to the universities, and there wholly maintained, he likewise gave to others, who were in circumstances to do something for themselves, what further assistance they required.

In his walks abroad, he would frequently bring home with him poor people, and send them away clothed as well as fed. But the money best laid out was, in his opinion, that which encouraged industry. It was one of his greatest pleasures to make up the losses of his laborious neighbours, and prevent their sinking under them. If a poor man had lost a beast, he would send him another in its room; or if any farmer had had a bad year, he would make him an abatement in his tithes. Thus, as far as he was able, he took the misfortunes of his parish upon himself; and, like a true shepherd, he exposed himself for his flock.

This benevolent and excellent divine, who merited and obtained the glorious titles of Father of the Poor, and the Apostle of the North, died in 1583, in the sixty-sixth year of his age.

GIMBALS (Lat. *gemellus*, *twin*), the two brass rings or hoops within which a ship's compass is suspended in its box, in order to counteract the effect of the ship's motion and keep the card horizontal. These rings move one within the other, each perpendicularly to its plane, about two axes placed at right angles to each other. By this contrivance the compass, having a free motion in two directions at right angles to each other, maintains a vertical position, and consequently the card is horizontal. Gimbals are also applied to other instruments, such as the portable or mountain barometer, &c.

GIN, a kind of malt spirit flavoured with the essential oil of juniper. The process of making it is described under Distillation, vol., viii. p. 51. The inferior spirit sold as gin is said to be flavoured with turpentine instead of juniper, and rendered biting to the palate by caustic potash.

GIN, in *Mechanics*, a contrivance for raising heavy weights, driving piles, &c., which consists of three spars set up in a pyramidal form, and furnished at top with a tackle which is worked by a windlass beneath. The name *gin* is also applied to a machine with which the fibres of cotton are disentangled, by means of a series of revolving spikes. This operation is termed *ginning*.

GINETA, La, a town of Spain, province of Murcia, thirteen miles N.N.W. of Albacete, in a plain. It contains a parish church, two primary schools, a prison, and a court-house. La Gineta has manufactures of hempen and woollen cloth; and a trade in wine, oil corn, rice, and salt fish. The market is weekly, and the population is nearly 3000.

GINGEE, a town of the Carnatic, in the district of South Arcot, and a celebrated fortress, which stands on a stupendous rock and is impregnable by all the ordinary modes of attack. It is said to have been built or improved on an old foundation of the Chola kings by the son of Vijeya Runga Naik, the governor of Tanjore, in 1442. It was successively strengthened by the Mohammedan kings of Bejapore, who possessed it from 1669 to 1677, and by the Mahrattas, who held it in the year 1698. At this period it was besieged and taken by Zulficar Khan, the imperial general, who appointed Rajpoot governors. They affected independence, and assumed the rank of rajahs. In 1750 it was taken by surprise during a night attack by the French under M. de Bussy; but it surrendered to the British after the capture of Pondicherry in 1761. Like all the other hill forts in India, it is reckoned very unhealthy; and the French are said to have lost about twelve hundred of their number during the ten years they held possession of it. Long. 79. 27. E., Lat. 12. 15. N.

GINGER, the rhizome (underground stem) of *Zingiber officinale*, a plant of the nat. ord. *Zingiberaceæ*, and a native of the East Indies and China, but early carried to the West Indies, where it is much cultivated, particularly in the island of Jamaica. The ginger of commerce is distinguished into two kinds, the white and the black; but the difference depends merely on the method of preparation. The white variety consists of carefully selected rhizomes, which are scraped, scalded in boiling water, and dried in the sun; and the whiteness is frequently aided in this country by bleaching with chloride of lime. The black kind (which is really of a pale brown colour) consists of inferior pieces which have been scalded but not scraped. It should be observed, however, that some East Indian ginger, in its natural state, is as light-coloured as African ginger that has undergone the whitening process: and hence it seems probable that they are the produce of different species.

The young and tender rhizomes preserved in syrup constitute the well-known sweetmeat called *preserved ginger*. Ginger is much employed in medicine as an antispasmodic and carminative. Made into a thin paste with spirit, and spread as a plaster, it is a useful topical remedy in face-ache, earache, &c.; and has this peculiar property, that notwithstanding it excites a considerable sensation of heat, it leaves even the most delicate skin perfectly free from injury or discoloration.

GINGERAH. See Jinjeera.

GINGUENÉ, Pierre Louis, the author of the *Histoire Littéraire d'Italie*, was born in 1748 at Rennes in Bretagne. He was educated at a Jesuit college in his native town, but he owed most of his literary tastes and accomplishments to his father, who early imbued him with a love of music and the languages of England and Italy. His first literary effort, a poetical piece entitled *Confession de Zulme*, brought him into notice among the literary coteries of Paris, from the circumstance that when first published anonymously it shared the fate of Wolfe's Ode on the Burial of Sir John Moore, and was claimed by six or seven different authors. Though the intrinsic value of this piece is not very great, it is still entitled to be called Ginguené's poetical *chef d'œuvre*. The part he took in the strife which then divided the musical world into partizans of Glück or Piccini made him still more widely known; and the reputation he enjoyed as a promising political writer secured employment for him in the public service. He hailed, however, with enthusiasm the first symptoms of the Revolution, and celebrated in an indifferent ode the opening of the States General. A more creditable effort was his *Lettres sur les Confessions de J. J. Rousseau*, in which he defended to the uttermost the life and principles of that richly-endowed but ill-starred genius. Refusing to countenance the excesses of the Revolution, Ginguené became an object of suspicion to the authorities, and was thrown into prison, whence he only escaped with life by the downfall and death of Robespierre. Some time after his liberation he was made director-general of the "Commission Exécutive de l'Instruction Publique," and re-organized the system of public instruction according to the principles and ideas then fashionable in France. When the Institute was established in 1796, Ginguené was elected into it and attached to the academy of moral and political sciences. In 1798 he was sent by the Directory as minister plenipotentiary to the king of Sardinia, whose ruin, begun by force of arms, they had determined to complete, if possible, by treachery and cunning. A worse tool than Ginguené could not have been found for carrying out so base a design. After fulfilling his duties for seven months very little to the satisfaction of his employers, Ginguené resigned office and retired into private life at his country house of St Prix, in the valley of Montmorency. Here he prosecuted his literary toils till the revolution of the 18th Brumaire called him once more into public life. He was made a member of the tribunate which made a show of maintaining a democratic opposition to the arbitrary proceedings of the First Consul. But Napoleon, finding that Ginguené was by no means sufficiently tractable, had him expelled at the first "purge" which he administered to the tribunate, and Ginguené once more joyfully returned to private life and his favourite pursuits. These were now more than ever a necessity of life to him, as his only other source of income was the small endowment attached to his seat in the Institute. Fortunately he was nominated one of the commission charged to continue the literary history of France, brought down by the Benedictines to about the close of the twelfth century. The continuation of this work, which appeared in three volumes in 1814, 1817, and 1820 respectively, is for the most part the work of Ginguené. But the work by which he will be longest remembered is his *Histoire Littéraire d'Italie*, 9 vols. 8vo, 1811–1819. He was still engaged in putting the finishing touches to this great undertaking when he was cut off by a painful disease, Nov. 16th, 1815. The first six volumes of the work appeared before their author's death; the seventh is entirely his except a few pages; and of the eighth and ninth he wrote about a half, the other half being composed by Salfi, and revised by Daunou. The success which this work had in Italy was astonishing. Editions of it appeared in various parts of the peninsula, with notes and comments by the best scholars. Three translations of it also appeared at Milan, Naples, and Venice.

Ginguené was originally led to make Italian literature his especial study by finding how ill that subject was understood, and how little it was appreciated by his countrymen. The better to dispel their prejudices, as well as their ignorance, by enhancing the interest of the work, he classified the various productions of each department of literature under one head and in the order of time, so that we can trace the progress of thought in modern Italy, through its various phases, from its dawn in the twelfth century to its glorious noon in the sixteenth. In its composition, Ginguené was guided for the most part by the great work of the Jesuit Tiraboschi, from which he has borrowed very largely. He avoids, indeed, the prejudices and party views of his model, and has imparted a more lively colouring to the original design; but his own style, though occasionally forcible and eloquent, is often too tame for the subject. He often trespasses also on his reader's patience by his over-minuteness of detail. But these faults are more than atoned for by the fine critical discernment, the impartiality, and the freedom which the work displays. On the score of accuracy, indeed, Ginguené sometimes offends, but seldom in matters of great moment; and his occasional slips are such as are almost inevitable to a foreigner and one who could hardly be said to have even seen the country whose literary history he relates. The Italians felt grateful to Ginguené for having placed their literature in its proper light, and readily forgave the excessive eulogies which he passed on many of their writers, whose very names had been forgotten in their own country.

During the latter years of his life Ginguené wrote extensively for the press, and edited the *Decade Philosophique, Politique et Littéraire*, till it was suppressed by Napoleon in 1807. He also contributed largely to the *Biographie Universelle*, chiefly articles bearing on the literature of Italy. (*Biog. Univers.*; *Eloge de Ginguené, Mémoires de l'Institut*, tom. vii.; *Discours de M. Daunou*, prefixed to the 2d edit. of the *Hist. Litt. d'Italie.*)

GINSENG, the Chinese name for the root of *Panax quinquefolium*, a small plant of the nat. ord. *Araliaceæ*, found in the northern parts of Asia and in America. It has a jointed, fleshy, tapered root, which when dried is of a yellowish-white colour, and has a mucilaginous sweet flavour somewhat resembling liquorice, accompanied with a slight bitterness. It is highly prized by the Chinese as a stimulant and restorative, or rather as a panacea for every ill. American ginseng was formerly exported largely from this country; but now the Americans carry it direct to China, which is its only market.

GINZO DE LIMIA, SANTA MARINA, a town of Spain, province of Orense, in Galicia. It stands on a small stream of the same name about twenty miles S.E. of Orense, and contains a parish church, a primary school, and a town-house. Its chief manufacture is linen of various kinds; and its trade is principally in linens and wool. On account of the numerous antiquities found in its vicinity Ginzo is supposed to occupy the site of an ancient town. Pop. 2000.

GIOJA, FLAVIO, an Italian navigator and mathematician of the fourteenth century. His native place was Pasitano, near Amalfi. He has been frequently asserted to be the inventor of the mariner's compass in consequence of his having properly applied it to navigation; but before his time that valuable instrument was known in Europe. It is most likely that the secret of this use of the magnetic needle was brought to Italy by Marco Polo in the year 1260 A.D., after his visit to the East.

GIORDANO, LUCA, a celebrated Italian artist, called by some writers "The Proteus of Painting," was born at Naples, in the house adjoining that inhabited by his future master the famous Ribera, better known as Spagnoletto. The date of his birth is a moot-point among authorities; some assigning it to the year 1632, others, and among them Velasco, with a greater show of probability, to 1629. After studying under Ribera at Naples, he became the pupil of Pietro da Cortona at Rome, whom he assisted in many of his works. Leaving Rome, he visited the famous schools of Bologna, Florence, and Venice, studied the great masters there, and made many copies of their works. He executed these so well and so quickly, that his sketches came to be in great demand. His father, who was noted for his avarice, turned his son's gifts to good account, and would hardly allow him time to eat his meals in peace, continually crying out, "Luca, fa presto" (make haste, Luke), so that the young Giordano was at last known by no other name among his companions. The rapidity of his execution may be inferred from the following story, which is pretty well authenticated. While engaged one day on a painting of Jesus and his twelve disciples, he was interrupted by his father summoning him to dinner; "Luke, come down immediately, the soup will be cold;" "I shall be there in a moment," answered Luke, "I have only the twelve apostles to do now." It is said that he often used his fingers instead of the brush, and never spent more than half an hour upon a half figure of the size of life. To this astonishing rapidity of hand, however, he joined a fine imagination, teeming with ideas; and his fame at length became so great that it reached the ears of Charles II. of Spain, who invited him to his court, and commissioned him to paint fresco-pieces for the Escorial. After Charles's death, Giordano returned to Naples, where, despite his fame achieved, his wealth, and his advanced age, he continued as busy as he had been in his youth, when he had both his name and his fortune to make. He died at Naples in 1704 or 1705.

As a painter, Giordano has no claim to be ranked among the Raphaels, Titians, or Michael Angelos of his own country. But the versatility of his talents, the fire of his compositions, and his fine powers of colouring, entitle him to respectful mention in the history of art. Even his drawing, which has been severely criticised, is perfectly correct in those pieces on which he chose to bestow time and pains. But the wideness of his aims, and his perpetual haste, prevented him from attaining the first rank in any of the many styles which he affected. His best pieces are his frescoes at the Escorial, at Florence, and at Rome. His grand altar-piece of the Fall of Lucifer and Battle of the Angels in one of the Neapolitan churches, is reckoned his masterpiece. There are some fine cartoons and other pieces of his in the galleries of Dresden and London.—See Lanzi.

GIORGIONE, or GIORGIO BARBARELLI, an eminent painter, born at Castelfranco, near Trevigi, in 1478. He learned the rudiments of his profession from Giovanni Bellini at Venice, and is said to have derived his first notions of the force of well-adapted lights and shadows from the works of Leonardo da Vinci. Giorgione was one of the first of the Venetian school who broke through the timid and constrained style to which the art was confined in the time of Bellini, and introduced a freedom of outline, a boldness of handling, and a new and animated manner of colouring, unknown before. De Piles remarks, "that it is a matter of wonder to consider how, all of a sudden, he soared from the low and dry manner of Bellini's colouring to the supreme height to which he raised that lovely part of painting, by joining extreme force with extreme sweetness." Yet, as Pilkington observes, when we reflect that nature and Da Vinci were his models, and that he had a genius happily qualified to study them judiciously, we may more easily account for that excellence by which he was distinguished. His pictures were much admired by Titian, who copied his style, and improved upon his effects of chiaroscuro. His untimely death prevented his acquiring so extensive a celebrity as Titian did; but, as Phillips observes, "in the race of rivalship between these extraordinary artists, it seems probable, had Giorgione's life been prolonged, he might have surpassed Titian in splendour and vivacity, both of colour and of execution." Several of Giorgione's grand compositions in fresco have perished, and those which remain are so materially injured that little of their original beauty is discernible. His easel pictures were few, and now, on account of their scarcity as well as merit, are exceedingly valuable.

In the department of portrait-painting Giorgione may be ranked with the greatest masters. His figures are justly esteemed for their grace, dignity, expression, and truth of character. His carnations have more the appearance of real flesh than of being a fine imitation of it. The landscapes of this artist are also admirable. Of his oil pictures the principal are—Christ bearing his Cross, in the Church of St Roch at Venice; at Trevigi, St Mark appeasing the Tempest; in the Monte di Pietà, a Dead Christ; and at Milan, the Finding of Moses. Giorgione died of the plague, in the prime of life, in 1511.—See Lanzi, *Stor. Pit.* (A. II.)

GIORNOVICHI, Giovanni Maria, more commonly known under the name of Jarnowick, was, according to his own statement, born at Palermo in Sicily, in the year 1745. He studied the violin under the famous Lolli, and became one of the most popular violinists in Europe. About 1770 he went to Paris, where his elegant performance of his first concerto (in A major) at once rendered him a favourite. His overbearing temper and fondness for gambling led him everywhere into misadventures, and a discreditable affair forced him to leave Paris in 1779. After visiting several continental cities, he reached London in 1792, and was well received; but unluckily for him, Viotti arrived soon after, and took the place due to the latter's great superiority. Giornovichi quitted London in 1796, and went to Hamburg; thence, in 1802, to Berlin, and afterwards to St Petersburg, where he died suddenly while playing at billiards on the 24th November 1804. During his residence in England he was invited to Edinburgh, and performed there at the St Cecilia's Hall concerts. His particular merits as a player were perfect intonation, neat execution of rapid passages, and good taste in embellishment. His tone was pure but feeble, and he was deficient in breadth of style and expression. His compositions are light and pleasing, and consist of fifteen violin concertos; three stringed-quartetts; four sets of duets for two violins; sonatas for violin and bass; several symphonies. (G. F. G.)

GIOTTO, who shares with Cimabue the honour of creating, or at least of restoring, modern art, was born at Vespignano, a little village about 15 miles from Florence. His father's name was Bondone, and his own was a diminutive either of Ambrogiotto, his Christian name, or of Angiolotto, a term of endearment formed from Angiolo or Angelo. The date of his birth is not very accurately determined. Vasari and Baldinucci refer it to the year 1276, which would make Giotto only twenty-two years of age when he executed his famous mosaic of the Miraculous Draught of Fishes in 1296, before which date he had produced some of his most famous works. Other authorities refer it to the year 1270; others, considering that Vasari had made a mistake of a figure, put the real date as 1266, thus making him almost exactly coeval with Dante, his *coetano ed amico suo grandissimo.* He died at Florence, January 8, 1336. The best of his works were executed in fresco in various cities of Italy, especially Florence, Rome, Naples, Padua, and Assisi. Giotto may also be considered the creator of the art of portrait-painting. (For an estimate of his genius, and an account of his principal works, see Painting.)—See Lanzi, *Stor. Pit.*

GIOVENAZZO, the ancient *Natiolum*, a walled seaport-town of Naples, province of Bari, on a high rock projecting into the sea, 10 miles W.N.W. of Bari. It is a miserable looking place, with narrow and filthy streets. It is the seat of an archbishopric, and has a cathedral and several other churches, convents, hospitals, and an asylum for the maintenance and instruction in some useful art of foundlings, mendicants, &c. Pop. 7000.

GIPSIES. See Gypsies.

GIRAFFE. See index to Mammalia.

GIRALDI, Lilio Gregorio (1479–1552), a celebrated classical scholar of Italy, was born at Ferrara. The early part of Giraldi's career is a bright example of severe study successfully carried on amid hardships and privations of every kind. The fall of Constantinople had spread the learning of Greece throughout Europe, and Giraldi applied himself to master that branch of knowledge, then new and strange in the West, under the care of Chalcondylas at Milan. The fruits of his extensive erudition was a vast number of treatises on the literature and antiquities of the ancient world. Through one of these Giraldi's name is still remembered—his *Historia de Diis Gentium.* To him belongs the merit of having first examined the mythology of the ancients, and applied to its elucidation an amount of learning and judgment till that time unknown.

Another distinguished member of this family was Giovanni Battiste Giraldi Cintio, who wrote a large number of *novelli* and miscellaneous pieces, of which the most remarkable was his *Gli Hecatomiti*, or *Hundred Tales.*

GIRALDUS CAMBRENSIS. See Barry, *Girald de.*

GIRDER, in *Architecture*, a main beam for supporting the joists of a floor: so called, probably, because the ends of the joists are inserted into it.

GIRDLE, a band of leather or other material worn around the waist. The girdle was used by the Hebrews, the Greeks, and the Romans, and is still worn in the East. Among the Romans it was used to confine the *tunica;* and so general was the custom, that the want of a girdle was regarded as strongly presumptive of idle and dissolute propensities. It also formed a part of the dress of the Greek and Roman soldier; and we meet with the phrase *cingulum deponere*, to lay aside the girdle as equivalent to quitting the service. It was used as now in the East to carry money in; hence *zonam perdere*, "to loose one's purse."

The phrase *zonam solvere virgineam* was appropriated to the ceremony of unloosing the girdle of the bride on the nuptial night. To Venus was attributed by the poets the possession of a girdle which had the miraculous virtue of inspiring love. See Cestus.

It was an ancient custom in Britain for bankrupts or other insolvent persons to put off and surrender their girdles in open court. The reason of this was, that our ancestors used to carry their purse, keys, and the like, fastened to the girdle; and hence the girdle became a symbol of the condition of the individual. History relates that the widow of Philip I. duke of Burgundy renounced her right of succession by putting off her girdle upon the duke's tomb.

GIRGEH, a town of Upper Egypt, on the Nile. See Egypt, vol. viii., p. 505.

GIRGENTI, a province on the S.W. coast of Sicily, occupying an area of about 1200 square miles. Ramifications of the Neptunian mountains cover most of its surface, rising highest in the north, and rapidly descending towards the southern shore. Among the mountain ridges there are numerous beautiful and very fertile valleys, producing in rich abundance oranges, lemons, corn, wine, and oil. The valleys and uplands afford also excellent pasture, which gives richness to the abundant dairy produce, especially to the cheese, which has long been famous. The principal streams are the Salso, the Belice, and the Platani—the Salso bounding the province on the S.E., the Belice on the N.W., and the Platani traversing it near the centre in a W.S.W. direction. The mineral products found in greatest abundance are salt, sulphur, naphtha, and bitumen, as well as some fine agates. The manufactures and trade of this province are unimportant. It is divided into three administrative districts—Girgenti the capital, Bivona, and Sciacca, which are subdivided into sixteen circondarij. The population is rather more than 250,000.

GIRGENTI, a town on the S.W. coast of Sicily, capital of the province of the same name. It stands near the site of the ancient Agrigentum (which is described under that head), on the slopes of Mount Camicus, in the Val-di-Mazzara, nearly 3 miles from the shore, and 60 S.S.E. of Palermo. The modern town is about one-tenth of the size of the ancient city, and though irregularly built, it presents rather an imposing appearance standing at an elevation of 1100 feet above sea-level. The streets are, however, mean and dirty; and they are so steep, narrow, and wretchedly paved, that they are impassable by wheel-vehicles. It contains a cathedral, 45 churches, 17 convents, one seminary, one orphan hospital, a lyceum, and a monte-di-pietà. The harbour, once capable of admitting large vessels, has now only 12 feet water on the bar. It was formed in 1752 by the erection of a fine mole; and its latitude and longitude are respectively 37. 15. 36. N., and 13. 31. 45. E. The principal objects of commerce are fruit, oil, sulphur, and grain, of which last large quantities are stored in caverns in the rock. Four miles north of Girgenti is the mud volcano called Maccaluba. The present population of the town is nearly 18,000, consisting chiefly of agriculturists and priests.

GIRONDE, a maritime department in the S.W. of France, formed of part of the old province of Guienne; and bounded on the north by the department of Charente-Inférieure, east by those of Dordogne and Lot-et-Garonne, south by that of Landes, and west by the Bay of Biscay. It lies between Lat. 44. 12. and 45. 35. N., and between Long. 0. 18. E. and 1. 16. W., being 106 miles in length from N.W. to S.E., and 80 in breadth from N.E. to S.W. This is the largest of the French departments, having an area of 3761 English square miles. Population (1851) 614,387, as follows:

	Cantons.	Communes.	Pop. in 1851.
Bordeaux	18	153	296,632
Blaye	4	56	59,469
Lesparre	4	30	39,677
Libourne	9	132	111,104
Bazas	7	68	55,112
La Réole	6	105	52,393
	48	544	614,387

Bordeaux, the capital, in 1851 contained 123,935 inhabitants.

With the exception of the eastern portion of the department, where there are some hills, the surface is generally level. The western portion is a vast sandy plain, termed *les Landes.* On the coast are two extensive shore lakes, Carcano and Canau, communicating with each other, and with the bay of Arcachon, near the southern extremity of the department. A range of sandy downs separates these two lakes from the sea. The bay of Arcachon contains numerous islands, and on the land side forms a vast shallow lagoon; a considerable portion of which, however, has lately been drained and converted into arable land. On the south side of the bay stands the port of Teste-de-Buch, which is now connected with Bordeaux by railway. The river or estuary of the Gironde, from which this department takes its name, is formed by the union of the Garonne and Dordogne. It has a N.N.W. direction, is about 45 miles in length, and varies in breadth from 2 to 6 miles. The principal affluent of the Dordogne in this department is the Isle. The feeders of the Garonne are, with the exception of the Dropt, all small. West of the Garonne the only river of importance is the Leyre, which flows into the bay of Arcachon. The climate is humid and temperate, and, except in the Landes, is generally healthy. About one-third of this department consists of heaths and wastes, one-fourth of arable land, one-seventh of vineyards, and one-eighth of woods and forests. Wheat, rye, maize, millet, and hemp, are grown to a considerable extent. The corn produced, however, does not more than half meet the wants of the inhabitants. The culture of the vine is by far the most important branch of industry carried on. The annual produce of wine, principally claret, in this department is about 55,000,000 gallons. The finest clarets are the growths of Lafitte, Latour, Château-Margaux, and Haut Brion. The most valued white wines are Sauterne, Barsac, Preignac, and Vin de Grave. This department also produces excellent fruit. The extensive woods which skirt the sea-coast or pervade the *Landes* consist chiefly of pine, and supply timber for deals and masts, as well as resin, pitch, and turpentine. There are stone quarries and smelting works, but few mines. The manufactures are various, and, with the general trade, are chiefly carried on at Bordeaux.

GIRONDISTS. See FRANCE, vol. x., p. 71, &c.

GIRONS, ST, a town of France, capital of a cognominal arrondissement in the department of Ariège, on the right bank of the Salat, 25 miles west of Foix. It has a communal college, an old Gothic church with a lofty spire, and manufactures of woollens, linens, leather, and paper. Pop. (1851) 3895.

GIRVAN, a market-town and burgh of barony in the county of Ayr, Scotland, on the left bank of the Girvan, near its mouth, 17 miles south by west of Ayr. The river here forms a small harbour, with 9 to 11 feet water. The houses are chiefly buildings of one story, and the inhabitants are mostly weavers for the Paisley and Glasgow manufacturers. A few are employed in fishing. They are generally very poor, and about two-thirds of them are Irish, or of Irish extraction. Market-day, Monday. Pop. (1851) 7319.

GISORS, a town of France, department of Eure, in a pleasant valley on the Epte, 14 miles east of Les Andelys. Of its ancient castle built in the twelfth century, and once one of the principal strongholds in the kingdom, the tower and keep are still standing. Its ancient ramparts have been converted into promenades. It has a curious old church which dates from the thirteenth century, a communal college, tanneries, breweries, cotton-spinning and bleaching establishments. Pop. 3700.

GITTITH, גִתִּית, a word which occurs in the titles of Psalms viii., lxxxi., lxxxiv., and is generally supposed to denote a musical instrument. From the name it has been supposed to be an instrument brought from Gath (גת) by David; and from Isaiah xvi. 10 it has been inferred that it was used especially at the vintage season. If it means a musical instrument, it is remarkable that it does not occur in the list of instruments assigned by David to the temple musicians, nor even in that list which appears in the first two verses of Psalm lxxxi., in the title of which it is found. The supposition of Gesenius that it is a general name for stringed instruments obviates this difficulty. The Septuagint renders the title by ὑπὲρ τῶν ληνῶν, "upon the wine-press;" and Carpzov, Pfeiffer, and others follow this in taking the word to denote "a song composed for the vintage," or for the feast of tabernacles. (Carpzov, *Observ. Philol. super Psalmos Tres* על־הגתית, Helmst. 1758.; Pfeiffer, *Ueber die Musik*, p. 32.)

GIUGLIANO, a town of Naples, 8 miles N.N.W. of the capital of that kingdom. It has a castle, four churches, two of which are collegiate, and a hospital. Pop. 9000.

GIULIANO, SAN, a town of Sicily, on the summit of a mountain of the same name, 5 miles E.N.E. of Trapani. It has numerous churches and convents, a hospital, a *mont-de-piété*, and about 10,000 inhabitants. It occupies the site of the ancient ERYX, which see.

GIULIO-ROMANO, the name by which Giulio-Pippi, or rather De Giannuzzi, is commonly known, was born at Rome in 1492, and at an early age distinguished himself as one of the ablest of the pupils of Raphael, whose successor he may justly be considered. He assisted that great master in the celebrated "Battle of Constantine," and other famous frescoes in the Vatican; and with Pinni he completed the frescoes of the Stanza di Costantino in the Vatican after the death of Raphael in 1523. In the following year he entered the service of the duke Federigo Gonzaga at Mantua, where he succeeded in establishing a considerable school, and conducted the various works which that prince had projected for the embellishment of his capital. His talents as an architect would place him among the most eminent of his age in this profession, were it not that his reputation as a painter has eclipsed these. Giulio Romano died at Mantua, November 1, 1546, at the age of forty-seven, leaving numerous works in fresco, and many fine oil paintings, which fully established his fame as the chief of all Raphael's disciples. He may also fairly be considered the ablest of the Italian ornamental decorators. See PAINTING. (Vasari, *Vite de' Pittori*, &c., Flor. 1846; Gaye, *Carteggio Inedito d' Artisti;* Lanzi, *Storia Pittorica.*)

GIURGEVO, a town and river port of Wallachia, on the left bank of the Danube, opposite Rustchuk, 40 miles S.S.W. of Bucharest. The houses are mean-looking mud edifices, and the streets are narrow and filthy. The cathedral stands on an eminence in the river, and is connected with the town by a bridge. The principal square contains a tall quadrangular tower, surmounted by a bell, which sounds at certain hours. The fortifications which formerly surrounded the town were demolished by the Russians in 1829. Giurgevo is the most important trading port on the Wallachian side of the Danube, and carries on a considerable trade with Austria, Germany, Hungary, &c. Pop. 7000. The Russians were here defeated by the Turks, July 7th, 1854.

GIVET, a fortified town of France, department of Ardennes, situated on both sides of the Meuse, 26 miles N.N.E. of Mezières. On the left bank of the river, at the foot of a mountain, on which stands the citadel called Charlemont, is the quarter Givet St Hilaire, while on the opposite bank is that of Givet Notre-Dame. They are both fortified, and communicate with each other by means of a handsome stone bridge of five arches. The town is generally well built, and has extensive barracks, a military hospital, and public library; also manufactures of white-lead, glue, earthenware, leather, and some trade. Pop. 4000.

GIVORS, a town of France, department of Rhône, 14 miles south of Lyons. Being situated on the Rhone and the Canal of Rive-de-Gier, and near the railway between Lyons and St Étienne, its inhabitants are chiefly boatmen or carriers. It has also several glass and tile works. Pop. 7010.

GLACIER,

A NAME given to masses of ice which descend from snowy mountains into the adjacent valleys, where they attain a level often far below the upper limit of the surrounding vegetation. The following are the synonymes for a glacier in some different languages and dialects. In French, *glacier;* German, *gletscher;* Italian, *ghiacciaja;* Tyrolese, *fern;* in Carinthia, *käss;* in the Vallais, *biegno;* in part of Italy, *vedretto;* in Piedmont, *ruize;* in the Pyrenees, *serneille;* in Norway, *iisbræ* or *iisbrede;* in Lapland, *geikna* or *jegna;* in Iceland, *jökull* or *fall-jökull.*

The characteristic appearance of a glacier can be nowhere better studied than in Switzerland and Savoy. The icy mass of the glacier of Bossons at Chamouni—which descends immediately from the highest part of Mont Blanc, but lies, summer and winter, in the valley at a height of no more than 3500 English feet (the height of perpetual snow being about 9000 feet), where it is embosomed amongst luxuriant wood, and is almost in contact with corn-fields—exhibits a spectacle which none who have once seen it can forget, and which attracts more interest and curiosity the more carefully it is considered. The lower glacier of Grindelwald, descending to 3400 feet, is another familiar example of the same phenomenon. In the Arctic regions true glaciers also exist, which, descending the valleys (often of great width and little inclination), enter the sea, and, breaking off, supply the floating ice-islands or icebergs which frequently drift into comparatively low latitudes. These glaciers do not essentially differ from those of alpine countries.

The diminution of temperature as we ascend the slopes of mountains, as indicated by successive zones of vegetation, and finally by the occurrence of perpetual snow, is stated and explained in other articles (CLIMATE, PHYSICAL GEOGRAPHY, and BOTANY, Part III.), and therefore may be assumed here. Thus in the high mountains of the Andes and Himalaya, between the tropics, the commencement of perpetual snow is found at from 15,000 to 18,000, or even 19,000 feet, according to circumstances; whilst in southern Europe the level is from 8000 to 9000 feet, and in Norway from 5500 to 3000 feet, according to the latitude and the distance from the sea. It was first shown by Baron Humboldt and Von Buch that the limit of perpetual snow depends principally on the temperature of the summer, and not upon that of the whole year.

It has been already explained that an accumulation of snow, even frozen snow, does not constitute properly a glacier. A glacier is a mass of ice, having its origin in the hollows of mountains where perpetual snow accumulates, but which makes its way down towards the lower valleys, where it gradually melts, and it terminates exactly where the melting, due to the contact of the warmer air, earth, and rain of the valley—compensates for the bodily descent of the ice from the snow reservoirs of the higher mountains. From this it is evident, without any formal measurements, that A GLACIER IS ICE IN MOTION.

Geographical Distribution of Glaciers.—Glaciers are not peculiar to any country or region of the earth. It may be that there are extensive snowy mountains wholly devoid of them, as is supposed to be the case in tropical South America; but even this exception requires confirmation.

There are peculiarities in the form of mountains, and still more in climate, which, as we shall see, favour the formation of glaciers, or may even totally prevent it.

Although it is only of late years that glaciers have been generally acknowledged to exist in the Himalaya, the descriptions given many years ago by Captain Hodgson of the source of the Ganges could leave no doubt as to the fact on the mind of any one familiar with the glaciers of the Alps. "The Bhagiruttee or Ganges," he writes in 1817, "issues from under a very low arch at the foot of the grand snow-bed. . . . . . . Over the debouche the mass of snow is perfectly perpendicular, and from the bed of the stream to the summit, we estimate the thickness at little less than 300 feet of solid frozen snow, probably the accumulation of ages. It is in layers of some feet thick, each seemingly the remains of a fall of a separate year."[1] The level of the source of the Ganges is 12,900 feet, and the chief error of this description is in the interchange of the word *snow* for ice, and in the absence of a clear perception that the ice could not have always lain there, some thousand feet below the snow-line, but must have travelled progressively down the valley, producing the phenomena of rents and superficial rubbish-heaps which Captain Hodgson describes in another paragraph.

For many years after 1817 the glaciers of the Himalaya, if mentioned at all, are so under the false name of snow-beds, and their relations to physical geography were wholly neglected. This arose from the imperfect education of those clever men who have at different times explored our Indian possessions, who being chiefly bred in that remote land had little acquaintance with the scientific literature of Europe, and still less with its physical features. Scarcely any of our Himalayan travellers had previously visited the Alps.

It is since 1840 that we have acquired more correct information as to the glaciers of India. Mr Vigne, in his interesting *Travels in Kashmir*, has described the perfectly characteristic features of the glaciers of some of the sources of the river Indus occurring in the territory of Little Thibet, about Lat. 35°. Colonel Madden and Captain Richard Strachey directed attention to the glaciers of the central Himalaya (Kumaon) at the source of the rivers Pindur and Kuphinee, in Lat. 30° 20′, at the level of 11,300 and 12,000 feet respectively, the height of the snow-line being there about 15,000 feet.[2] The phenomena and mode of progression of these glaciers, as noted by Captain R. Strachey, appear identical with those which we shall presently describe as characteristic of those of Europe. Farther in the interior of the same chain Dr Thomas Thomson has lately described[3] numerous glaciers filling valleys of the central Himalaya (particularly that on the north side of the Bardar or Umasi pass, Lat. 33° 20′, Long 76½° E.), which probably exceeds in size any other yet described. Dr Joseph Hooker, in his interesting *Himalayan Journals*, has described in detail the glaciers of the eastern portion of the same range in the territories of Sikkim and Nepaul, where the gigantic mountain Kinchinjunga rears its head to 28,178 feet above the sea, whence the ice descends (he states) in one unbroken mass of 14,000 feet of vertical height to the source of the Thlonok river. Both Dr Thomson and Dr Hooker concur in ascribing to the Himalayan glaciers a formerly much greater extension towards the plains of India, which has left geological evidence of their former sojourn in the lower valleys, in the masses of transported rock and rubbish there accumulated. Thus, instead of glaciers being rare or unexampled phenomena in the east, as was at one time supposed, we find them developed on a scale commensurate with that of the stupendous mountains with which they are connected, and that from one end to the other of the Himalayan range.

Passing over the less important glaciers of the Caucasus and Altai, we come to the glaciers of Europe, which are principally confined to two great mountainous districts, the Alps and the high lands of Norway.

Referring for minute topographical details to the works which have been published more particularly in connection with the subject, and with those countries,[4] we may state generally, that wherever (in Europe) any considerable area of mountainous country rises above the snow-line, there glaciers are found in more or less abundance. In the Alps this level is, on an average, about 7200 feet, including glaciers of all descriptions (Schlagintweit). The great glaciers have of course the lowest mean level. Of these there are, on the same authority, sixty in the whole Alpine chain. Glaciers commence on the south-western prolongation of the chain in the region of Mont Pelvoux and Monte Viso (Lat. 45°), and they extend on the N.E. to the Gross Glockner in Carinthia. The best known and most important glacier-bearing groups in the interval are those of Mont Blanc, Monte Rosa, the Bernese Alps (Finsteraarhorn and Jungfrau), and the Oertler Spitz in the Tyrol. The most considerable individual glaciers are the Mer de Glace of Chamouni, the Gorner glacier near Zermatt (Monte Rosa), the lower glacier of the Aar (Bernese Oberland), the Aletsch glacier and glacier of the Rhone (Vallais), and the Pasterzen glacier (Carinthia). Of these, the first, third, and last have been made the subjects of the most careful surveys and observations.

In Great Britain no mountain fully attains the height of the snow-line, consequently there are no glaciers. But patches of snow, with a more or less icy structure, remain through the summer in the clefts of some of the Scottish hills. Geological appearances, however, strongly indicate the formerly greater extension of glaciers, especially in Scotland and Wales.

In Norway we find two principal groups of glacier-bearing mountains—those in the Bergenstift and those within the arctic circle. The former were well described by M. Durocher.[5] Professor J. D. Forbes, in a recent work,[6] has detailed his observations on most of them, has given an enumeration of all the known glaciers of Norway, and has compared their conditions and structure with those of the glaciers of the Alps. Of the Bergen group, those of Justedal are the best known, and probably the best worth visiting. Justedal is connected with the inmost ramification of the intricate Sognefiord. On the Fjærlandsfiord, another branch of the same inlet, two important glaciers are found, one of which terminates only 105 feet above the sea level, in Lat. 61°. The Hardanger fiord, somewhat farther south presents one fine glacier, the Bondhuusbræ. The more northern group of Norwegian glaciers commences at Fondal, just within the limits of the arctic circle, where numerous glaciers descend almost to the sea level. About Lat. 70°, on the promontory of Lyngen, are several glaciers, and in the neighbouring Jokulsfiord is one which is stated actually to enter the sea, and to break off in miniature icebergs. About the North Cape the mountains are not sufficiently high to afford any perpetual snow.

Iceland, with a summer temperature far inferior to that of Norway, abounds in glaciers, which, however, have not been very particularly described. Those of Swina-fels and Holaar are stated to be large and characteristic.

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[1] *Asiatic Researches*, vol. xiv., quoted in Captain R. Strachey's paper cited below.

[2] *Journal of the Asiatic Society of Bengal*, vol. xvi., part 2.

[3] *Western Himalaya and Tibet*, &c., by Thomas Thomson, M.D., London, 1852.

[4] Gruner's and De Saussure's *Travels in the Alps*; Prof. J. D. Forbes's *Travels in the Alps of Savoy*; Agassiz, *Etudes sur les Glaciers*; Hugi, *Alpeureise*; Schlagintweit, *Untersuchungen*; and Johnston's *Physical Atlas*.

[5] *Annales des Mines*, 4th series, tom. xii.

[6] *Norway and its Glaciers, visited in* 1851.

The glaciers of Spitzbergen have been minutely described by Dr Scoresby[1] and by M. Martins.[2] They appear to be essentially of the same nature, and subject to the same laws as those of Switzerland, but modified by the depression of the snow-line and the extreme shortness of the summer. The texture is less icy, the rate of progression probably slower; as the superficial fusion is not great, they descend in vast sheets into the waters of the sea (as at Magdalena Bay), where they form icebergs. The western coasts of Greenland appear to offer the same phenomena, but on a grander scale.

The interior of arctic North America has too even a surface, and perhaps too dry and rigorous a climate, to present glaciers in perfection.

In South America, about Lat. 47°, where the climate is one of the worst in the world, numerous glaciers, resembling probably those of Iceland, have been described by Captain King and Mr Darwin. Sir James Clark Ross, in his antarctic voyage, has described and represented by admirable views the stupendous icy barriers which fringe the coast of the inhospitable southern continent.

After reviewing the descriptions of glaciers in all regions of the world, we recur to those of the Alps as presenting all the characteristic features of glaciers in perfect development, and under circumstances the most convenient for study.

General Phenomena of Alpine Glaciers.—The manner in which a glacier protrudes itself into a valley, far below the level of perpetual snow, has been already mentioned. The inference being obvious, that since it is continually melting (during summer) in all its parts, yet retains its general form and place, the waste below must be supplied by the continual advance of the glacier forwards and downwards, we shall consider in the meantime the *motion of the glacier* as an established fact to which we shall afterwards devote a separate and special discussion. It very frequently happens that the termination of the greater glaciers takes place in an alluvial flat in the bottom of a large alpine valley (as in the glaciers of the Mer de Glace, Brenva, Rhone, Lower Aar, and those of Grindelwald). From a vault in the green-blue ice, more or less perfectly formed each summer, the torrent issues, which represents the natural drainage of the valley, derived partly from land springs, partly from the fusion of the ice. That of the Arveiron, near Chamouni, is perhaps the best known, but almost every glacier possesses such a vault.

Most usually the glacier terminates amidst a wilderness of stones borne down upon its surface and deposited by its fusion. Sometimes these blocks are heaped up in mounds called *moraines*, which, when in front of the lower end of a glacier, are called its *terminal moraines*, and mark in a characteristic and certain manner the greatest limit of extension which the glacier has at any one time attained. Sometimes a glacier is seen to have withdrawn very far within its old limits, leaving a prodigious barren waste of stones in advance of it, which, being devoid of soil, nourishes not one blade of grass. At other times the glacier pushes forward its margin beyond the limit which it has ever reached (at least within the memory of man), tears up the ground with its icy ploughshare, and shoves forward the yielding turf in wrinkled folds, uprooting trees, moving vast rocks, and scattering the walls of dwelling houses in fragments before its irresistible onward march.[3]

The lower end of a glacier is usually steep; sometimes with a dome-shaped unbroken outline, more frequently broken up by intersecting cracks into prismatic masses which the continued action of the sun and rain sharpen into pyramids, often assuming (as in the glacier of Bossons at Chamouni) grotesque or beautiful forms.

The united or crevassed condition of the glacier generally depends almost entirely on the slope of its bed. If it incline rapidly, numerous transverse fissures are formed from the imperfect yielding of the ice during its forced descent along its uneven channel. These cracks often extend for hundreds of yards, and may be hundreds of feet in depth; but their greatest depth is not accurately known, since they are rarely quite vertical. In many cases, however, the crevasses are comparatively few in number, and the glacier may be readily traversed in all directions. This is especially the case if a glacier of considerable dimensions meets with any contraction in its course. The ice is embayed and compressed, and its slope lessens, just as in the case of a river when it nears a similar contraction preceding a fall. Such level and generally traversable spaces may be found about the middle regions of the Mer de Glace, the lower glacier of Grindelwald, the lower glacier of the Aar, and in many other cases. The last named glacier is perhaps the most remarkably even and accessible of any in Switzerland. The slope of its surface is in many places only 3°. The Pasterzen glacier in Carinthia is even less inclined. It is in such portions of a glacier that we commonly find *internal cascades*, or "moulins." These arise from the superficial water of a glacier being collected into a considerable mass by a long course over its unbroken surface, and then precipitated with violence into the first fissure it meets with. The descending cascade keeps open its channel, which finally loses the form of a fissure, presenting that of an open shaft, often of immense depth.

Nearly connected in their origin with the internal cascades are the *gravel cones*, occasionally seen on the surface of glaciers, which appear to be formed in this way:—a considerable amount of earthy matter derived by the superficial water-runs from the *moraine*, accumulates in heaps in the inequalities of the ice, or at the bottom of the "moulins." As the glacier surface wastes by the action of the sun and rain, these heaps are brought to the surface, or rather the general surface is depressed to their level. If the earthy mass be considerable the ice beneath is protected from the radiation of the sun and from the violent washing of the rain; it at length protrudes above the general level of the glacier, and finally forms a cone which *appears* to be entirely composed of gravel, but is in fact ice at the heart, with merely a protecting cover of earthy matter. These singular cones are very well seen on the glacier of the Aar, but on most others they are comparatively rare.

The similar protective action of large stones detached from the moraines and lying on the surface of the ice often produces the striking phenomenon of *glacier tables.* Stones of any considerable size almost invariably stand upon a slightly elevated pillar of ice; but when they are broad and flat they occasionally attain a height of 6 and even of 12 feet above the general level. A striking instance has been described and drawn by Professor Forbes, in his *Travels in the Alps of Savoy.*

To this peculiar tendency of glaciers *apparently* to elevate heavy and opaque bodies above their surface—*in reality* to have their surface depressed beneath them—is no doubt mainly owing to the striking, and at first sight perplexing, fact, that stones or dirt are scarcely ever seen imbedded in the massive ice of glaciers. The Swiss peasants attribute to them an intrinsic power of rejecting impurities. The fact is, that year by year, and month by month, fresh thicknesses of virgin ice become revealed by the fusion of the surface. That ice, formed in the highest mountain hollows, never was or could be impure. The rocks and earth have fallen upon the surface since; and, by the conditions which we have mentioned, once there, there they remain. Even those blocks which fall into the crevasses are usually arrested at no great depth, and by the general lowering of the glacier-surface, soon attain its level.

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[1] *Arctic Regions*, vol. i.

[2] *Bibliothèque Universelle*, 1840.

[3] Such a sudden and disastrous increase took place in many of the glaciers of Switzerland and Savoy in 1818 (occasioning the catastrophe of the Val de Bagnes), and in those of the Bergenstift in Norway about 1740. The retreat of a glacier far within its old moraines is well exemplified in most of the glaciers of the latter country, and especially in that of Nygaard.

The superficial waste of a glacier is thus a very important phenomenon. Owing to it the body of the ice has its vertical thickness rapidly diminished during the heats of summer, and, as we have already intimated, the lower end of a glacier has its position determined by the amount of this waste. Suppose a glacier to move along its bed at the rate of 300 feet per annum, and imagine (merely for the sake of illustration) its yearly superficial waste to be 20 feet: then the thickness of the glacier will diminish by 20 feet for every 300 feet of its length, or at the rate of 360 feet per mile; so that the longitudinal section of a glacier has the form of a wedge; and however enormous its original thickness, after a certain course we must at length come to the thin end of the wedge, and *that* the more rapidly as the causes of melting increase towards the lower extremity. These causes are indeed so various that it is difficult to estimate them with accuracy. We have (1) the direct solar heat; (2) the contact of warm air; (3) the washing of rain. All these causes act on the surface, and produce the *ablation* of the surface. Besides these, the ice of the glacier wastes somewhat beneath by the contact of the soil and the washing of the inferior streams. This may be called its *subsidence.* Further, the natural slope of the rocky bed of the glacier causes any point of the surface to stand absolutely lower each day in consequence of the progressive motion. These three causes united produce the *geometrical depression* of the surface. Professor Forbes has shown how the several effects may usually be distinguished by observation.[1] During the height of summer, near the Montanvert, he found the daily average *ablation* to be 3·62 inches, the daily *subsidence* to be 1·63 inches. Seven-tenths of the geometrical depression are due therefore to the former cause, and three-tenths to the latter. This is a very large amount, and it is certain that during the colder period of the year, and whilst the glacier is covered with snow, the subsidence is not only suspended, but that the glacier recruits in thickness a portion of its waste during the season of summer and autumn. To this subject we shall again return.

One point about *moraines* we have not yet mentioned. As we ascend any considerable glacier we almost invariably observe *several* parallel trails of *debris* extending throughout its length, and not mixing with one another. These *medial moraines* may in all cases be traced to a rocky promontory where two tributary glaciers have united. The rocky masses detached by frost and rain which have rolled upon the margin of the confluent glaciers are borne along by the progress of each to the point of union. But where the icy streams unite the trails of rock do so also; and being continually retained on the surface by the causes we have mentioned, float, as it were, down the middle of the common glacier, preserving throughout the distinctive character of their origin. Four such medial moraines may readily be traced to their sources on the great glacier of Chamouni; but the grandest specimen of a medial moraine is that on the glacier of the Lower Aar, effectively represented in one of the plates in M. Agassiz' work (*Etudes sur les Glaciers*).

The middle region of the great glaciers of the Alps extends from the level of about 6000 to 8000 feet above the sea. The inclination is usually there most moderate—say from $2\frac{1}{2}°$ to 6°. But this is not invariably the case. Beyond 8000 feet we reach the snow line. The snow line is a fact as definite on the surface of a glacier as on that of a mountain, only in the former case it occurs at a somewhat lower level. It cannot be too distinctly understood that the fresh snow annually disappears from the glacier proper. Where it ceases entirely to melt, it of course becomes *incorporated* with the glacier. We have therefore arrived at the region where the glacier *forms;* everywhere below it only *wastes.* This snowy region of the glacier is called in French *névé;* in German, *firn.* As we ascend the glacier it passes gradually from the state of ice to the state of snow. The superficial layers are more snowy and white, in fact nearly pure snow; the deeper ones have more colour and consistence, and break on the large scale into vast fragments, which at Chamouni are called *seracs.* The *névé* moves, as the glacier proper does, and it is fissured by the inequalities of the ground over which it passes. These fissures are less regular than those of the lower glacier. They are often much wider, in fact of stupendous dimensions, and being often covered with treacherous snowy roofs, constitute one of the chief dangers of glacier travelling. The constitution of the *névé* may be well studied on the Glacier du Géant, a tributary of the Mer de Glace.

The mountain-clefts in which large glaciers lie, usually expand in their higher portions (in conformity with the ordinary structure of valleys) into extensive basins in which snow is perpetual, and which therefore contain the *névé*, the true origin and material of the glacier, which is literally the overflow of these snowy reservoirs. The amount of overflow, or the discharge of the glacier—upon which depends the extent of its prolongation into the lower valleys—depends in its turn on the extent of the *névé* or collecting reservoir. Glaciers with small reservoirs, of necessity perish soon. Their thickness is small, and consequently the wedge of the glacier soon thins out. Such glaciers are common in confined clefts of the higher mountains. Being destitute of reservoirs, they soon terminate abruptly. Such are the *glaciers of the second order* described by De Saussure. They are exceedingly numerous in all glacier-bearing chains of mountains, but from their comparative smallness and inaccessibility, they usually attract but little attention. Their slope is often very great—from 20° to 40°.

Structure of Glacier Ice, and Dirt Bands.—The ice of the glacier proper has a very peculiar structure, quite distinct from the stratification of the snow on the *névé* (the relics of its mode of deposit), and one which requires special notice. When we examine the appearance of the ice in the wall of an ordinary crevasse (especially if it be tolerably near the side of the glacier) we are struck with the beautiful *vertically laminated structure* which commonly it presents, resembling delicately-veined marble, in shades varying from bluish-green, through green, to white. It sometimes resembles the marble called in Italy *cipollino.* When we trace the direction of the planes constituting the laminated structure, by observing them on the surface of the glacier (where they are usually well seen after rain, or in the channels of superficial water-runs), we find that where best developed (or not very far from the sides of the glacier) these laminæ are nearly parallel to the sides, but rather incline from the shore to the centre of the ice stream as we follow the declivity of the glacier.

The general *out-crop* of the veined structure may best be seized at a glance by means of a correlative phenomenon thus described by Professor Forbes, who first observed it:—" On the evening of the 24th July (1842), the day following my descent from the Col du Géant, I walked up the hill of Charmoz to a height of 600 or 700 feet above the Montanvert, or 1000 feet above the level of the glacier. The tints of sunset were cast in a glorious manner over the distant mountains, whilst the glacier was thrown into comparative shadow. This condition of half-illumination is far more proper for distinguishing feeble shades of colour on a very white surface like that of a glacier than the broad day. Accordingly, whilst revolving in my mind, during this evening's stroll, the singular problems of the ice world, my eye was caught by a very peculiar appearance of the surface of the ice, which I was certain that I now saw for the first time. It consisted in a series of nearly hyperbolic brownish bands on the glacier, the curves pointing downwards, and the two branches mingling indiscriminately with the (lateral) moraines, presenting an appearance of waves some hundred feet apart, and having opposite to the Montanvert the form which I have attempted to show upon the map,[1] where they are represented in the exact figure and number in which they occur. . . . . . . I was satisfied, from the general knowledge which I then had of the 'veined structure' of the ice, that these coloured bands probably followed that direction."[2] Farther examination confirmed this conjecture, and showed that these superficial discolorations in the form of excessively elongated hyperbolas are due to the recurrence (at intervals of some hundred feet along the course of the glacier) of portions of ice in which the veined structure is more energetically developed than elsewhere, and where, by the decomposition of the softer laminæ, portions of sand and dirt become entangled in the superficial ice, and give rise to the phenomena of *dirt bands*, which thus at a distance display (though in a manner requiring some attention to discover) the exact course of this singular structure on the surface of the glacier. The annexed figure, No. 1, displays the superficial form of the dirt bands, and the course of the structural laminæ projected horizontally. No. 2 shows an ideal transverse section of the glacier; and No. 3 another vertical section parallel to its length. These three sections in rectangular planes will serve to give a correct idea of the course of this remarkable structure within the ice, but a more popular conception will be formed of it from the imaginary sections of a canal-shaped glacier in the annexed woodcut, No. 4. The structure of the compound glacier, originally double, becomes gradually single; and the *frontal dip* of the laminæ at the loop of the horizontal curves which in the upper region of the glacier is nearly vertical, gradually slopes forwards until at the lower termination it has a very slight dip inwards, or indeed may be reversed and fall outwards and forwards. The general form of a structural lamina of a glacier rudely resembles that of a spoon.

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[1] Eleventh Letter on Glaciers. *Ed. Phil. Journal*, 1846. Observations of the ablation of the ice have also been made by MM. Martins and Agassiz. The amount, of course, depends materially on the elevation and exposure of the glacier as well as on the weather and season.

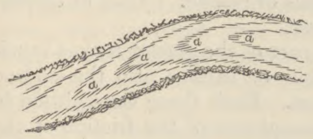

Fig. 1.

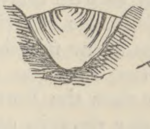

Fig. 2.

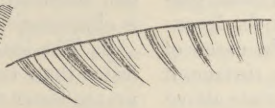

Fig. 3.

This structure and the accompanying dirt bands have been recognized by different observers in almost all glaciers, including those of Norway and of India. The interval between the dirt bands has been shown in the case of the Mer de Glace (and therefore probably in other cases) to coincide with annual rate of progression, and in the higher parts of the glacier (towards the *névé*) to be accompanied by wrinkles or inequalities of the surface which are well marked by the snow lying in them during the period of its partial disappearance.[3]

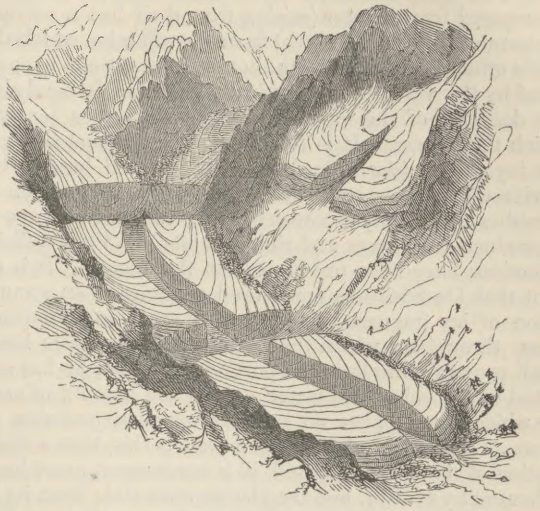

Fig. 4.

The Motion of Glaciers, and its causes.—The most characteristic and remarkable feature of glaciers is their motion downwards from the *névé* towards the lower valley. The explanation of it is by far the most important application of mechanical physics connected with the subject.

Obvious as the fact itself must appear by what has been already stated, manifest confusion has obtained in the minds of intelligent persons regarding it. Thus Ebel, in his well-known Swiss guide-book, affirms the motion of the glaciers of Chamouni to be 14 feet, and those of Grindelwald 25 feet in a year; quantities which, if they have any meaning, must refer to the *apparent* advance of the lower termination of those glaciers into the valley, which therefore only indicate the difference of the real motion, and of the waste in any particular season, and which may become *null*, or even *negative*, if the summer be more than usually warm. The peasants, however —who are inevitably made aware of the progressive motion of the ice by observing the progressive advance of conspicuous blocks on its surface—commonly ascribe to the glaciers the more correct measure of several hundred feet per annum.

M. Hugi, of Solcure, measured, with some accuracy, year by year, the progress of a conspicuous block on the glacier of the Aar, which he found to be 2200 feet in nine years, or about 240 feet per annum.[4] M. Agassiz continued some of these annual measures, but only in a rough way by causing his guides to reckon the distance of a block on the moraine by lengths of a pole or rod from a fixed rock some thousand feet off. These measures appear not to have been altogether trustworthy.

The principal theories to account for the progressive motion of glaciers which were prevalent previous to 1842, may be briefly characterized as De Saussure's and De Charpentier's, though each had been maintained in times long antecedent by the earlier Swiss writers. The first may for brevity be called the *gravitation* theory, the latter the *dilatation* theory. Both suppose that the motion of the ice takes place by its sliding bodily over its rocky bed, but they differ as to the force which urges it over the obstacles opposed by friction and the irregularities of the surface on which it moves.

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[1] Map of the Mer de Glace of Chamouni, &c., in *Professor Forbes's Travels in the Alps*.

[2] *Travels in the Alps of Savoy, &c.*, 2d edit., p. 162.

[3] Fifth Letter on Glaciers. *Edin. Phil. Journal*, 1844; and *Travels in the Alps*, 2d edit.

[4] Agassiz, *Etudes sur les Glaciers*, p. 150.

The following quotation from De Saussure explains his views with his usual precision:—"These frozen masses, carried along by the slope of the bed on which they rest, disengaged by the water (arising from their fusion owing to the natural heat of the earth) from the adhesion which they might otherwise contract to the bottom—sometimes even elevated by the water—must gradually slide and descend along the declivity of the valleys or mountain slopes (*croupes*) which they cover. It is this slow but continual sliding of the icy masses (*des glaces*) on their inclined bases which carries them down into the lower valleys, and which replenishes continually the stock of ice in valleys warm enough to produce large trees and rich harvests."[1] Very sufficient objections have been urged against this theory. It is evident that De Saussure considered a glacier as an accumulation of icy fragments, instead of a great and continuous mass, throughout which the fissures and *crevasses* bear a small proportion to the solid portion; and that he has attributed to the subglacial water a kind and amount of action for which there exists no sufficient or even probable evidence. The main ojection, however, is this, that a sliding motion of the kind supposed, if it commence, must be accelerated by gravity, and the glacier must slide from its bed in an avalanche. The small slope of most glacier-valleys, and the extreme irregularity of their bounding walls, are also great objections to this hypothesis.

The Dilatation theory ingeniously meets the difficulty of the want of a sufficient moving power to drag or shove a glacier over its bed, by calling in the well-known force with which water expands on its conversion into ice. The glacier being traversed by innumerable capillary fissures, and being in summer saturated with water in all its parts, it was natural to invoke the freezing action of the night to convert this water into ice, and by the amount of its expansion to urge the glacier onwards in the direction of its greatest slope. In answer to this it is sufficient to observe, in the first place, that during the height of summer the portions of those glaciers which move fastest are never reduced below the freezing point, and that even in the most favourable cases of nocturnal radiation producing congelation at the surface, it cannot (by well-known laws of conduction) penetrate above a few inches into the interior of the glacier. Again, the ascertained laws of glacier motion are (as will be immediately seen) entirely adverse to this theory, as it is always accelerated by hot weather and retarded by cold, yet does not cease even in the depths of winter.[2]

It is singular how slow observers were to perceive the importance to the solution of the problem of glacier motion of ascertaining with geometrical precision the amount of motion of the ice, not only from year to year, but from day to day, whether constant or variable at the same point, whether continuous or by starts; if variable, on what circumstances it depended, and in what manner it was affected at different points of the length and breadth of a glacier.

This method of studying the question was taken up by Professor Forbes of Edinburgh. His observations were commenced on the Mer de Glace of Chamouni, in June 1842. Between the 26th and 27th of that month the motion of the ice opposite a point called the "Angle" was found, by means of a theodolite, to be 16·5 inches in 26 hours; between the 27th and 28th, 17·4 inches in 25½ hours; and from about 6 A.M. to 6 P.M. on the 28th the motion was 9·5 inches, or 17·5 inches in 24 hours; whilst even the proportional motion during *an hour and a half* was observed. No doubt could therefore remain that the motion of the ice is *continuous* and tolerably uniform—in short, that it does not move by *jerks*. He also ascertained about the same time that the motion of the ice is greatest towards the centre of a glacier and slower at the sides, contrary to an opinion then maintained on high authority. He next found that the rate of motion varied at different points of the length of the same glacier, being on the whole greatest where the inclination of its surface is greatest. As the season advanced, he observed notable changes in the rate of motion of the same part of the ice, and connected it by a very striking direct relation with the temperature of the air. These facts were established during the summer of 1842, and promptly published. By means of occasional observations during the following winter and spring by his guide, Auguste Balmat of Chamouni, and by a more full comparison of the entire motion of a glacier for 12 months with its motion during the hot season of the year, another generally received error was rectified: the motion of the glacier continues even in winter, and it has a very perceptible ratio to the summer motion. Last of all, it was found that the *surface* of a glacier moves faster than the ice nearer the bottom or bed.[3]

These and some minor laws of motion are undoubted expressions of the way in which glaciers move; and having been successively confirmed by succeeding observers, seem to admit of but one expression in the form of an approximate theory, and it is that given to them by Professor Forbes: "A glacier is an imperfect fluid or a viscous body, which is urged down slopes of a certain inclination by the mutual pressure of its parts."[4] The analogy subsisting between the motion of a glacier and that of a river (which *is* a viscous fluid;—were it not so, its motion would be widely different) will be best perceived by stating more precisely its laws of motion in order.

1. Each portion of a glacier moves, not indeed with a constant velocity, but in a *continuous* manner, and not by sudden subsidences with intervals of repose. This, of course, is characteristic also of a river.

2. The ice in the middle part of the glacier moves much faster than that near the sides or banks; also the surface moves faster than the bottom. Both these facts obtain in the motion of a river in consequence of the friction of the fluid on its banks, and in consequence also of that internal friction of the fluid which constitutes its viscosity.

Thus, at four stations of the Mer de Glace, distant respectively from the west shore of the glacier
100 230 305 365 yds.,
the relative velocities were...1·000 1·332 1·356 1·367.

3. The variation of velocity (as in a river) is most rapid near the sides, whilst the middle parts move nearly uniformly. This and the preceding laws are also fully brought out by the subsequent experiments of M. Agassiz on the glacier of the Aar, and of MM. Schlagintweit on the Pasterzen glacier.[5]

4. The variation of velocity of a glacier from the sides to the middle varies nearly in proportion to the absolute velocity of the glacier; whether that absolute velocity change in the same place in consequence of change of season, or between one point and another of the length of the same glacier, depending on its declivity. (See (5.) and (6.) below.) These facts, clearly brought out in Professor Forbes's observations of 1842, present a striking analogy to the phenomena of rivers, as observed by Dubuat.[6]

5. The glacier, like a stream, has its pools and its rapids. Where it is embayed by rocks it accumulates, its declivity increases, and its velocity at the same time. When it passes

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[1] *Voyages dans les Alps*, § 535.

[2] The fullest exposition of the Dilatation Theory is to be found in De Charpentier, *Essai sur les Glaciers* (1841), and Agassiz, *Etudes sur les Glaciers* (1840).

[3] Eleventh Letter. *Edin. Phil. Journal*, 1846.

[4] *Travels in the Alps*, p. 365.

[5] See Mousson, *Gletscher der Jetzt-zeit*, p. 126.

[6] *Traité d'Hydraulique*, arts, 37, 49, 65.

down a steep, issuing by a narrow outlet, its velocity increases. Thus the approximate declivities of the inferior, middle, and superior region of the Mer de Glace (taken in
the direction of its length) are ....15° 4½° 8°
and the relative velocities are as the numbers............................ 1·398 ·574 ·925[1]

6. A fact not less important than any of the preceding, and equally well-established, not only by the observations of Professor Forbes, but by those of succeeding experimenters, is this: that increased temperature of the air favours the motion of the ice; and generally whatever tends to increase the proportion of the watery to the solid constituents of a glacier, as mild rains, and especially the thawing of the superficial snow in spring. The velocity does not, however, descend to nothing even in the depth of winter. Indeed, in the lower and most accessible portions of the Mer de Glace (or Glacier des Bois) and the Glacier des Bossons, the ratio of the winter to the summer motion is almost exactly 1 : 2. On endeavouring to establish a relation between the velocity of the glacier and the temperature of the ambient air, we find that these two quantities diminish together in an almost regular manner down to the freezing-point; below which the velocity seems to remain constant.[2]

The circumstances of motion detailed in the six preceding propositions appear to be reconcileable with the assumption of what may be called the *Viscous* or *Plastic Theory* of glacier motion, and with that alone.

Plastic Nature of Glacier Ice.—Notwithstanding the apparent paradox of calling a vast mass of coherent ice a *semifluid* body, there is something about a glacier which almost inevitably conveys to the mind the idea of a *stream.* This may be traced in the descriptions of unscientific tourists, of poets, and of some of those who have addressed themselves more seriously to the question of the real nature of these bodies. To the latter class of observers belong Captain Basil Hall and Monseigneur Rendu, bishop of Annecy, who had much more than hinted at the possibility of a true mechanical connection between the descent of a glacier and that of a mountain torrent, or of a stream of lava. But until the actual conditions of motion were reduced to rule, it was impossible to know how far the analogy was real or apparent.

The viscous theory of glaciers, as deduced from observation by Professor Forbes, though now very generally accepted, had to struggle with numerous and strongly-urged objections; of which the oftenest repeated was, that ice is by its nature a brittle solid, and not sensibly possessed of any viscous or plastic quality. In answer to this, it may be urged that the qualities of solid bodies of vast size, and acted on by stupendous and long-continued forces, cannot be estimated from experiments on a small scale, especially if short and violent; that sealing-wax, pitch, and other similar bodies mould themselves, *with time*, to the surfaces on which they lie, even at atmospheric temperatures, and whilst they maintain, at the same time, the quality of excessive brittleness under a blow or a rapid change of form; that even ice does not pass at once, and *per saltum*, from the solid to the liquid state, but absorbs its latent heat throughout a certain small range of temperature (between 28°·4 and 32° of Fahrenheit), which is precisely that to which the ice of glaciers is actually exposed; that, after all, a glacier is not a crystalline solid, like ice, tranquilly frozen in a mould, but possesses a peculiar fissured and laminated structure, through which water enters (at least for a great part of the year) into its intrinsic composition. But, waiving the inferences from all these facts, the main argument in favour of the view now maintained is this, that admitting the preceding propositions as to the velocity of its parts (which no one now contests), the quasi-fluid or viscous motion of the ice of glaciers is not a theory but a FACT. A substance which is seen to pour itself out of a large basin through a narrow outlet without losing its continuity,—the different parts of which, from top to bottom, and from side to centre, possess distinct, though related velocities, which moves over slopes inconsistent with the friction between its surface and the ground on which it rests—which surmounts obstacles, and, even if cleft into two streams by a projecting rock, instead of being thereby anchored as a solid would necessarily be, reunites its streams below, and retains no trace of the fissure, leaving the rock an islet in the icy flood—a substance which moves in such a fashion cannot, in any true sense of the word, be termed a rigid solid, but must be granted to be ductile, viscous, plastic, or semifluid, or to possess qualities represented by any of these terms which we may choose to adopt as least shocking to our ordinary conception of the brittleness of ice.[3]

Origin of the Veined Structure of Ice.—Any mechanical theory of glaciers must be more or less imperfect which does not explain the remarkable veined or ribboned structure of the ice, which, with its peculiar course through the interior of the glacier, has been described at page 637; In applying the theory of *quasi-fluid* motion to explain this structure, two great difficulties are experienced; first, our confessed ignorance of the *modus operandi* of those molecular forces which induce pervading structures of this kind; secondly, our imperfect acquaintance with the laws of motion of semifluids under the action of gravity, even in simple cases. Nevertheless it seems possible to prove, partly from admitted mechanical principles, partly from direct experiments, that the tendency of the motion is to produce such a structure.

The fundamental idea is this, that the veined or ribboned structure of the ice is the result of internal forces, by which one portion of ice is dragged past another in a manner so gradual as not necessarily to produce large fissures in the ice, and the consequent sliding of one detached part over another, but rather the effect of a *general bruise* over a considerable space of the yielding body. According to this view, the delicate veins seen in the glacier, often less than a quarter of an inch wide, have their course *parallel* to the direction of the sliding effort of one portion of the ice over another. Amongst other proofs of this fundamental conception that the veined structure is the external symbol of this forced internal motion of a body comparatively solid, we may mention one very striking instance recorded by Professor Forbes, as observed on the glacier of La Brenva, on the south side of Mont Blanc, subsequently to the publication of his principal work on the subject. In this case the ice of the glacier, forcibly pressed against the naked rocky face of an opposing hill is turned into a new direction; and in thus shoving and squeezing past a prominence of rock, he observed developed in the ice a "veined structure" so beautiful, that "it was impossible to resist the wish to carry off slabs, and to perpetuate it by hand specimens." This perfectly developed structure was visible opposite the promontory which held the glacier in check, and past which it struggled, leaving a portion of its ice completely embayed in a recess of the shore behind it. Starting from this point as an origin, the veined laminæ extended backwards and upwards into the glacier, but did not spread laterally into the embayed ice. They could, however, be traced from the shore to some distance from the promontory into the icy mass. The direction of lamination exactly coincided with that in which the ice *must* have moved if it was shoved past the promontory at all. That it *did* so move was made the subject of direct proof, by fixing two marks on the ice opposite the promontory, one on the nearer, the other on the farther side of the belt of ice which had the lamination best developed. The first mark was 50 feet from the shore, and moved at the rate of 4·9 inches daily; the other mark was 170 feet farther off, and moved almost *three times* faster, or 14·2 inches daily. Throughout this breadth of 170 feet there was not a single longitudinal crevasse which might have facilitated the differential motion. A parallelogram of compact ice, only 170 feet wide, was therefore moving in such a manner, that, whilst one of its sides advanced only a *foot*, the other advanced a *yard*. No solid body, at least no rigid solid body, can advance in such a manner; it is therefore plastic, and the veined structure is unquestionably the result of the struggle between the rigidity of the ice and the *quasi-fluid* character of the motion impressed upon it. That it is so is evident not only from the direction of the laminæ, but from their becoming distinct exactly in proportion to their nearness to the point where the bruise is necessarily strongest.[1]

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[1] The absolute velocity of a glacier depends upon so many circumstances besides its declivity that this law must not be sought to be verified, except *under like conditions.* The breadth and depth of a glacier (as of a river) no doubt materially affect its rate of motion, and its elevation has a not less important influence. Small lofty glaciers of the second order move slowly over steep inclinations. See *Phil. Trans.*, 1846, p. 177.

[2] *Phil. Trans.*, 1846, p. 191; and *Edin. Phil. Journal*, 1847.

[3] For a fuller reply to the objections which have been urged against the theory of the plasticity of glaciers, see *Phil. Trans.*, 1846, particularly pp. 162, &c. The confirmatory observations of MM. Agassiz and Schlagintweit on other glaciers, and their adoption of views virtually the same with those of Professor Forbes, have proved convincing to a majority of those who at first rejected a theory apparently opposed to commonly received notions. See Mousson, *Die Gletscher der Jetzt-zeit,* who says, p. 162, speaking of the plastic theory, "Er steht noch heute unangefochten da."

This observation sufficiently illustrates the general fact, that the veined structure appears most vividly in a direction parallel to the sides of glaciers, being caused by the friction of the rocky shore compelling a forced molecular separation of the middle parts from the side parts of the glacier.

But we have seen (p. 637) that the direction of the horizontal section of these laminæ gradually inclines inwards, so as to form loops on the surface of the glacier. The portion of these loops next to the shore, which is at first parallel to the shore, but which gradually inclines towards the axis or middle of the glacier, is conceived to be owing to the differential motion of the parts retarded by lateral friction, as in the case of the glacier of La Brenva just mentioned. But, moreover, the opposing resistance of the shore-ice immediately in front will give a tendency to molecular dislocation in a direction sloping towards the middle of the glacier where the current moves fastest, in consequence of the friction being less. When we arrive at a distance from the shore comparable to the *depth* of the ice, then the friction due to the *bed* of the glacier communicated through its plastic layers to the surface combines with the lateral friction in determining the lamination in a direction at once upwards and towards the middle; and when we reach the middle region of the ice the lamination takes place entirely in the vertical plane, completing the *spoon-shaped* arrangement of those surfaces of dislocation, of which the form has already been illustrated at p. 637. As, however, this differential motion in the vertical plane is not at first readily admitted (and has been overlooked by writers on hydraulics, though it must equally take place in *very* sluggish waters), we shall here introduce a figure in illustration of it. The series of particles, m_1, m_2, &c., are supposed to be acted on by a force partaking of the nature of hydrostatic pressure, derived from the ice at a higher level in the rear of the point in question. Each particle is ready to move in the direction in which the effective pressure is greatest. Near the bottom, at m_6, the frontal resistance arising from the lower ice in front and retarded by friction, is very great, but so also is the pressure of the superincumbent ice. The motion of the particle will take place under the joint action of these two resisting forces, as shown by the direction of the arrow. As we approach the surface, the latter of the two resistances (the weight of the glacier ice) is always diminishing, and bears a less and less proportion to the former. Near the surface, therefore, the tendency to slide will be more and more directly vertical, as the arrows indicate.[2] This consideration seems adequate to explain the remarkable phenomenon of the *frontal dip*, with its gradual fall as we approach the extremity of the glacier, where, of course, the horizontal resistance from the ice in advance becomes nothing.

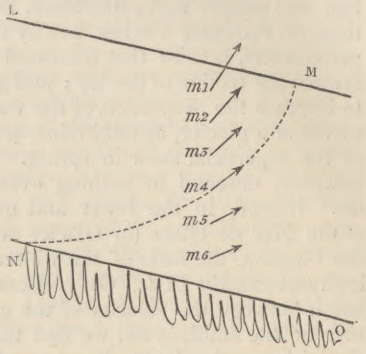

Fig. 5.

It has been deduced from M. Agassiz' observations on the glacier of the Aar (which is remarkable for the uniformity of its section, and its uniform but small slope), that the ice does actually undergo a compression from back to front as it forces its way down the valley; and as ice is not sensibly compressible, this diminution of the horizontal area, which any given section of the glacier (between two vertical transverse planes) exhibits in successive years, can only be explained by admitting that the ice accumulates in a vertical direction.[3]

This fact also corresponds with the convex surface which the slowly-moving glaciers present. Such a surface is seen in the precisely analogous case of viscous bodies, such as pitch, and in clayey land-slips.

It also satisfactorily accounts for the otherwise mysterious way in which, during winter, the glacier recovers the level which it had lost by ablation during summer (page 636, col. 1). When snow covers the whole surface the motion of all points of the length of a glacier approaches equality. The higher parts move relatively faster than the lower, tend, as it were, to overtake them, and thus to squeeze the yielding mass in a vertical direction. (J. D. F.)

GLACIS, in *Fortification*. See FORTIFICATION.

GLADBACH, or MÖNCHEN-GLADBACH, a flourishing manufacturing town of Rhenish Prussia, province of Düsseldorf, 16 miles west of the town of that name, on the small river Niers. Its chief manufactures are linen, cotton, and silk goods. Pop. about 5000.

GLADIATORS, in *Roman Antiquity*, men who fought publicly with *gladii* or swords in the forum, circus, or amphitheatre for the amusement of the populace. Gladiatorial fights had their origin in the ancient practice of sacrificing prisoners of war at the tomb of an illustrious chief or warrior who fell in battle. Thus Achilles (*Iliad*, book xxiii.) is described as sacrificing twelve Trojan youths to the manes of Patroclus; and in the *Æneid*, the hero of that poem is mentioned as sending captives to Evander to sacrifice at the funeral pyre of his son Pallas. This custom was at a later period so far modified that, instead of being offered up like sheep, captives were made to fight around the funeral pyre, and the victors in these combats were allowed to escape with life. Though these fights were originally limited to public funerals, yet it afterwards became the fashion at Rome for every private individual of any consequence to leave by will a certain sum of money for a gladiatorial show at his funeral. As a natural result of this system, such exhibitions soon became widely diffused, and were regularly organized for all public festivals, especially such as were set on foot by the ædiles or other magistrates who had any object to gain by courting the favour of the people. The first gladiators are said to have been exhibited in Rome in the year 264 B.C. by Marcus and Decimus Brutus, at the funeral of their father. On this occasion only three pairs of combatants fought; but the sport became rapidly popular and fashionable, and we find Julius Cæsar in his ædileship exhibiting 320 couples. Under the empire, the passion for gladiatorial shows amounted to a madness. Titus organized one which lasted for 100 days; and Trajan, in celebrating his triumph over Decebalus, exhibited no fewer than 5000 pairs of combatants. Though the loss of human life in these games of murder was fearful, and though their demoralizing influence on the popular mind was undeniable, yet many of the leading men of Rome who had no interest in upholding them, commended them strongly as diffusing among the people a warlike spirit and a contempt of death. The evil became at length so crying that Constantine issued an edict abolishing the gladiatorial shows, which, however, continued a favourite pastime till the reign of Honorius. The gladiatorial system was often fraught with the greatest danger to Rome. One of the most memorable results of this system was the rebellion of Spartacus, a gladiator of Capua, who, with an army of desperadoes like himself, overran Italy in the year 76 B.C., defeated several times the forces sent against him, kept his country in unceasing terror for three years, and was at last defeated and slain by M. Crassus, after performing prodigies of valour.

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[1] Twelfth Letter on Glaciers. *Edin. Phil. Journal*, 1847, where the details of the observation are illustrated by a figure.

[2] See Seventh Letter on Glaciers. *Edin. Phil. Journal*, 1844.

[3] Ninth Letter on Glaciers. *Edin. Phil. Journal*, 1845.

Gladiators were either prisoners of war, condemned malefactors, or volunteers who fought for pay. Malefactors were said to fight either *ad gladium*, in which case they were to be killed within a year, or *ad ludum*, in which, if they survived, they were allowed to claim their discharge at the end of three years. Freemen who became gladiators were said to be *auctorati;* and on entering the service were obliged to take a very stringent oath to their masters. They commonly belonged to the very lowest dregs of the people; but under the empire men of patrician rank often appeared in the arena. This practice was latterly interdicted by Severus. The schools in which the gladiators were trained were termed *ludi*, and the persons who trained them were called *lanistæ*. Sometimes they were the personal property of the lanista, who let them out at a fixed price. Sometimes they belonged to citizens, and were merely trained by the lanista. The care and expense bestowed on their training, diet, and general management were extraordinary.

When a gladiatorial fight had been arranged, the combatants entered the arena and began a mock-fight, called *prælusio*. This done, the trumpets sounded, and the sport became earnest. When a gladiator was wounded, the spectators cried out *habet*, and the wounded man lowered his weapons in token of submission. If he had fought well, the audience on whose will his fate depended depressed their thumbs, to indicate that they wished his life to be spared. If, on the other hand, he had displayed neither courage nor address, they held up their thumbs, and the victor immediately passed his sword through the body of his fallen foe. Palms were awarded to the conqueror. Gladiators on retiring from the service were presented with a wooden sword (*rudis*); whence Horace, in humorous allusion to his advancing years, talks of himself as a gladiator "jam rude donatus." They resumed that rank of life which they had quitted on entering the service. Thus a freeman emerged into his ancient liberty, and a slave into his old servitude. Any one, however, who had once been a gladiator was considered to have degraded himself, and was not allowed to aspire to patrician honours.

There were various classes of gladiators, called according to their arms or modes of fighting. Of these may be mentioned the Andabatæ, who fought blindfold, and often afforded great mirth to the spectators; the Catervarii, who fought in troops and not in pairs; the Essedarii, who fought from chariots like the ancient Britons; the Hoplomachi, who fought armed cap-à-pie; the Laqueatores, who tried to strangle each other with nooses; the Mirmillones, who fought with the weapons of ancient Gaul; the Samnites, who used the arms of the old inhabitants of Samnium, especially the oblong scutum; the Thraces or Threces, armed with a dagger and a round buckler, who were generally pitted against Mirmillones; and the Retiarii, whose chief weapon was the net (*rete*), from which they took their name. The Retiarius had no defensive armour of any kind, and was lightly clad, that nothing might interfere with his speed of foot, on which his life depended. His object was to throw his net over the head of his heavily-armed antagonist, whom, if he succeeded in entangling him, he slew with the three-pointed lance (*tridens* or *fuscina*), which was the only weapon he was allowed to carry besides his net. If he missed his aim, he immediately took to flight, and continued running until he had prepared his net for another throw. The pursuers of the Retiarii were called Secutores.

Gladiators formed admirable models for the sculptor. One of the finest pieces of ancient sculpture that have come down to us is the "Dying Gladiator" of the Capitoline Museum, on which Byron composed his memorable stanza, beginning with the lines—

> "I see before me the gladiator lie:
> He leans upon his hand—his manly brow
> Consents to death, but conquers agony," &c.
> *Ch. Harold*, Canto iv. 140.

GLADOVA or KLADOVA, a town of Servia, on the Danube. See DANUBE.

GLAMORGANSHIRE (Welsh *Gwlad Morgan*), a maritime county of South Wales, bounded on the N. by Brecknock, on the N.W. by Caermarthen, on the W. and S. by the Bristol Channel, and on the E. by the county of Monmouth. Its greatest length from east to west is about 53 miles, and its greatest breadth from north to south about 29 miles.

Glamorgan, with the exception of some flat tracts on the borders of the Bristol Channel, consists of a succession of hills and valleys, the general character of the country becoming more mountainous as we proceed inland, until on the borders of Brecknock the surface is "a sea of hills." None of the mountains rise to a great height, the most lofty—Llangeinor—being only 1859 feet. Although the mountains are not lofty, yet, owing to their fine bold forms, the scenery of this county is marked by considerable grandeur and great beauty. The lower parts of the country are richly wooded, but the timber generally is of small size.

The valleys of Glamorgan have long been famous for their great beauty, and the charming scenery they contain. The vale of Glamorgan has been called with truth the garden of Wales; and here the climate is so mild that the myrtle and many other tender plants flourish luxuriantly in the open air. The Vale of Neath has long been known to tourists as the waterfall district of South Wales; and although the finest of these are at the upper end of the valley in the county of Brecon, still the Glamorgan part of the valley can boast of some well worthy of a visit. The Swansea valley also contains some pieces of fine scenery, and is throughout marked by great beauty. Besides these, the principal valleys are the Rhymney, the Taff, the Rhondda, and the Llwchwr.

The rivers of Glamorgan are mostly unimportant streams. The chief are the Rhymney, in the vale of that name, forming the county boundary on the east; the Ogwr, which flows into the Bristol Channel at Bridgend; the Taff, which forms the important harbour of Cardiff; the Neath and the Tawe, which both discharge their waters into Swansea Bay; and the Llwchwr, which forms the county boundary on the west, and, falling into Caermarthen Bay, forms the estuary known as the Burry river, on which the thriving town of Llanelly is situated.

The chief geological feature of Glamorgan is the coal measures, which extend nearly over the whole county, and are bounded by a narrow band of millstone grit (the "Farewell Rock" of the miners), and mountain limestone, nearly coincident with the county boundary on the north. In the extreme south and south-west, the Devonian, the magnesian limestone, and the lias show themselves.

The climate is mild, and the plains on the coast, as well as the inland valleys, are very fertile. Agriculture, although better than in some of the other Welsh counties, is still in a backward state, and much remains to be done to bring it to that condition which the soil and the climate would warrant. The farms are seldom large, and the buildings but little suited to "high farming." The crops chiefly raised are wheat, beans and pease, oats, barley, vetches, turnips, and potatoes. The cattle of the county are numerous and of good quality, and great numbers of sheep and ponies are reared in the more mountainous parts.

The industry of Glamorgan is chiefly applied to its coal and iron mines, which are of immense extent; indeed the whole county may be said to be a gigantic coal and iron mine. It is to this that it owes its pre-eminence as the most important of all the Welsh counties. In the neighbourhood of Merthyr Tydvil the iron works are carried on on a scale seldom surpassed; and within a short circuit there are upwards of sixty blast furnaces, employing many thousands of workmen, some of the largest works having from 4000 to 6000 persons engaged in them. Vast quantities of coal and iron are annually exported; and Cardiff, which a few years ago was a small and unimportant town, is gradually becoming one of the most important shipping ports in the Bristol Channel, solely from the great export of minerals and its excellent docks, erected by the late Marquis of Bute, who was also lord of the manor of some of the richest mineral fields.

Besides the coal and iron, a great trade is carried on with Cornwall for the melting of tin and copper ores. The tin is used for the production of tinned iron, and the copper ore is smelted chiefly at Swansea, where there are some of the most extensive copper works in the kingdom.

Glamorgan possesses many ancient ruins of castles, and has been from remote times a district of great importance. It has also some fine cromlechs and other old British remains; and the Sarn Helen, an ancient Roman road, traverses the county. The district to the south of Swansea is called Gower, and is famed for the beauty of its coast scenery, as well as for its people, who are descendants of Flemings, planted here by Henry I., and who retain many characteristics pointing them out as a wholly distinct race from the Welsh, with whom they intermingle but little.

Glamorgan is well supplied with means of transport, for besides its ports, it has four railways and a canal, and numerous tramways.

The county is divided into 128 parishes and 10 hundreds, and is situated in the diocese of Llandaff.

In 1847, the number of day schools was 327, with 15,674 scholars. The number of Sunday schools was 381, of which 92 were Church of England, with 5908 scholars; 92 Calvinistic Methodists, with 8626 scholars; 101 Independents, with 10,188 scholars; 61 Baptists, with 5610 scholars; 21 Wesleyans, with 1709 scholars; 14 other denominations, with 1472 scholars. In the Sunday schools, the proportion per cent. in which Welsh and English were used as the language was as follows:—English, 29·7; Welsh, 34·5; both languages, 35·8. English is much used by the people, except in the remote agricultural districts.

Population.			Increase.	Per Cent.
1831		126,612	Between 1831 & 1841	35
1841		171,188	... 1841 & 1851	35
1851	Males... 120,748 Females 111,101	231,849	In 50 years	223
			Annual rate	2·38

Area in square miles, 856; in statute acres, 547,494. Pop. to a square mile, 268 persons, or 51 houses.

The county returns two members to parliament; the borough of Merthyr Tydvil, one; the Cardiff district of boroughs, one; and the Swansea district of boroughs, one. Total, five. Annual value of real property assessed to property-tax, 1850-1, L.850,440.

Principal Towns with their Population in 1851.

Aberavon*	6,567	Longhor*	821
Cardiff†	18,351	Merthyr Tydvil	63,080
Cowbridge†	1,066	Neath*	5,841
Kenfig*	433	Swansea*	31,461
Llantrisaint†	1,007		

* Contributory to Swansea parliamentary district of boroughs 45,123

† Contributory to Cardiff parliamentary district of boroughs 20,424

GLAMOUR, or GLAMER, an old term of popular superstition in Scotland, denoting a kind of magical mist believed to be raised by sorcerers, and which deluded the spectators with visions of things that had no real existence, altered the appearance of those which really did exist, and produced other effects equally wonderful. The eastern nations have a similar superstition, as we learn from the *Arabian Nights Entertainments*, and other works of oriental fiction.

GLANCE-COAL, anthracite. See COAL.

GLAND, a term applied to those organs of the body in which the process of secretion is carried on. See ANATOMY.

GLANDFORD BRIGG or BRIDGE, a market-town of England, county of Lincoln, 24 miles N. by E. of the town of that name. It is situated on the Ancholme, by means of which it carries on a considerable trade in corn, coal, and timber. It has a handsome church with a lofty tower, and a free grammar-school. Market-day Thursday. Pop. (1851) 2201.

GLANVILL, or GLANVIL, JOSEPH, was born at Plymouth in 1636. He received his education in the university of Oxford; in 1666 obtained the cure of Abbey Church at Bath; in 1678 became prebend of the church of Worcester; and died at Bath, Nov. 16, 1680, in the forty-fourth year of his age. This writer—the first who in England presented philosophical scepticism under a systematic form—deserves more marked attention than has hitherto been accorded to him; nor can we observe without surprise that Brücker has not given him any place in his *Critical History of Philosophy*. Two parties then existed in England—one of which abused the name of philosophy, in order to accredit atheism; and the other the name of religion, in order to justify superstition. Glanvil deplored this double aberration; he felt that philosophy itself required a reform, and he laboured to prepare rather than to produce it himself. It is in this light, and from this point of view, that his writings should be studied and judged. Of these, the two principal are, *The Vanity of Dogmatizing, or Confidence in Opinions, manifested in a Discourse of the shortness and uncertainty of our knowledge of its principles, with Reflections on Peripateticism, and an Apology for Philosophy*, 1661, in 8vo; and *Scepsis Scientifica, or Confessed Ignorance the Way to Science*, an essay on the vanity of dogmatizing and confident opinion, London, 1665, in 4to. The latter of these works procured him the honour of being admitted a member of the Royal Society of London. Montaigne and Charron appear to have served as his guides, and he has borrowed much from both; he reviewed the principal objects of human knowledge, and endeavoured to show, in regard to each of these, the weakness and impotence of reason. The Peripatetic doctrine, and the system of Descartes—which he appears to have especially had in view to combat—themselves furnished him with arms; and in the rapid advancement of physical science at this period, he also endeavours to discover grounds for rendering more sensible our ignorance in the study of nature. Hobbes is the frequent object of his criticism. In general he endeavours to prevent the abuse of rational speculations; and it is only in the observations to which they have led that he seeks for considerations fitted to inspire the distrust which he inculcates. His views respecting the sources of human error are presented with much perspicuity and method, often with striking novelty. The manner in which he treats the great question of causation is the more remarkable, because it appears to have opened the way to Hume in an investigation which has produced one of the greatest revolutions which philosophy has experienced in modern times. According to him, we know only that things occur, and succeed one another, not how they are produced; we see their relation of coincidence, but not the tie which connects them; and hence the relation of the effect to the cause is, as far as we are concerned, a fact, and not a veritable law. Glanvil compares dogmatism to a narrow prison in which the human mind is confined, and beyond the walls of which it cannot extend its view. The offspring of ignorance and of pride, dogmatism is, according to him, the father of error; and scepticism is called in to apply a remedy, not by employing negations as arbitrary, but by weighing with impartiality the proofs. Doctrine like this was, however, liable to be mistaken or misrepresented; and we need not wonder, therefore, that at the period when Glanvil wrote he was considered by the greater number of readers as an absolute sceptic, and treated as such. The partisans of the prevailing systems regarded with more aversion the men who provoked discussion than they did those who rejected their doctrines without examination. Hence Glanvil was very fiercely attacked; but he justified himself in his answer to one of his opponents, which is subjoined to his *Scepsis Scientifica;* and he also undertook the defence of philosophy, conceiving that this belonged of right to those who desired to bring her back to her proper and legitimate sphere. It is singular enough, however, though by no means without example, that this writer, who had not only shown, but even exaggerated, the infirmity of human reason, paid himself a strange tribute to its weakness; for, after having combated scientific dogmatism, he not only yielded to vulgar superstitions, but actually endeavoured to accredit them in his *Philosophical Considerations concerning the Existence of Sorcerers and Sorcery*, published in 1666, in 4to. The story of the pretended drum, which was said to have been heard every night in the house of an inhabitant of Wiltshire (Mr Mompesson), a story which made much noise in the year 1663, and which is supposed to have furnished Addison with the idea of his comedy of the *Drummer*, appears to have given occasion to this work. It might have been imagined that such a tale would have been treated with derision by Glanvil, and that the philosopher could have had no other object than to turn into ridicule the credulity of his country. For such a supposition, however, there seems to be little or no room; and, in point of fact, this production gave rise to a controversy which only terminated with the life of Glanvil. At his death he left a piece enitled *Sadducismus Triumphans*, which was printed in 1681, 8vo, reprinted with some additions in 1682, and translated into German in 1701. He had there collected twenty-six relations or stories of the same description as that of the *Drum*, in order to establish, by a series of facts, the opinion which he had expressed in his *Philosophical Considerations.* Glanvil supported a much more honourable cause when he undertook the defence of the Royal Society of London, under the title of *Plus Ultra, or the Progress and Advancement of Science since the time of Aristotle*, 1658, in 12mo. His object was to refute a foolish ecclesiastic who had alleged that Aristotle possessed individually more knowledge than could be found in the Royal Society, or even in all the men of the seventeenth century. By this production he drew upon himself a violent antagonist in the person of one Stubbe, a physician at Warwick; but, after an animated dispute, the doctor, by some mischance, lost his life, and his generous antagonist, in a funeral sermon which he preached on the occasion, pronounced an eulogium on his memory.

Besides the works already noticed, Glanvil wrote, *Lux Orientalis*, 1662; *Philosophia Pia, or Discourse on the Religious Character, and the Tendency of Experimental Philosophy; Essays on Several Important Subjects in Philosophy and Religion*, 1676, in 4to; *An Essay Concerning Preaching;* and *Sermons.* After his death in 1681, there were published other sermons and posthumous works in one volume 4to. The style of Glanvil is clear, easy, and animated; and to the student of the philosophy of the human mind his works are full of instruction. (J. B—E.)

GLARUS, or GLARIS, a canton of Switzerland, is bounded on the N. and N.E. by St Gall, on the E. and S. by the Grisons, and on the W. by Uri and Schwyz. Its greatest length is about 33 miles, and greatest breadth 16; and its area 280 square miles, of which little more than one-fifth is arable. It consists chiefly of the great valley of the Linth, which crosses it from S. to N.; and of the valleys of the Sernft and Klön, affluents of the Linth. The greater part of the surface is overspread with mountains, of which many are covered with perpetual snow. The principal chain, which stretches from the Haustock to the Scheibe, has an elevation of nearly 10,000 feet, and contains many glaciers; the chief summits are Dödiberg and Scheibe. From the Dödiberg an offset detaches itself from this chain, and divides the waters of the Linth from those which flow into the Reuss through the valleys of Schwyz and Uri. The elevated and extensive group of Glärnisch belongs to this offset, and rises 9400 feet above sea-level. The surface of the canton inclines generally towards the north to the shores of the Lake of Wallenstadt, and towards the low country between that lake and that of Zürich. The lakes are numerous, but less remarkable for their extent than for the magnificent scenery in their vicinity. The climate of Glarus is very severe, so that only the milder sheltered districts and deeper valleys are habitable during the whole year. Even in these the snow mostly remains till near the 1st of May. The principal rocks are conglomerate, generally under mountain limestone; but in some districts there occur vast accumulations of grauwacke. This is especially the case in the Sernftthal. Though ancient mines of copper, silver, and iron, were wrought in different places, the minerals are not now of much value. Marble, gypsum, and slate abound; and even coal in some unimportant seams. From the nature of the surface and climate but a small proportion of the canton can be cultivated with the plough; yet a good deal of fruit is raised, especially cherries. Alpine pastures necessarily occupy the greater part of the accessible surface. The most fertile district stretches through the Linththal, in which most of the corn is produced. The prevailing kind of timber is pine, which covers many of the mountains; after it the principal kinds are beech, ash, maple, and a very few oaks. The flora—ranging over an altitude commencing at 1500 feet above sea-level, and continuing to the utmost verge of vegetation—is very rich; and, considering the limits of the canton, is remarkable for its variety. The wild mammals are not very numerous, being chiefly limited to the marmot, hare, badger, fox, and chamois. Of domestic animals, about 10,000 cows and 5000 sheep are fed on the mountain slopes during the summer months, and constitute the principal part of the wealth of the district. Besides these, a great many goats are kept, but they take a wider range in search of food than the sheep and cows. The principal manufactures of Glarus include woollen, cotton, linen, and silk goods, prints, muslins, paper, writing-slates, and many wooden articles. The trade of the canton is chiefly carried on with Italy and Germany; and the principal exports are cattle, butter, cheese, skins, leather, wood, and chamois-skins. This is the seat of the peculiar manufacture of *schabzieger*, or "green cheese," which is made of the milk of goats and cows, mixed with churned milk. The curds are brought down in sacks by the peasants from their mountain chalets, each sack containing about 200 lbs., for which they receive 36 francs. This cheese owes its peculiar colour, smell, and flavour, to the blue pansy (locally called *klee*, and botanically *Trifolium melilot cærul.*), an herb grown in small inclosures beside most of the cottages, which is dried, ground to powder, and then thrown into a mill like a cider-mill, along with the curd, in the proportion of 3 lbs. of *klee* to 100 lbs. of curd. After being ground for about 2½ hours, the pulp is put into shapes, and there left to dry, when it is ready for use; but it is not considered to have attained perfection or to be fully ripe until it is one year old, though it will keep for a long time. The wholesale price of this kind of cheese is about 3½d. per lb.; and it is mostly exported to America. The principal imports of the canton are corn, wine, oil, salt, metals, glass, silks, and colonial produce. The constitution of Glarus is very democratical; and it occupies the seventh place in the Swiss Confederation. The government is in the hands of the entire male population above sixteen years of age, being about 7000, who meet annually on the first Sunday in May, in "General Assembly" (Landsgemeinde), to appoint their magistrates, &c., and accede to or reject the laws proposed by the executive body, which consists of a council of 80 members, of whom three-fourths are Protestants, and the rest Roman Catholics; both persuasions enjoying equal rights, and alternately electing the presidents of the General Assembly and Council. The executive is delegated to a landamman with three coadjutors. Both Protestant and Roman Catholic clergy are paid by the government. Taxation is very light; the state expenditure is defrayed by a poll-tax of 6d. upon every male arrived at the age of sixteen years; a property tax of 3d. upon every 100 francs (or L.4, 3s. 4d.) worth of property; and the rent of state property, customs, excise, fines, &c. On Sundays there are voluntary subscriptions for the poor; but there are no poor-laws properly so called, though any one known to have the means of contributing, being observed not to give, may be summoned before the council and compelled to contribute. One of the most remarkable of the laws is that only a son or a daughter can inherit property. Should a man die without issue, his property, if it was inherited, reverts to government; but if he had purchased the property, he can bequeath it by will. Each of the sixteen *tagwen* or communes has one or more schools, of which the masters are paid by the state at the rate of L.35 per annum. Though all instruction in these schools is gratuitous, yet parents are obliged to send their children to school. Glarus furnishes 482 men to the army, and 3615 francs to the treasury of the Swiss Confederation. The population of Glarus in 1851 was 30,213, of whom 26,281 were Protestants, and 3932 Roman Catholics; of the whole, 28,969 were citizens of the canton, 978 citizens of other cantons, and 248 foreigners. The people of Glarus are remarkable for their industry and independence of character; they are the most Swiss of all the Swiss. The chamois hunters of this canton hold the highest rank for boldness and attachment to the chase. Instruction is so general, that there is no one unable to read and write; and offences are so few that there is rarely any one in prison. In spiritual matters the Protestants are governed by a synod, and the Roman Catholics are subject to the see of Constance. Numerous ancient medals found at Mollis corroborate old traditions in proving that the Romans occupied some stations on the Lake of Wallenstadt. In 490 A.D. an Irish monk named Fridolin, who founded the convent of Seckingen on the Rhine, near Lauffenburg, exerted himself in propagating Christianity in this canton, where he built a church in honour of St Hilarius; whose name, being corrupted into Glarus or Glaris, became the appellation of the district or canton. The whole valley afterwards became the estate of the convent, and was governed by a mayor or bailiff, whose nomination in the course of time became vested in the Hapsburg family. The tyranny of these officers compelled the people of Glarus to unite themselves to the Helvetic Confederation in 1352; and in 1388 they obtained the memorable victory over the Austrians at Näfels, which secured their independence. From 1506 to 1516 the reformer Zuinglius was curate of Glarus; and the new doctrines soon spread through the canton from the valley of Sernft, where they first took root. Civil dissensions immediately sprung up on the adoption of Protestantism; these have, however, long disappeared in consequence of the judicious means used to prevent collision of parties in the administration of the government. In recent times some interesting events have transpired in this lofty district. In 1799 Suwarrow retreated before the French across the Prägel, down the Klönthal, and up the Sernftthal.

Glarus, a Swiss town, capital of the canton of the same name. It is chiefly remarkable for its secluded situation at the base of the Glärnisch and Schilt, encompassed and shut in by the Alps, whose bare and bleak precipices and peaks contrast strikingly with the milder verdure around their base. It stands on the left bank of the Linth, in a narrow part of the valley, and is a bustling town, containing 4500 inhabitants, actively engaged in the manufacture of cottons, muslins, woollen cloth, and hardwares. It contains a number of mills, and one printing press; and the parish church, an ancient Gothic edifice, is harmoniously used as a place of worship for both Protestants and Roman Catholics. The other public buildings are the free school, for 700 children, the hospital, a new government house, and the old town-house in a square planted with lime trees. The situation of the town is at once wild and melancholy. In midwinter the mountains so overshadow the place that the sun is not visible during more than four hours a-day. The streets are narrow and crooked; the houses are painted in fresco with fantastic devices, and have the time of their erection marked on them; some of these date back to the twelfth century. The Linth is here crossed by two bridges. The environs of Glarus contain many romantic walks, with commanding positions from which magnificent views may be obtained.

GLASGOW.

The commercial and manufacturing metropolis of Scotland, and in population the second city in Great Britain, is situated on the banks of the River Clyde, in the lower ward of the county of Lanark, at the distance of about 400 miles N.W. of London, and 42 miles W. of Edinburgh, in 55. 51. 32. N. Lat., and 4. 17. 54. W. Long. Its greatest length from east to west is 3 miles, and its breadth from north to south 2 miles, and circumference about 8 miles. The Clyde, upon which the city of Glasgow is situated, is one of the principal rivers in Scotland, and has its rise among the mountains that separate the counties of Dumfries and Lanark. The length of this stream, from its source to its junction with the western sea, is about 100 miles. Along its whole course it is beautified by magnificent natural scenery, and embellishments of art. Its banks are crowded with the abodes of industry and a thriving population. The site of Glasgow occupies both sides of the river, and though at the distance of above thirty miles from the influx into the sea, the tide, which flows a considerable way above the town, gives it a command of trade and means of ready conveyance for commercial purposes to every quarter of the globe.

Origin of Glasgow.

As many other towns, not only is the etymology of the name a matter of conjecture, but the earlier state of the city is shrouded in obscurity. Into the discussion of either of these our limits forbid us to enter; but it may be briefly observed as to the first, that the most probable conjecture of antiquarians and etymologists is, that Glasgow derives its name from the two Celtic words signifying "a dark glen," being, as is supposed, the ravine or wooded sloping banks of the Molendinar burn at the east end of the cathedral; and with regard to the second—concerning the origin of the city itself—it may be stated that although Glasgow is certainly one of the most ancient of Scottish towns, there is not a tittle of evidence to show that a single stone of it had been laid until "Rome had filled the world with her renown, and fallen at length amid the ruins of her own greatness." At the period of the Roman power in Britain, the province of Valentia in which Glasgow is situated was inhabited by a tribe called the Damnii; and on the retirement of the Roman legions, those comparatively peaceful provincials were left to defend themselves and their territory during a period of nearly four centuries, first against the inroads of the Picts, then against the invasion of the Saxons from the east, and latterly against the assaults of the martial Scots, who, emigrating from Ireland, settled in the districts now called Argyleshire and Galloway. It is considered more than probable, that Alpine, the last king of the Scots, lost his life when fighting against the Strathclyde Britons.

All Glasgow chroniclers commence their accounts of the city with the story of St Kentigern, who is supposed to have laid the foundation of the holy edifice round which the few huts or wooden houses which then constituted the town were congregated. The period at which this early seat of the church was founded, was about the middle of the sixth century. From the pious, benevolent, and amiable character of its ecclesiastical founder, he acquired the appellation of Mungo, a word used in several languages as an epithet of fondness and endearment. In the year 539, St Kentigern, then twenty-five years of age, is said to have taken leave of his episcopal instructor, St Servanus, Bishop of Orkney, and to have come to Glasgow, where from his great sanctity he was chosen by the king and clergy of the district their bishop, his consecration having been performed by St Columba. At this time Marken was king of the Strathclyde Britons; and having become jealous of the spiritual influence of St Kentigern, ultimately became his persecutor, and compelled him to seek refuge in Wales, where he sojourned several years and founded the see of St Asaph. Under the more benign rule of the successor of Marken, St Kentigern was recalled to Glasgow, where, on his arrival, having preached to a great multitude, a monkish legend records that the earth on which he stood was instantly upheaved into a little knoll so that the preacher might easily be seen and heard by all present. To this has been attributed the motto of the city, "Let Glasgow flourish by the preaching of the Word."

Following the procedure of the first teachers of Christianity, who established their churches on the spots which had been previously hallowed by the habitual performance of the people's devotions, it is commonly supposed that St Kentigern founded his church on the vestiges of a Druidical circle, which he did about the year 560; and here he continued to minister till his death, which took place in 601, leaving the infant town to spring up under the shadow of the church the foundation of which he had laid, and under which it is also said he was buried. Such is the account which unvarying tradition and ancient chronicles have handed down concerning the origin of Glasgow, and which receives additional confirmation from the armorial bearings of the see. These are, argent, a tree growing out of a mountain base, surmounted by a salmon in fesse, all proper; in the salmon's mouth an amulet, or, on the dexter side a bell pendent to the tree, of the second. Setting aside all monkish fables respecting the origin of each separate part of these armorial bearings, it may without much doubt be conceded that the tree referred to the ancient forest which surrounded the cathedral, the bell to the cathedral itself, the ring to the episcopal office, and the fish to the scaly treasures which the neighbouring Clutha then offered to its metropolitan master.

From the death of St Kentigern till the year 1050 an impenetrable obscurity gathers over the annals of Glasgow. From that period successive bishops are noticed; but it was not till the year 1115 that full light began to fall on its history. The importance of the see is then demonstrated from a preserved deed recorded in the ancient register of the episcopate. From this it appears that David, when Prince of Cumbria, ordered an investigation to be made as to the lands and churches belonging to the bishopric of Glasgow. In this document the foundation of the church, and the ordination of St Kentigern are related, and also that after his death he was succeeded by many bishops, but that in consequence of the many revolutions and confusion incident thereto which followed, all traces of the church and even of Christianity were destroyed. From this document it appears quite evident that while no traces of the church's history can be found, the cathedral itself not only existed, but was richly endowed.

David having succeeded his brother Alexander I. on the throne of Scotland in the year 1124, at once promoted his chaplain, John Achaius to the bishopric in 1129. On the nones of July 1136 the newly built church was dedicated, on which occasion King David I. endowed it with the lands of Perdeyc (Partick); and subsequently this saintly king restored to the bishop a long list of possessions formerly belonging to the see. In the reign of Malcolm, the church of Glasgow received many gifts from the crown; and during the reign of Pope Alexander III. a bull was issued enjoining the clergy and people of the diocese to visit annually the cathedral church of Glasgow.

While William the Lion was founding free burghs in

Scotland, the great lords of the church obtained privileges of the same nature for the cities erected around their cathedrals. Such was the origin of the burgh of Glasgow. The royal charter rendering Glasgow a burgh, and giving it a market with freedoms and customs, was granted between the years 1175 and 1178. In the early part of this reign the cathedral possessed 25 churches, 17 of which seem to have been mensal. Between 1189 and 1192, Bishop Joceline appears to have been anxiously engaged in the restoration of his cathedral church. The original church erected by Bishop John, chiefly of wood, had been recently destroyed by fire, and Joceline founded a society to collect funds for its restoration. His energy and success in this matter must have been great, since we find that on the 6th June 1197 his new church was sufficiently advanced to be dedicated. After a long episcopate, he died at his old Abbey of Melrose on the 17th March 1199, and was buried on the north side of the choir. During the next century seven bishops occupied the episcopal chair, among the most remarkable of whom were Bondington, who greatly advanced the building of the cathedral, and Robert Wisheart, who latterly stood forward as the most strenuous opponent to the encroachments of Edward I. This monarch spent a fortnight in Glasgow in the autumn of 1301. He resided at the Friars Preachers, but was constant in his offerings at the high altar and the shrine of St Mungo. It may be stated of Wisheart, that when Wallace, almost single-handed, set up the standard of revolt against Edward, the bishop of Glasgow instantly joined him. When Robert the Bruce, friendless and a fugitive, raised the old war cry of Scotland, the same bishop supported him. And when Bruce was proscribed by Edward and under the anathema of the church, Bishop Wisheart assoilzied him for the sacrilegious slaughter of Comyn, and prepared the royal robes for his coronation. Wisheart was taken prisoner in 1306 and was not liberated till after the battle of Bannockburn. He died in 1316, having lived to see Robert the Bruce firmly seated on the Scottish throne, and was buried in the cathedral betwixt the altars of St Peter and St Andrew. In 1321, John de Lindesay was elected bishop. In 1337, when, returning from France to Scotland, the ship which conveyed him and many noble Scottish ladies, with L.30,000 in money, and the treaty between France and England, was taken by the English; and it is said the bishop died of grief before reaching the land. He was succeeded by William Rae, of whom nothing is known except that he built the stone bridge over the Clyde at Glasgow, and was followed by Mathew de Glendonwyn, who during his episcopate made preparations for rebuilding with stone the wooden steeple of the cathedral, which had been consumed by lightning, but who was prevented from accomplishing this through death, which event took place in 1408. On his demise William de Lawedre succeeded, who built the crypt below the chapter-house, and the stone steeple as far as the first battlements. In 1425 John Cameron was elected bishop. He built the great tower of the bishop's palace, and also the chapter house begun by his predecessor. In 1447 William Turnbull was chosen bishop. During a short incumbency he obtained from King James II. in 1420 a charter, erecting the town and the patrimony of the bishops into a regality. This ecclesiastic will be ever regarded with affectionate gratitude as the founder of the University of Glasgow, which was effected through a bull of Pope Nicholas V. in the year 1451. Turnbull was succeeded by Muirhead, Laing, Carmichael, and Blackadder. During the incumbency of the last, the see of Glasgow was made archiepiscopal through the religious enthusiasm of James IV., who in early life had been a canon of the cathedral. The bull declaring the see of Glasgow metropolitan is dated in 1491. Its suffragans were the Bishops of Dunkeld, Dunblane, Galloway, and Argyle. In 1488, Blacadder, in conjunction with the Earl of Bothwell, negotiated a marriage between King James III. of Scotland and the Lady Margaret, eldest daughter of King Henry VII. of England. This union laid the foundation of the title of the Scottish kings to the English throne. Blackadder was followed by James Bethune, Gavin Dunbar, Alexander Gordon, and James Bethune, abbot of Arbroath, who was consecrated at Rome in 1552. At the Reformation in 1560, the latter archbishop retired to France, carrying with him all the relics, documents, and plate which pertained to the See. Since the renovation of the cathedral in 1129, it appears that there had been 26 Roman Catholic bishops, and four Roman Catholic archbishops. From the Reformation till the Revolution, the church in Glasgow was governed by 14 Protestant archbishops, the first, James Boyd, created in 1572, and the last, John Paterson, in 1687.

While the early history of Glasgow may be said to be almost entirely associated with its cathedral and its ecclesiastics, there are a few matters connected with its civil history which may not be uninteresting. The first charter granted by William the Lion to the city was in 1178, another was in 1190, and by a deed in 1268, still extant, it appears that the town was then governed by a provost and bailies, and that it was then in all respects an organized corporation, having persons in official situations for the investing and transferring of property, and with courts of justice for determining disputes amongst the inhabitants. In the year 1300 a battle between the Scots under Wallace and the English under Percy, was fought in the High Street, when victory declared for the former, and the latter are said to have lost their leader with 700 men. Glasgow was successively visited by the plague in the years 1350, 1380, and 1381, and numbers perished by this fearful disease. About 1524 a council convened by the Earl of Angus, and consisting of a great part of the nobility of the kingdom, was held at Glasgow, for the purpose of strengthening that nobleman's overgrown power; but the Duke of Albany being then in France, and hearing of the circumstance, and being assisted by the French king, ere long landed in Scotland with a considerable force, which so intimidated Angus that he retired from the country. In 1538 the first sacrifice of life was made by the church in the vain hope of arresting the Reformation. Jerome Russell, a member of the Glasgow convent of Franciscans, and a youth named Kennedy, of eighteen years of age, were condemned for heresy, and were burned alive, suffering most heroically. About 1542 the bishop's castle, while garrisoned by the Earl of Lennox, sustained a siege from the Regent Arran. It surrendered upon terms which were violated, and the garrison were all put to the sword. Soon after an engagement took place between the same parties at what was called the Butts, at the east end of the city, when 300 men fell, and the regent obtained a victory, in consequence of which the town was plundered. In 1560, the Reformation having taken place, superintendents took the position of bishops. In 1563 a great dearth occurred. In 1566 Queen Mary visited the city for the purpose of seeing her husband Darnley, who had been taken ill when residing with his father in his house at the Limnerfield; and in 1568 many of the citizens fought against her at the battle of Langside, which proved fatal to the hopes of that unfortunate sovereign. In 1570 the castle was again besieged, but in vain, by the Hamiltons. Episcopacy, though in a crippled state, was restored in the person of James Boyd of Trochrig. In 1578, the General Assembly having questioned the legalty of the episcopal function, Boyd ceased to act. To him succeeded in 1581 Robert Montgomery, who resigned in 1585, when William Erskine, a layman, was nominated to the see and revenues. In 1588, however, the temporalities were restored to Archbishop Beaton, at whose death in 1603 Spottiswood, the historian, succeeded to the vacant mitre. In 1638 the famous Assembly of the Presbyterian Church was held at Glasgow, when episcopacy was abjured; churchmen were declared incapable of sitting in the Scottish parliament; and in the following year every person who refused to sign the Solemn League and Covenant was debarred from church ordinances. During the next fourteen years Glasgow suffered great calamities. In 1645 Montrose, after his victory at Kilsyth, marched into the city during a visit of the plague, and levied a heavy contribution upon the inhabitants; and in the same year three of the prisoners taken at Philiphaugh, viz. Sir Walter Rollock, Sir Philip Nisbet, and Ogilvie of Inverquarity, were executed at Glasgow. In 1648 Provost Stuart and the other magistrates were superseded in their offices for their contumacy towards Charles I., and were for some days put in prison. New municipal rulers were elected; and as a punishment on the old, four regiments of foot and horse were sent to the city, with orders to quarter solely on the magistrates, council, and session. In the following year the city was in the horrors of plague and famine; and in two years thereafter Oliver Cromwell took up his quarters, and held his levees in Silvercraig's land in the Saltmarket. When there he visited the cathedral; on which occasion Mr Zachary Boyd, the minister, having inveighed against the general, Thurlow, his secretary, said he would shoot the scoundrel. "No, no," said Cromwell; "we will manage him in his own way;" and having invited the clergyman to dine with him, Oliver concluded the entertainment by prayer, which lasted three hours! In 1652 a great fire took place, by which about one-third of the town was destroyed, the loss being estimated at one hundred thousand pounds sterling. Soon after the restoration of Charles II., Episcopacy being restored in Scotland, 14 ministers belonging to the Presbytery of Glasgow were turned out and took leave of their flocks. During the gloomy ecclesiastical period which succeeded, the citizens of Glasgow, who were chiefly Covenanters, were persecuted with unremitting fury. Numbers were hanged in the streets, while guards were placed at the city ports on Sunday to prevent the inhabitants from attending field preaching. In 1678, immediately after a second dreadful fire had sent a thousand families to the street, the Tolbooth, in which a great number of persons were confined, chiefly for religious opinions, was broken open by the citizens, and the prisoners set at liberty. On hearing that this had been done, the government of the day sent an army of Highlanders to Glasgow, where they exercised the most wanton acts of cruelty and oppression, which ere long led to the battles of Loudon Hill and Bothwell Bridge, and ended in the execution of Cargill, the minister of the Barony Parish of Glasgow, in Edinburgh, and in the martyrdom at Glasgow of James Nisbet, James Lawson, and Alexander Wood, who died "for their adherence to the word of God, and Scotland's covenanted work of reformation." On the abdication of James II. the city raised a regiment of 500 men to support their Presbyterian views; and on the 4th June 1690 the town was declared free by a charter of William and Mary, with power to elect their own magistrates, which was done by a poll of the burgesses. In 1697 the citizens suffered severely from the Darien Scheme, in which many of them adventured their means. The Union in 1707, which has since proved so beneficial to Scotland and England, was most unwelcome in Glasgow, and threatened to cause riot; but in 1715, when the Stuarts' claim to the throne was attempted to be established by the sword, Glasgow at once took her side with the House of Hanover, and raised a battalion of 600 men to aid the Duke of Argyle in quelling the insurrection. In 1725 the extension of the malt tax caused a serious tumult in Glasgow; on which occasion the house of Daniel Campbell of Shawfield, the M.P. for the city, was completely gutted, and six persons killed and seventeen wounded by the soldiers called out to quell the disturbance. The magistrates were committed to their own jail for dereliction of duty, but were soon afterwards released. In 1745, when Charles Edward Stuart again attempted to win the crown, Glasgow was once more on the side of religious liberty, and on that occasion raised for the service of the government two battalions of 450 men, both of which, it is well known, suffered severely at the fight of Falkirk. On the return of the rebels from Derby they threatened to burn the city, but were prevented by Cameron of Lochiel. A heavy contribution was levied both in money and goods, which, with the charge of maintaining the rebel army in free quarters for ten days, the period Prince Charles resided in the Shawfield mansion in Trongate, cost the community about L.14,000 sterling, L.10,000 of which was subsequently recovered by a grant of the British parliament. On the breaking out of the American war in 1775 a regiment of 1000 men was raised at the expense of the city; at the same time the merchants fitted out fourteen privateers, mounting from 12 to 22 guns each, and carrying in whole about 1000 men. During the spring of 1782 a most remarkable inundation of the Clyde occurred, causing great distress and misery to the inhabitants in the lower part of the town, on which occasion the river rose 20 feet above its ordinary level. When the conflict consequent on the French Revolution commenced, the military spirit of the city was roused in support of the constitution and its safety. In 1794 the town volunteers mustered 1300; and in 1798 about L.14,000 was subscribed by the inhabitants for carrying on the war. On the resumption of the conflict after the short peace of Amiens, upwards of 4000 volunteers started up at their country's call. In 1813 the citizens subscribed L.5200 towards the relief of sufferers in the Russian campaign, and L.4554 for the sufferers in Germany. Illuminations for victories followed each other in rapid succession, there being one after the battle of Leipzig, another after the taking of Paris, and a third at the victory of Waterloo. On the latter occasion Glasgow forgot not, amid the exultation of success, the claims of the widows and orphans which the event produced. To the large fund then raised throughout the country she contributed no less than L.7578, 13s. 4d. In 1816-17, great distress having been experienced by the working classes, a subscription to the amount of L.12,871, 1s. 7d. was raised for their relief. This was followed by a serious outbreak of typhus fever, when another voluntary contribution was raised of L.6626, 14s. 1d. to meet the deadly emergency. In 1819–20 the working classes were again thrown into great distress from want of employment; and during the winter an exceedingly feverish state of mind among these persons manifested itself, and created great alarm. On Easter day of 1820 a treasonable proclamation was found posted up in the city; and the next day work was almost universally given up, and a crisis seemed approaching. On Wednesday the city presented a lively picture of a beleagured town; but through the display of a strong military force, and the activity of the magistracy, all was soon rendered tranquil. The only result of the whole ferment which is now to be regretted is the miserable catastrophe which followed in the wake of the special commission which met soon afterwards at Glasgow to try those who were engaged in this *Radical* insurrection; on which occasion a poor old weak creature called James Wilson was hanged and beheaded—a punishment which, considering to what extent vile spies were then employed, is now considered to have been both sanguinary and impolitic. Of the remaining events of a purely historical character connected with Glasgow, we shall limit ourselves to only one more; and that is to the auspicious and ever-memorable visit which Queen Victoria and her illustrious consort made to the city on the 14th August 1849, being the only sovereign of Scotland or England who had entered Glasgow since Mary Queen of Scots, no less than 283 years before. The enthusiastic manner in which her Majesty was then everywhere greeted from upwards of half a million of her subjects on her landing at the harbour, and during her whole progress through the gaily ornamented streets, must have been highly gratifying to the object of such unbounded expression of loyalty and attachment; and when it is added that from the judicious arrangements which were made by those entrusted with the details, everything passed off without the slightest accident, it is certain that this event will ever remain an important episode in the annals of Glasgow.

Although Glasgow may justly be said to be one of the most ancient cities in Scotland, it is at the same time one of the most *modern* of the larger towns of Great Britain. It was, it appears, a place of some consideration at the commencement of the twelfth century, when the foundation of its cathedral was laid; and yet at the beginning of the nineteenth century it had given proofs only of progress equal to those of many other towns in the empire. The fact is that to its wealthy church and its numerous body of ecclesiastics, and afterwards to the establishment of its university, the city owed all the importance which it then possessed. Glasgow only held in 1556 the eleventh place of rank among the other towns of Scotland. The agitation consequent on the introduction of the Reformed religion proved for some time prejudicial to the opulence of the city. The money which had formerly been expended among the citizens by the bishop and clergy was now diverted into other channels, and the advantages resulting from the university were also for a time lost; for as the reformers generally despised human learning, the college was in a manner deserted. According to the assessment of the burghs in 1695, Glasgow was reckoned the second in Scotland. For the great accession of wealth in little more than a century, it may be mentioned that the inhabitants had, for a very considerable time even before the restoration of Charles II., the sale both of raw and refined sugars for the greatest part of Scotland; they had a privilege of distilling spirits from their molasses free of all duty and excise; the herring fishing was also carried on to a considerable extent; they were the only manufacturers of soap, and they annually sent hides, linen, &c., to Bristol, from whence they brought back in exchange tobacco, sugar, and English manufactured goods, with which they supplied the greater part of the kingdom. Immediately after the signing of the Union an increasing impetus was given to commerce, and consequently to the progress, of Glasgow. The American colonies, hitherto exclusively the field for English enterprise, were opened up to the merchants of the west of Scotland; partnerships were at once formed, and vessels chartered, and thereafter built, for carrying on, at first an extensive barter trade, and at length a regular commercial intercourse with Virginia, Maryland, and Carolina. In 1735 the Virginian merchants in Glasgow could boast of having fifteen large vessels belonging to the ports of the Clyde engaged in the tobacco trade, besides many others which they had chartered from other ports. In short, between the years 1760 and 1775 Glasgow became the great emporium for tobacco in the empire, for while the whole import in 1772 was 90,000 hogsheads, Glasgow alone imported 49,000. This trade may be said to have got its death-blow on the breaking out of the American war; but although the period during which it flourished was by no means long, many monuments of its success and greatness have been left either in the princely estates purchased from its gains, or in the magnificent city mansions reared for the accommodation and comfort of the merchant princes who then conducted it. At that period, however, wealth was chiefly confined to those engaged in this traffic; and the style of living by the two classes into which the inhabitants were divided was more marked than that which now exists between the peer and the successful tradesman. Business being paralyzed for a time by the American war, a universal cry of distress was heard throughout the town. At length the exertions of the citizens were thrown into other channels;—the West Indies offered its sugar cultivation to some, and the introduction of the cotton manufacture attracted others. Through these means many years did not elapse before riches became more widely diffused, and before a more general respectability became apparent. By the time that the French revolution again brought the country into war, the city had increased very considerably, and during the few years that preceded that event, foreign commerce was found to be daily increasing, while manufacturing establishments were rising on every hand. The fruits of this industry soon exhibited themselves in the extension of the city. Handsome private mansions were being erected, while public edifices devoted to religion or amusement were seen rapidly rising throughout the city. The general character of the people, which at a more early period was remarkable for its ascetic severity and apparent sanctity of manners, had somewhat changed; and the inhabitants of Glasgow, in liberality, had become more in unison with the feeling and conduct of their neighbours. While commerce and manufactures had thus given the city a stimulating and onward progress, science and art had also added their mighty aid in effecting improvement. As a proof of this it may be mentioned that in 1759 the first act for deepening the river Clyde was obtained; and that in 1764 James Watt made in Glasgow his first model of a steam-engine, to the benefits derived from which the city and its harbour owe much of its prosperity. Necessity and utilitarianism combined to sweep away many of the old landmarks, and a desire for greater comforts brought about improvements in the cleaning, lighting, and paving of the city. With the introduction of the cotton manufacture, that of linens, lawns, and cambrics, which had been a species of staple since 1725, was superseded, but many others had been added to the handicrafts which then existed in the town. A bottle-house for the manufacture of green bottles had been erected so far back as 1730, and one for that of crystal was erected in 1777. Mr Harvey also, at the risk of his life, had introduced the inkle loom into the town in 1732; while a large manufactory of delft pottery was put in motion. The printing of calicoes, first introduced at Pollockshaws, within a short distance of the city, in 1742, had extended; while the brewing of beer and ale, hitherto restricted to mere cauldron brewing, was carried on to a great extent both within and without the town. The manufactures which were established previous to and since the commencement of this century yearly increased, and at this period Glasgow made its first great stride in population, wealth, and importance, which render it at present *cosmopolitan* both in its commerce and crafts. Glasgow, in fact, now unites within itself a portion of the cotton-spinning and weaving manufactures of Manchester, the printed calicoes of Lancashire, the stuffs of Norwich, the shawls and muslins of France, the silk throwing of Macclesfield, the flax-spinning of Ireland, the carpets of Kidderminster, the iron and engineering works of Wolverhampton and Birmingham, the pottery and glass-making of Staffordshire and Newcastle, the ship-building of London, the coal-trade of the Tyne and Wear, and all the handicrafts connected with or dependent on the full development of these various and important branches. Glasgow also has its distilleries, breweries, chemical-works, tan-works, rope-works, dye-works, bleach-fields, and paper manufactories, besides a vast number of staple and fancy hand-loom fabrics, which may be strictly said to belong to the locality. Glasgow, also, in its commercial relations, trades with every quarter of the globe; and its merchants deal in the various products of every country. It hence will appear that one branch of manufacture or trade may be dull, while another may be prosperous; and, accordingly, Glasgow does not feel any of those universal depressions which so frequently occur in places limited to one or two branches of manufacture or commerce.

Population.

In order to bring the progressive and present state of Glasgow more palpably into view, the following statistical comparisons have been prepared, which will at once prove the rapid and steady advance of a city which is scarcely rivalled but certainly not surpassed by any in the world. The first and most striking evidence of the increasing importance of Glasgow will be found in the following chronicle of its progressive and present population:—

Year.	Population.	Year.	Population.
1560	4,500	1811	110,460
1708	12,766	1821	147,043
1763	28,300	1831	202,426
1785	45,889	1841	280,682
1801	83,769	1851	347,001

Of the 347,001 inhabitants of 1851, 163,731 were males, and 183,270 females. It is right to state that the population within the parliamentary district, from which is excluded part of the ancient burgh, was only 329,096. Neither of these numbers, however, fully expresses the true population of Glasgow and its suburbs. Taking the whole population of the four parishes which now constitute the city and its growing suburbs, and which have formed the boundaries within which the mortality of Glasgow has been taken, we find that it had reached, on the 31st March 1851, to no less than 360,138, of which 170,179 were males, and 189,959 were females. According to calculations founded on the increase of dwelling-houses and otherwise, the population in 1855 may fairly be assumed to exceed, within the last-mentioned territory, 400,000. From Dr Strang's analysis of the census of 1851, we find the population located as follows:—

	Males.	Females.	Total.
Ten parishes of old burgh of Glasgow	70,329	77,786	148,115
Barony parish within parliamentary boundary	56,670	66,264	122,934
Gorbals and Govan parishes, within boundary	29,059	32,423	61,482
	156,058	176,473	332,531
Harbours	1,088	38	1,126
Total within old burgh and parliamentary boundary	157,146	176,511	333,657
Barony parish beyond parliamentary boundary	6,585	6,759	13,344
Govan do. do. do.	5,886	6,064	11,950
	169,617	189,334	358,951
Small portion of Govan parish, county of Renfrew, but close to parliamentary boundary	562	625	1,187
	170,179	189,959	360,138

From the same source we find the character of the population at the census of 1851 to have been 283,506 born Scotch, 64,185 Irish, 8930 English, 1065 foreigners, 815 colonists, British subjects, and 450 not ascertained. The ages being—

Age	Number	Age	Number
Under 1	11,618		
1 and under 5	33,070	60 and under 70	10,847
5 ... 10	37,657	70 ... 80	3,973
10 ... 15	36,385	80 ... 90	829
15 ... 20	40,295	90 ... 100	75
20 ... 30	78,176	100 and upwards	4
30 ... 40	51,024	Unknown	452
40 ... 50	34,156		
50 ... 60	20,390		358,951

While the above figures, indicating the place of nativity, show that the Irish form 15·93 per cent. of the gross population, they are far below the reality; for although the children born in the city of Irish parents, and who are imbued with all the characteristics, habits, feelings, and religious sentiments of their fatherland, have been lately most numerous, they are all placed in the census returns as Scotch. The truly Irish population may be fairly assumed to be little short of 90,000.

While the population has thus increased, it may be reasonably supposed that the means of accommodating that population have increased along with it, and the following table of the gross number of dwelling-houses, shops and warehouses, and other possessions, will best show that such has been the case, but which are limited to the parliamentary and burgh boundaries, with an assumed population, for 1855, of 375,000:—

Houses, warehouses, and shops.

1845,	distinct possessions,	65,028	Gross rental,	L.866,150
1850,	...	76,034	...	1,017,362
1855,	...	82,490	...	1,241,590

It hence appears that the distinct possessions have increased 17,462 since 1845, and 6466 since 1850; while the gross rental has also increased between the first and last period L.385,440, and since 1850, L.224,228. The following is a detailed statement of the gross number and rental of dwelling-houses, shops, warehouses, and other possessions within the municipal and parliamentary city, from Whitsunday 1854 to Whitsunday 1855:—

		No.	Rental.
Occupied.	Dwelling-houses and other premises occupied in connection with dwelling-houses	70,793	L.655,436
	Shops, warehouses, counting-houses, and other places of business, public works, &c.	10,271	565,163
		80,964	L.1,220,599
Unoccupied.	Dwelling-houses and other premises occupied in connection with dwelling-houses	1,175	L.11,632
	Shops, warehouses, counting-houses, public works, &c.	351	9,359
		1,526	L.20,991

	No.	Rental.
Possessions occupied	80,964	L.1,220,599
... unoccupied	1,526	20,991
	82,490	L.1,241,590

In comparing this table with that of 1851 an increase will be found, in 1855, of dwelling-houses, to the extent of 6466; of shops and warehouses, and other places of business, and of public works, of 509; while the increase of rental has been, in the course of only four years, L.76,720 on the former, and L.80,698 on the latter. The comparative numbers of dwelling-houses in three different classes of rentals, in 1851 and 1855, are as under:—

	1851.	1855.	Increase.
Total dwelling-houses at L.5 and under,	35,791	36,648	857
... Above L.5 and under L.10,	14,748	18,665	3,917
... At L.10 and upwards,	14,963	16,655	1,692
	65,502	71,968	6,466

Hence it appears that the greatest increase is in houses between L.5 and L.10, clearly indicating an improving condition in the habitations of the working-classes.

Water supply.

While from the foregoing statement may be easily gathered the growing number and advancing comforts of the inhabited houses, and also the increasing size and elegance of the shops and warehouses, perhaps nothing indicates the progress of Glasgow more than the great and increasing consumption of water. Prior to the year 1806 the city depended chiefly for its supply on twenty-nine public wells, and a few private pump wells. About that period was formed the Glasgow Water Company to pump water from the Clyde; this was soon followed by the Cranston Hill Company, which ultimately became united. In 1846 another company was established to furnish water by gravitation, limited, however, to the supply of the inhabitants on the south side of the river, who may now (1855) be estimated at about 80,000. The daily supply in 1854–55 sent in by both establishments to Glasgow and its suburbs, amounted to about 15,300,000 gallons, which, after making a due deduction for the use of factories, dye-works, and other trade purposes, cattle, &c., left nearly thirty gallons a-day for each inhabitant, supplying also in 1854–55 within the mere boundaries of the city, no fewer than 6638 plunge and shower baths, and 12,114 water-closets in private houses. While this is certainly a very large supply of water, and such as no other town can boast of, still its quality is indifferent; and to meet this desideratum, powers have just been obtained to bring water from Loch Katrine to the extent, if necessary, of forty millions of gallons per day, and to vest the whole water supply in the hands of the corporation.

Gas supply.

After water there is nothing which marks a city's onward progress more than its consumption of gas. Previous to 1817 Glasgow was dependent, like all other places, on oil and candle for light. During that year the first Gas Light Company was instituted, which was followed by another in 1843. On the 15th September 1818, the streets were first lighted with this economical agent; and thereafter it began to be used in dwelling-houses and factories. In 1840, for example, the quantity of gas consumed in Glasgow and its suburbs was 173 millions of cubic feet, whereas, in the year 1854, it has reached the enormous amount of nearly 589 millions of cubic feet. The average cost of every 1000 cubic feet being 4s., it follows that the sum paid for gas must have amounted in 1854 to L.117,800. The number of street lamps lighted by the police in 1835 was 2888, whereas the number lighted in 1854 amounted to 7500.

Scotch manufactures, particularly cotton.

The first steam-engine in Glasgow connected with cotton-spinning was erected in 1792; but it was not till the beginning of the present century that any considerable quantity of yarn was spun in Scotland. In 1850 the number of spindles employed in cotton-spinning connected with or dependent on Glasgow amounted to 1,683,093, and the cotton consumed amounted to about forty-five millions of pounds, or 120,000 bales. At present (1856) the consumption does not appear to have increased. The power loom was first introduced into Glasgow in 1793 by Mr James Robertson, who brought two from the Hulks in the Thames. In the following year forty looms were fitted up at Milton, and in 1801 Mr John Monteith had 200 looms at work at Pollockshaws, near Glasgow. In 1831 the power looms in or dependent on Glasgow had increased to 15,137; in 1850 they amounted to 23,564, and produced the daily average of 625,000 yards of cloth; at present (1856) there are about 26,000 or 27,000 power looms, and consequently the daily produce is not only greater from this cause, but also from an increase in speed. The number of persons employed in the cotton factories throughout Scotland, and which may be said to be all connected or dependent on Glasgow, in 1850 was 8797 males, and 27,528 females, total 36,325, while the motive power was, steam, 71,005 horse-power; water, 2812. In addition to the cotton spun for weaving, there are several very large manufactories of sewing thread; and to that of power-loom weaving there must be added all the beautiful fabrics that are still made by the hand-loom, and which employ a vast number of persons, and a large capital. These consist of muslins, plain and fancy harness curtains, jaconets, cambrics, ginghams, checks, and coloured tissues of all kinds; while, of late years, mixed fabrics consisting of cotton and silk, cotton and linen, and cotton and wool, have all been manufactured to a great extent. To the many thousand hand-loom weavers that still reside in Glasgow, must be added those who reside in all the villages for many miles round, and even in some of the more distant towns in Scotland and north of Ireland, to form any adequate idea of the extensive and widespread textile manufacturing interests of Glasgow.

Embroideries.

There is one branch of manufacture connected with cotton, to which it would be wrong not to particularly allude, and that is the embroidering of muslins, better known under the common designation of "sewed muslins." This is comparatively a new manufacture, having only been first started in Scotland about the year 1825. At that period there were only two or three persons engaged in the manufacture; now there are fifty or sixty. The importance of this branch may in some measure be estimated from the fact that it gives employment to a vast number of females in the rural districts for whom no other useful work is provided in the intervals of field labour. In Ireland alone, where it is practised from the Giant's Causeway to Cape Clear, and from St George's Channel to the Achill and other remote islands, it is a source of great comfort to the female population, as it enables them to add to the food and clothing of their families without entailing on them any of the evils of the factory system, the work being supplied to them by agents of the large manufacturers, scattered over all the country, and executed entirely at their own firesides. As the workers are only engaged a portion of their time at this species of industry, it is impossible to estimate their numbers; but it is computed that the amount paid in the western counties of Scotland and in Ireland reaches no less a sum than three quarters of a million sterling annually. Like all other fancy trades, it has been subject to its periods of depression; but its progress has been regular, from a total produce of a few thousand pounds a-year paid for labour in 1825, to the amount above stated, the greatest increase having, however, taken place since 1845.

Coal and iron.

The next great branches of industry, of which Glasgow is the central mart, are its coal and iron trades. Although coal, from a pretty remote period, has been wrought round the city chiefly for domestic uses, it has only been since the introduction of the steam-engine, and still more since the discovery of the economical mode of smelting iron by the hot blast, that the vast and closely packed mineral wealth of its neighbouring districts has been at all fully developed and turned to profit.

In 1854 no fewer than 6,448,000 tons of coals were drawn from the pits in the western districts around Glasgow, of which 2,152,800 tons were consumed in the manufacture of pig-iron, 367,200 in the conversion of pig into malleable, making in all 2,520,000 tons used in connection with the manufacture of iron; while 926,221 tons were shipped, and 148,312 tons sent beyond the boundaries by railways, leaving for the manufacturing and domestic uses of the Glasgow district 2,853,427 tons. The produce of pig-iron in the two western counties of Lanark and Ayr in 1854 was 717,600 tons, 122,684 tons of which were shipped direct to foreign countries, and 294,194 tons were sent coastwise from the Clyde, Port Dundas, and other ports of the Clyde estuary; while 22,865 tons were sent away by railways, and 171,360 were converted into malleable iron, leaving the remaining 106,497 tons for foundry and other purposes of the district. Of malleable iron there was manufactured in the district 122,400 tons. The value of the coal and iron industries to the district in 1854 was L.4,872,866, of which there was paid in wages to 33,908 persons employed in them L.1,973,937. The great progress of the pig and malleable iron manufactures may be best shown as follows:—In 1830 there were only 16 blast furnaces going in the west of Scotland, in 1854 there were 102, the produce of them in 1830 being 40,000 tons, whereas in 1854 the produce was 717,600. In 1842 the production of malleable iron was only 35,000 tons, in 1854 it amounted to 122,400.

Iron ship-building and marine engine making.

Of all the branches of industry, however, belonging to Glasgow and its harbour, there is assuredly none of modern date which has made such rapid progress as that of steamboat building and marine engine making. From the first start of the little "Comet" in 1812 till 1820, there were at the most only one or two river steamers launched yearly, and of a tonnage so small as to be scarcely worth notice. About that period this manufacture received a new impulse, and began at once fairly to develop itself.

From 1821 to 1830, there were 38 steamers built, with a tonnage of 4200; from 1831 to 1840, there were 94 steamers, with a tonnage of 17,623; from 1841 to 1850, there were 167 steamers, with a tonnage of 81,447, while during the three years from 1851 to 1853 there were 206 steamers, with a tonnage of 141,713. The present magnitude of this industry may however be best appreciated from the fact that during the years 1853 and 1854 the then 32 shipbuilders on the Clyde had constructed or contracted for no fewer than 266 vessels, including both steam and sailing, having an aggregate tonnage of 168,000, for which also marine engines were made, or in progress, of 29,000 horse-power; the average of these vessels being 630 tons, and involving the enormous cost of nearly five millions sterling.

Other branches of industry.

Of the many other industries existing in Glasgow, it is only necessary to allude to the chemical works, of which those of St Rollox are understood to be the largest in the world, covering as they do twelve acres of ground, and employing upwards of 1000 workmen, making use of 20,000 tons of salt, and consuming from 70,000 to 80,000 tons of coals annually.

The manufactured products consist chiefly of vitriol, chlorate of lime, of bleaching powder, soda, and soap. The stalks of this establishment are among the most remarkable objects in the city, one of which being 450 feet high, 50 feet diameter at the base, and 14 feet at the top. The chemicals produced elsewhere in Glasgow consist of iodine, bichromate of potash, cudbear, naphtha, pitch oil, pitch, sulphate of ammonia, carbonate of ammonia, pyroligneous acid and its combinations with lead and iron, nitric and muriatic acids with their combinations, and alum, prussiate of potash, &c. Within the bounds of the Glasgow district there are ten distilleries of spirits, producing annually when in full work about 2,500,000 gallons, and in the city and suburbs there are five breweries. Of late years the manufacture of glass and pottery has wonderfully increased, and the making of tobacco pipes is carried on to a greater extent in Glasgow than in any other place in Great Britain.

The river and harbour.

To the progressive rise and present position of the river Clyde and its harbour may be justly attributed the importance and prosperity of Glasgow. The fact is, this city now possessing an inland navigation, and a stream harbour unequalled perhaps in Europe, and which has been accomplished first by the intelligence of the corporation, and in later years by a trust formed partly of the corporation and partly from other bodies of the citizens. About the beginning of the present century the depth of the Clyde at Glasgow was scarcely 5 feet, and there were few or no vessels at its port, and these consisted of craft drawing merely a few feet of water, none certainly exceeding 30 or 40 tons burthen. In 1820 the average available depth of the Clyde at high water during neap tides was 9 feet, which admitted vessels drawing 8½ feet. In 1840 the depth was increased to 14 feet, whereas in 1855 the average depth at high water during neap tides is 19 feet. To show the greatness of the improvements that have been made, it may be mentioned that while only one vessel arrived at the harbour of Glasgow in 1835 of 300 to 350 tons burthen, there arrived during 1854 19 vessels of 1000 tons and upwards. The following is the number of the sailing and steam vessels which arrived at the harbour of Glasgow, with their registered tonnage, during the years ending July 1828, 1840, 1850, and 1854.

Year.	Under 40 tons.	40 to 60.	60 to 80.	80 to 100.	100 to 150.	150 to 200.	200 to 250.	250 to 300.	300 to 350.	350 to 400.	400 to 450.	450 to 500.	500 to 600.	600 to 700.	700 and upwards.
1828	2117	2847	4605	1399	213	20	14	1	0	0	0	0	0	0	0
1840	3256	4286	3945	2975	922	326	171	284	107	118	90	2	4	0	0
1850	4319	2245	2894	3204	733	517	321	128	213	145	110	34	151	15	23
1854	5570	1922	3140	3715	1830	524	214	450	126	425	109	35	49	30	63

The whole number and tonnage arriving at the harbour of Glasgow during the same period were as follows:—

Years.	Sailing Vessels.		Steam Vessels.	
	No.	Tonnage.	No.	Tonnage.
1828	4405	214,315	7,100	481,946
1840	5337	271,942	11,149	894,387
1850	5857	391,033	9,195	873,159
1854	6322	504,008	11,880	1,090,804

The progress and present condition of the river and harbour, however, are probably best exhibited by the following abstract of the revenue of the trust at six different periods:—

In 1800 it was	L.3319 16 1	In 1840	L 46,481 1 9
1820	6,328 18 10	1850	64,243 14 11
1830	20,296 18 6	1854	86,580 5 11

In the progressive, and during the last years most rapid increase of the income of this trust, may be said to be mirrored the palpable progress of Glasgow. The increase of income in little more than fifty years has been nearly thirtyfold, while during even the last four years the increase is L.22,336, 11s., being more in one twelvemonth than the whole revenue amounted to only twenty-five years previous.

Custom-house duties and registered ships.

The next striking index to the progress and present position of Glasgow will be found in the amount of duties levied at its custom-house, and the number of its registered ships.

Years.	Duties.	No. of ships.	Tonnage.
Jan. 5, 1801	L.469 13 6½	0	0
... 1812	3,124 2 4½	35	2,620
... 1820	11,000 6 9	85	6,604
... 1830	59,013 17 3	233	40,978
... 1840	468,974 12 2	351	71,878
... 1850	640,568 7 9	507	137,909
... 1855	668,556 9 4	601	192,895

The following is the amount of duty received at Glasgow on the undermentioned articles during the year 1854-55;—

Butter	L.286	Raisins	L.2,348	Sugar	L.49,436
Cheese	336	Molasses	6,017	Tea	237,520
Coffee	7,123	Rum	8,577	Tobacco	243,507
Corn	10,937	Brandy	37,057	Wine	44,308
Currants	611	Geneva	1,881	Wood	3,435

Post-office.

The last matter connected with the progress of Glasgow to which we will advert is her post-office. At the period of the Union the whole postage revenue of Scotland, notwithstanding the very high rates charged for letters compared with the present, was L.1194, and in 1781 the revenue for Glasgow was only L.4341. In 1853, with a penny postage, it amounted to L.47,063, 7s. 5d. From 1842 to 1853 the increase had been L.20,353, 11s. 11d.; of money orders there were, in 1852, 144,787, amounting to L.267,444, 2s. 4d.,—the increase in eight years being in number 73,986, and in money L.133,414, 11s. 9d. Letters received and delivered in Glasgow in 1852, 15,597,504; letters received and forwarded in Glasgow in 1852, 19,496,880.

Ecclesiastical institutions and buildings.

During the reigns of Catholicism and Episcopacy in Scotland, Glasgow was first the seat of a bishop, and then of an archbishop. It is now merely the place of meeting of the Presbytery of Glasgow and the Synod of Glasgow and Ayr, of the Established Church and of the Free Church, and the District Synod of the United Presbyterian Church. Ecclesiastically, the ancient burgh comprehends ten parochial divisions, the other portions of the city having, either partly or wholly, within their bounds, the parishes of Barony, Calton, Gorbals, Govan, and Maryhill. Of nine of the Established churches within the ancient burgh the Corporation are patrons. The stipends of ministers belonging to the Establishment are paid out of the teinds or seat-rents. The following table gives the statistics of the several church sects at the census of 1851.

Religious Denominations.	Places of Worship.	Number of Sittings.
Establishment	25	28,206
Free Church	30	27,449
United Presbyterian	23	24,184
Episcopalian	5	3,690
Catholic	7	7,914
Independent	11	6,010
Baptists	7	1,711
Other denominations	35	15,114
	143	114,278

It appears that Glasgow, with a population of 333,657, had no fewer than 143 places of worship, affording sitting-room for 114,278 persons; and when it is added that there were three or four chapels or churches belonging to the Establishment which were either vacant or not returned, and likewise a considerable number of places of worship belonging to other religious denominations, which, from want of returns, are not included in this list, it is perhaps not too much to say, that there were church sittings provided in Glasgow in 1851 for at least 120,000. And when it is further considered, that of the above population there are not fewer than 80,000 Roman Catholics, which reduces the Protestants to 253,657, and that the sittings in the Catholic chapels amount to only 7914 (there are three, four, and even six different services in each of these every Sunday), it would appear that there are 112,000 sittings provided in Glasgow for her 250,000 Protestant inhabitants.

The cathedral and other churches.

The venerable cathedral, now in a state of complete repair, is acknowledged to be one of the best specimens of old English Gothic. It occupies a prominent position on the north-east side of the city, and stands about 104 feet above the level of the Clyde. Its form is that of a large cross, with exceedingly short transepts. Its length from east to west is 319 feet, its breadth 63, the height of the choir 90, and of the nave 85 feet. At the intersection, it has a tapering octagonal spire, which rises to the height of 225 feet. Since the late removal of the galleries in the choir, and of the modern stonework between the nave and the choir, the Cathedral is now seen in all its beautiful primeval condition. In this edifice there are 147 pillars, and 159 windows, some of them of exquisite workmanship. The crypt under the choir is scarcely equalled, and certainly not surpassed anywhere for architectural effect. *St Andrew's*, as a modern church, is one of the most elegant in the city. It is situated in St Andrew's Square, and is nearly a fac-simile of St Martins-in-the-Fields in London. *St David's* in the Gothic, and *St George's* and *St Enoch's* in the Roman style, belonging to the Establishment, are handsome structures; while the Gothic edifices of *St John's*, *St Matthew's*, and others, belonging to the Free Church, are elegant in design, and ornamented with lofty spires. Among the many churches belonging to the dissenters, perhaps there is none more striking than the one in Renfield Street, and none so beautiful as that lately built for the Congregational body, in the western line of Bath Street, the spire of which is a model of perfection. The Catholics too, in addition to their ornate Gothic chapel in Clyde Street, have lately added several ecclesiastical ornaments to the city.

Educational institutions.

The University.—This ancient and celebrated seminary of learning was founded by a bull of Pope Nicholas V. in 1451. It formed a corporate body, consisting of a chancellor, rector and dean, with doctors, masters, regents, and students, in the several faculties into which it was divided. One of these was known as the Pedagogium, or College of Arts. This school of learning was first situated in Rotten Row. In 1459, James Lord Hamilton bequeathed to the principal regent of that college some buildings and several acres of land, on part of which the present structure was afterwards erected. The College of Arts was restored and endowed by James VI. During the period which intervened between 1577 and 1688, the university underwent many changes; but in the year 1693, each of the Scottish colleges having received a grant of L.300 per annum out of the bishops' rents, the Glasgow institution again revived; and having received other public and private gifts, its progress has been since uninterrupted. The academic body of the university consists at present of the chancellor, the lord rector, the dean of faculty, the principal and vice-chancellor, twenty-two professors, and one lecturer. The whole business of the university is transacted in three distinct courts, viz., the senate, the faculty, and the comitia. (See UNIVERSITIES.) The students are divided into *togati* and *non-togati;* the former wear a gown of scarlet cloth, and belong to the Latin, Greek, logic, moral philosophy, and natural philosophy classes; the latter are unrestricted in their dress, except the students of divinity. There are bursaries connected with the college founded by thirty individuals, held by upwards of sixty students, from four to six years each; the amount payable to each varies from L.5 to L.25, a few being worth L.40, and one L.50. In addition to these are the more valuable bursaries bequeathed by Mr Snell and the Bishop of Rochester. The former afford L.120 per annum for each of ten Scottish students at Baliol, Oxford, and the latter L.15 for each of four, and which sum is generally bestowed in addition to four of the exhibitions under Snell's bequest. The present buildings were principally erected in 1593 and 1658. The spire, which is 153 feet in height, is chiefly interesting from possessing a thunder-rod which was reared under the auspices of Franklin in 1772. In the divinity and faculty halls are a few historical pictures and several portraits.

The university has had from its origin men of the highest talent, and literary and scientific eminence, among its professors and office-bearers. The names of Melville, Baillie, Leishman, Burnet, Simpson, Hutchison, Black, Cullen, Adam Smith, Reid, Millar, Richardson, Sandford, and Thomas Thomson, are conspicuous, while the names of Edmund Burke, Sir James M'Intosh, H. Brougham, Jeffrey, Thomas Campbell, Alison, Macaulay, and other distinguished persons, are to be found in the lists of lord rectors.

University Library.

The library was commenced almost simultaneously with the foundation of the college, and consists of upwards of 60,000 volumes, among which are some very rare and beautiful editions of the classics and several valuable MSS. The bibliomaniast may here see Zacharias Boyd's metrical version of the Bible, and a splendid copy of the Alexandrian version of the Scriptures. The library is supported from the interest of money left for this purpose, and the fees of students, but chiefly from the grant of upwards of L.700 per annum, which the college receives from the Exchequer as an equivalent for the loss of the Stationer's Hall privilege.

Hunterian Museum.

Immediately behind the university buildings stands the *Hunterian Museum*, a beautiful fabric erected in 1804, from a design by Starke. The building exhibits six Doric columns, bearing a pure Doric frieze and entablature, and surmounted by a glass cupola. It was reared for the reception of the magnificent collection of curiosities which the late Dr William Hunter bequeathed to the university, where he was educated. The contents of this valuable museum have been valued at L.130,000. The medals alone are accounted worth L.40,000; and the library, together with the rich collection of illuminated manuscripts, have been estimated at little short of the same sum. The naturalist will find here a beautiful collection of minerals, shells, quadrupeds, birds, insects, and fossils; the physiologist, an apartment filled with the most curious anatomical preparations; while the devotee of art will be gratified with some of the best specimens of Rubens, Guido, Domenichino, Murillo, Correggio, Giordano, N. Poussin, Zucherelli, Salvator Rosa, Sneyders, Weenix, Wouvermans, and Reynolds.

College Gardens.

Immediately behind, and surrounding the museum are the *College Gardens*, set especially apart for the use of the students. They are planted with trees, and ornamented with walks and shrubbery. This spot may be said to have obtained a semi-classical notoriety, from being the scene chosen by Sir Walter Scott for the rencontre of Rashleigh and Francis Osbaldistone, in the romance of Rob Roy.

Anderson's University.

Anderson's University.—This institution was founded by Mr John Anderson, professor of natural philosophy in the university of Glasgow in 1795, and endowed by him with a valuable philosophical apparatus, museum, and library. It is governed by 81 trustees, and is intended as a means of bringing a literary and scientific education more within the reach of the mass of the community. Every branch of study taught in the college, with the exception of divinity, is given here. Drs Garnett and Birkbeck were the original professors of natural philosophy and chemistry; and it was here that the first mechanics' class was established in Great Britain. The number of students in the session 1854–55 amounted to 1685, being an increase since 1852–53 of 578.

High School.

The High School or Grammar-School in John Street, under the charge of the Corporation, is the oldest educational institution in the city. It appears a grammar-school existed in Glasgow in the early part of the fourteenth century, being then dependent on the Cathedral church. Up to 1834 its masters only taught Latin and Greek, but at that period the school underwent a complete alteration. Two of the classical masterships were suppressed, and in lieu of these, teachers of English grammar, foreign languages, writing, arithmetic, geography, mathematics, and drawing, were introduced. The name was also changed from the Grammar to the High School.

The Mechanics' Institution.

The Mechanics' Institution, which was founded in 1823, for more effectually diffusing science among the working-classes, is situated in Hanover Street. Lectures are here given on chemistry, natural philosophy, and popular anatomy, while teachers give instruction in English grammar and composition, drawing and music. Attached to the institution are a reading-room and library, the latter containing upwards of 5000 volumes.

Normal and other schools.

There are two normal schools for the training of teachers; the one under the control of the Established, and the other under that of the Free Church. There has also been established an excellent school of design, which is well attended, while, during the last few years, several educational institutions of a semi-public semi-private kind have been formed, chiefly in the western parts of the town, for the instruction of the children of both sexes of the higher classes. The number of elementary schools is very great, and daily increasing. According to Dr Strang's tables, the education statistics of Glasgow, at the census of 1851, were as follows:—

Number of week-day schools	281
Number of evening schools	109
Day scholars on books	31,508
Day scholars attending 31st March 1851	28,356
Evening scholars, adults, attending	5,090
Total day and evening scholars attending, being	33,446

out of a population of 34,343 at 5 and under 10 years of age, and 33,202 at 10 and under 15 years of age.

These figures, however, do not express the precise educational destitution, the number between 5 and 10 years of age being estimated at about 6000 or 7000; and although the number in this last category has of late years been gradually reducing through the increased zeal of ecclesiastical educationalists, as well as the benevolence of general philanthropists, still there is left a wide field of ignorance to cultivate, and which, it is feared, can only be reclaimed by some governmental and unsectarian system of tuition. One of the most striking facts connected with the educational statistics of Glasgow is, that in 1851 there were 436 Sabbath schools, which were attended by 43,056 young persons.

Literary and scientific institutions.

Although Glasgow can boast of having had many learned and able men at various times born or resident within its borders, still its inhabitants cannot lay claim to having much of a literary character. About the middle of last century a literary society was established, consisting chiefly of the professors and clergy of the city and neighbourhood, and reckoned amongst its distinguished members, Professors Simson, Adam Smith, Traill, Reid, John Millar, and the Messrs Foulis the celebrated printers. Another literary and commercial society was also formed about the beginning of the present century, in which Drs Chalmers and Wardlaw, and other able men, took an interest, and where essays are still read, and discussions take place on the literary, commercial, statistical, and political topics of the day. A philosophical society was also established in 1802, which, uniting as it now does the man of science with the practical chemist and mechanic, forms a most effective nucleus for mutual encouragement and advancement. In 1808, a society for promoting astronomy was formed, which in due time erected an observatory, at first placed on Garnethill, which was thereafter removed to a rising ground about two miles west of the city, where it now stands. It is occupied and conducted by the professor of astronomy in the University. In addition to an Antiquarian Society, there is the Maitland Club, an institution similar to the Bannatyne of Edinburgh, for the printing of curious and rare manuscripts, illustrative of the history, literature, or antiquities of Scotland. Nearly 100 quarto volumes have been already printed by this brotherhood. There are 21 newspapers and mercantile lists published in Glasgow, irrespective of a host of penny papers which the altered state of the law has produced, some of which have a very large circulation. The first newspaper published in the west of Scotland was the Glasgow *Courant*, which appeared in the year 1715; since which time many have been established and disappeared. The first circulating library was established in Glasgow in 1753, and lent out books at one halfpenny per volume. At present there are many circulating as well as public and private libraries. We have already alluded to that of the College, and we may now mention those belonging to Anderson's University, to the Faculties of Physicians and Surgeons, and Procurators, the Philosophical Society, and also to those founded by Mr Stirling, and established under the title of the Glasgow Public Library.

Newspapers and libraries.

Letterpress printing.

In consequence of an invitation from the magistrates, George Anderson was induced to come to Glasgow in 1638, and here printed an account of the celebrated Assembly of the Church of Scotland which met in that year. The printing of books, however, does not appear to have succeeded well until the Messrs Foulis commenced in 1741, after which and during a succession of years they sent forth from their press works, and particularly editions of the classics, which for accuracy and beauty have never been surpassed in Great Britain. Letterpress printing is now carried on to a very great extent. Besides the great number of newspaper printing offices, many of which have steam-presses, the printing of books is pursued with great vigour and to a considerable extent.

Civic institutions.

The Corporation.—From the period when Glasgow was first created into a royal burgh by William the Lion about 1178, numerous alterations have taken place in its political and municipal constitution. At present, it possesses all the advantages of being a royal, municipal, and parliamentary burgh. It is governed by a lord provost, 8 bailies, and 39 councillors, in addition to whom the dean of guild from the merchants, and the deacon convener from the Trades' Houses, are members of council *ex officiis*. During the term of their office, the bailies are justices of the peace within the county of Lanark, while two out of the council are chosen for holding a species of admiralty jurisdiction over the River and Firth of Clyde. The income of the burgh in 1855 was L.20,124, 6s. $3\frac{1}{2}$d., and the expenditure L.19,139, 16s. 9d. The sheriffs, consisting of the principal and three substitutes, who have a co-ordinate jurisdiction with the magistrates, hold regular criminal, civil, registration, and small-debt courts; and during three times in the year a circuit court of justiciary is held in the city. Since the passing of the Reform Bill, Glasgow sends two members to the House of Commons. The number of registered electors on the roll is 19,500, although scarcely 6000 are actual voters.

The Merchants' and Trades' Houses.—These two bodies or minor corporations formerly exerted considerable political power; but since the passing of the Reform Bill they have restricted their attention chiefly to the management of their property and funds, and which they expend on the support of their aged members and on education. In 1854 the Merchants' House consisted of 1500 members, of whom 36 are directors. Persons on entering pay L.10, for which they have a right to participate in the property and privileges of the institution. The Merchants' House has existed since 1605. Its annual revenue is considerable; and during the year 1854 it distributed in charity amongst its decayed members L.1656, 7s. 5d. The Trades' House is an equally ancient, honourable, more numerous, and wealthy body. In 1846, its revenues, with those of the fourteen incorporations, of which it is the representative, amounted to no less than L.10,972, 19s. 5d., while the number of freemen on the roll was 3234.

The Dean of Guild Court.—This tribunal, to which is referred all questions regarding the boundaries and construction of streets and buildings, consists of the dean of guild, with four assistants from the Merchants' House, and four from the Trades' House; the town-clerks are assessors.

The Police.—Previous to 1800, when the first police act was obtained for the city, the peace was chiefly maintained by the citizens themselves, under what was called "watch and ward," with the assistance of the town-officers. Since that period, the establishment, which was governed by commissioners chosen by the rate-payers, was successively remodelled by different acts of parliament, and in 1846 the commissioners were superseded, and the whole management of the officers of police, statute labour, and sewerage of the city, was placed under a committee of the town council, consisting of the lord provost, the 8 bailies, the dean of guild, the deacon convener, and 18 of the councillors. The chief superintendent of the police is chosen by the lord provost, the sheriff of the county, and the 8 bailies. There are six police courts held within the city, which are presided over by the bailies, assisted by legal assessors.

During the year 1853 there were 15,777 persons brought before the magistrates in these courts. The cost to the community of the city police in 1854, including lighting, cleansing, fire department, and interest on debt, was L.64,726, 8s. 7d. The fines recovered amounted to L.3204, 13s. 9d. The police force consisted of 1 chief superintendent, 6 assistants, 13 lieutenants, and 612 other persons; in all 632. The paving and keeping the streets during 1854 cost L.23,800, 11s. 11d. The annual assessment at present (1856) for police and statute-labour purposes is 1s. 6d. per pound on the rental of the city.

The Prisons.—After the removal of the Old Tolbooth at the Cross, which, like other jails in the country, was very indifferent, a new prison was erected at the south end of Saltmarket Street; but this being found both inappropriate and inadequate, a large prison has been since erected on the site of the bridewell in Duke Street, and which now contains the whole criminal and civil prisoners of the city and neighbourhood. This establishment contains about 554 cells; and during the year 1854 there were 4209 criminal and 169 civil prisoners passed through the prison, the daily average being, of criminals 574, and of debtors 17. The average cost per head of the criminals was L.17, 0s. 10d., less earnings L.2, 14s. 5d. Nett cost L.14, 6s. 5d.

Houses of Refuge.—These asylums, chiefly for juvenile delinquents, are perhaps the best conducted in the country. Here the offspring, generally, of degraded parents, brought up in idleness and vice, and exposed to the crying necessities of hunger, and thereby easily induced to enter on a career of crime, find instruction and a home. Where, too, not a few of the many children rather of misfortune than of vice have been arrested in their criminal course, and have thus been saved from the cruelest of all woes, that of becoming, through the punishment of a prison, additional victims of that melancholy mass of "dishonoured ones," whom the conduct of a cold and unpitying world renders utterly irreclaimable. Of these houses there is one for boys and another for girls. In the former 229 boys were admitted during the year 1854, while in the latter 130 were living in the house on the 30th June of the same year.

The poor.

The Poor.—Glasgow, as regards poor-rates, is divided into four parishes—viz. Glasgow Proper, the Gorbals, the Barony, and Govan; the two latter being only partly within the parliamentary city. The following were the numbers on the poor-roll in 1854 in the various parishes.

	Glasgow Proper.	Gorbals.	Barony.	Govan.
No. on Out-door Roll...............	3126	290	2991	585
... of Orphans on do...............	528	12	348	28
... of Paupers in Poor-house ...	955	10	834	388
... ... in Lunatic Asylum....	138	9	116	21
... ... in Deaf and Dumb do.	3	...	9	2
... ... in Blind do.	1	...	...	...

The cost per head of the out-door poor for year 1854, exclusive of expenses of management, was, Parish of Glasgow L.5, 1s. 2d., Gorbals L.2, 7s. 6d., Barony L.3, 10s. 8d. Govan L.5, 16s. 2d. The cost of orphans per head, including clothing and school fees, being, Glasgow L.6, 11s. 9d., Gorbals L.4, Barony L.6, 14s., Govan L.6, 19s. 6d. The number of casual poor receiving relief during 1854 was, Glasgow 1809, Gorbals 166, Barony 1907, and Govan 1694.

Markets, abattoirs, and consumption of food.

In former days, Glasgow was celebrated for its market places; at present the greater part of the business formerly transacted in markets is now carried on in private shops. The only markets now worthy of notice are the cattle and horse market, situated at the east end of the town, which is of great extent, and most conveniently laid out for the purposes intended; and the large structure called the "bazaar," situated in Candleriggs Street, for the sale of vegetables, fruit, butter, cheese, eggs, &c.

In illustration of the business transacted in the former, it may be mentioned that in the year 1854 there were 36,009 oxen, 114,780 sheep, and 59,737 lambs, and about 9500 pigs, sold within its walls, besides a very large number of milch cows and horses. In the latter, there was of fruit, 620 tons of apples, and upwards of a million of lbs. of pears, plums, cherries, gooseberries, and currants; of onions 918 tons, and of cheese 1100 tons. There are three public shambles in the city, in all of which there were slaughtered, during the year 1854, oxen 27,881, calves 2004, sheep 94,027, lambs 44,098, goats 36, and pigs 4633. The annual amount of fresh and salted butcher meat used in Glasgow has been estimated at 45 millions of pounds weight, which, at 6d. per lb., is little short of L.1,125,000. The fresh fish sold or consumed in 1854 was 3367 tons, which at 3d. per lb., amounted to L.94,276. The bread consumed was calculated to be 144 millions of pounds weight, which, taking the 4 lb. loaf of both qualities to be on an average 8d., shows a gross cost of L.1,200,000.

Fairs.

There are three great fairs in Glasgow during the year, the chief of which is that held in the month of July. This great carnival lasts for a week, and affords the chief holidays for the working classes.

Commercial institutions.

The leading commercial institution in Glasgow is *The Chamber of Commerce*, which was instituted in 1783, under the auspices of Patrick Colquhoun, Esq., author of the *State of the Police of London*, at that time a merchant in Glasgow, for the purpose of encouraging and protecting trade, and keeping a watchful eye on whatever might be supposed to affect the commercial interests of Glasgow and its neighbourhood. It is governed by a chairman and 30 directors. The next in importance is the *Royal Exchange*, and *Lloyd s Room*, where the merchants daily congregate to transact business and to insure vessels against sea and fire risk. The annual subscribers to this institution are about 2000. There are also several other mercantile associations, such as the *East India Association*, the *West India Association*, &c., for the protection of their several particular interests. There are eleven banks and branch banks in Glasgow, which are all joint-stock companies. Five are properly Glasgow institutions, originating and having their principal establishments there; the rest are Edinburgh establishments, or partly Edinburgh and partly Glasgow.

Banks.

Of the former are the *Union Bank of Scotland*, a handsome building situated in Ingram Street; the *Western*, a Venetian edifice on the east side of Miller Street; the *Clydesdale*, a plain building in Queen Street; the *City*, a rather elegant structure in Virginia Street; and the *North British*, which does not issue notes, George's Street. Of the latter are the Royal Bank, Bank of Scotland, British Linen Company, Commercial, National, and Edinburgh and Glasgow. The edifices in which these establishments carry on their business are particularly handsome, and have of late years added much to the beauty of the city. The first local bank in Glasgow was the *Ship*, which began business in 1749; and the next greatest local bank was the *Glasgow*; both of these have merged in the Union Bank of Scotland.

National Savings Bank.

In 1815, the first attempt made in Glasgow to establish an institution for the accumulation of the savings of the community was the Provident Bank. This, and some others of a like kind, in 1836 were all merged in the National Savings Bank, which, during a career of 18 years, has not only received sums to the extent of L.3,325,168, 11s. 8d., and repaid of these L.2,640,422, 17s. 7d., but has credited depositors with interest to the extent of L.19,631, 14s. 10d., and had at the close of 1854 an accumulated deposit of L.659,460, 10s. 4d. The number of deposits during the year was 87,100, of which number 73,645 were in sums varying from one shilling to five pounds.

Charitable institutions.

There are few cities in which more charitable institutions are to be found than in Glasgow. Here are retreats for the poor and aged, houses for the houseless, hospitals for the sick, homes for the deaf, dumb, blind, and insane, and schools for the ragged and neglected. The sums annually dispensed by the Merchants and Trades' Houses and Incorporated Trades, and by other societies, go far to keep down the regular poor-rate; while this unseen charity preserves many thousands from feeling the degradation of public pauperism. Among the more important institutions may be mentioned Hutcheson's Hospital and the Royal Infirmary, the former dispensing in 1854 charity to 53 men and 410 women to the amount of L.3829, 15s., and educating and clothing 174 boys, at the cost of L.1123, 13s. 9d.; while the latter ministered to the distresses of no fewer than 5074 inmates in the house, and afforded medical relief at the dispensary to 6766, at an expense of L.10,076, 0s. 3d. The amount raised by religious and benevolent societies, irrespective of widows' funds, benefit societies, charity schools, maintenance of paupers, and for payment of the various denominations of clergy, cannot be less than L.30,000 a-year.

Public buildings.

The public buildings, exclusive of the churches, banks, and others which we have already mentioned, may be limited to the following:—The ROYAL EXCHANGE, the most elegant edifice in the city. The portico consists of twelve fluted Corinthian columns supporting a rich frieze and pediment. The north and south sides of this building are ornamented with a handsome colonnade of similar columns, while the back is chiefly occupied by a large window. If the exterior does honour to Mr David Hamilton, its architect, the interior is no less worthy of his acknowledged taste and talent. The newsroom, which is 122 feet in length by 60 broad, is fitted up according to the purest principles of Grecian architecture. Its roof boasts all the rich ornament of the Corinthian, and is supported by eighteen fluted columns of the same order, surmounted by a beautiful entablature. The ROYAL INFIRMARY, founded in 1792. It is in the Roman style of architecture, from a design by Adams. It is situated in a wide *Place* near to the cathedral. It has accommodation for about 240 medical and surgical patients, with a fever hospital capable of holding 220 more. The NEW CITY AND COUNTY BUILDINGS, in connection with the New Merchants' Hall, in Wilson and Hutcheson Streets, form a magnificent pile, from a design by Messrs Clarke and Bell. In these buildings are all the municipal and county offices, the Council Chamber, Sheriff and Dean of Guild Courts, Justice of Peace Court, and the hall for the meetings of the Merchants' House. The TRADES HOUSE, in Glassford Street, having a very fine hall for the meetings of that important body. The JUSTICIARY COURT, and other courts of justice, are situated at the south-west corner of the public green. These form a large and elegant building of the Grecian Doric, from a design by Starke. The front of this edifice will remind the virtuoso of the Athenian Parthenon, while he will scarcely fail to regret that such a building should have been injured by so low a situation. This building, which is 215 feet in length by 114 in breadth, cost the corporation upwards of L.34,000. Its interior has lately been altogether altered, and contains three public courts of justice, with every accommodation for jurors, witnesses, &c. The TONTINE, at the Cross, containing the Old Exchange-room and the Town Hall, is one of the most striking structures in the city. The front of this building is supported by an elegant piazza, which is surmounted by two stories crowned by an enriched entablature, a balustrade, and vases. In the Town Hall are portraits of all the British sovereigns, and an excellent picture of John Duke of Argyll, by Ramsay. Not far from this handsome building is the spire of the old Tolbooth, which stood on the site of the adjoining tenement. The top of this spire is surmounted by a light and airy piece of open stonework in the shape of an imperial crown, in which is placed a set of musical bells, which are daily played between two and three o'clock. Of the other public edifices, we can only allude to the TOWN'S HOSPITAL, HUTCHESON'S HOSPITAL, the TRADES' HALL, the ASSEMBLY ROOMS (now the ATHENÆUM), the CORN EXCHANGE, the WESTERN CLUB HOUSE, and the LUNATIC ASYLUM at Gartnavel.

Bridges.

Previous to the year 1768 there was only one bridge across the Clyde at Glasgow; and this continued for nearly six centuries to be the only communication between the north and south sides of the river. In that year a new one was founded, under the title of the JAMAICA STREET BRIDGE. Both of these structures have lately been swept away; and the bridges, now five in number, which span the Clyde at Glasgow, are all of modern construction.

The one immediately close to the harbour, called the GLASGOW BRIDGE, being the lowest of the series, was begun in the year 1832, from a design by Thomas Telford of London, and finished at a cost of L.34,000, and including compensation to owners and tenants of adjoining property, of L.40,000. It consists of seven arches, is 560 feet in length and 60 feet over the parapets, and is cased with Aberdeen granite, but, with all this breadth, it is already found narrow enough for the great traffic. It is altogether a graceful, light, and elegant structure. The next bridge eastward is PORTLAND STREET SUSPENSION BRIDGE, consisting of a single span of 412 feet, for foot passengers, and cost L.8000. It was commenced on 2d Dec. 1850, but not opened till May 1853. The third occupies the site of the ancient structure erected by Bishop Rae, from a design by Messrs Walker & Burgess of London, and is called the VICTORIA BRIDGE; it was commenced in 1850. It is built of heavy blocks of freestone, and cased with Dublin Bay granite. Victoria Bridge is altogether one of the most beautiful and strongest erections in Europe. It consists of five arches, each of which forms a very flat segment of a circle. The span of the centre arch is 80 feet, and the rise 10 feet 6 inches; the span of each of the adjacent arches is 76 feet, and the rise 9 feet 4¾ inches; while the span of each of the outward arches is 67 feet, with a rise of 7 feet 2 inches. Each of the two centre piers is 10 feet in thickness. The total length of the bridge to the end of the wing-walls is 467 feet; and the total river space occupied by piers 38 feet. This bridge is 60 feet broad over the parapets. The fourth, called HUTCHESON'S BRIDGE, is built on the site of one which was commenced in 1794, but carried away by a flood before completion. The present structure, which was begun in 1829, and completed in 1834, at a cost of L.30,000, is from a design by Mr Stevenson. It is of freestone, with five arches, and is only 34 feet broad between the parapets, and possesses none of the beauty of either of the other stone structures. Lastly, a SUSPENSION BRIDGE, just finished, situated a short distance eastward from Nelson's Monument, and which has been erected at a cost of about L.5500. The three stone bridges are managed by trustees, consisting of the town-council and certain gentlemen named by the counties of Renfrew and Ayr. The revenue from toll-duties for the year 1854–55, was L.6555, 10s. 5d.; the expenditure L.3220, 18s. 4d.; and the debt L.60,045, 1s. 2d.

Monuments and statues.

The public monuments consist of an obelisk on the public green, erected by subscription to the memory of Lord Nelson; a pillar, surmounted by a statue by Forrest, in the Necropolis, in honour of the reformer John Knox; and a column, with a statue, in the centre of George Square, in memory of Sir Walter Scott. There are three equestrian statues in the city; the oldest, that of William III., presented by Governor Macrea, and erected at the Cross; the next is that in bronze of the Duke of Wellington, by Marochetti, having bronze bas-reliefs on the pedestal, representing his first and last great battles—it was erected by private subscription, at a cost of L.10,000; and last, that of Queen Victoria in St Vincent Place, also by Marochetti, erected by subscription, to commemorate her Majesty's visit to Glasgow in 1849. There are four pedestrian bronze statues scattered over the town; the first, that of Sir John Moore in George Square, by Flaxman; the second, that of James Watt, also in George Square, by Chantrey; the third, that of James Oswald of Auchincruive, late M.P. for the city, in Crescent Place, by Marochetti; and the last, of Sir Robert Peel, not yet placed. There are likewise three marble pedestrian statues; the first, of William Pitt, by Flaxman, erected in the Town Hall at the Cross; the second, of James Watt, by Chantrey, in the Hunterian Museum; and the third, of Kirkman Finlay of Castletoward, late M.P. for the city, by Gibson, placed at the entrance to the Merchants' Hall, in Hutcheson Street.

Places of amusement and pleasure grounds.

The Theatre-Royal, situated in Dunlop Street, and lately rebuilt, is a large and elegant structure, in which, in addition to the usual performances of tragedy, comedy, and farce, has of late years been added Italian operas. The first regular theatre opened in Glasgow was in 1764, which having been burned, a new one was erected on the site of the present Theatre-Royal in 1785, which having been found, from the increasing taste for theatricals, too small, was abandoned, and a splendid edifice was erected by subscription in 1805 in Queen Street, at a cost of L.18,000. This, too, having been consumed by fire in 1829, the present theatre was got up entirely through the exertions of the late Mr J. H. Alexander, long its indefatigable manager. There is another theatre, situated in West Nile Street, called *The Prince's*, which is opened during summer.

The City Hall is situated in Candleriggs, and was originally erected by the corporation to meet the demands for great public meetings. It has latterly been remodelled, and is used for concerts, lectures, &c. A splendid organ has also been added to it at a cost of little less than L.1500. This hall can easily accommodate 2000 or 3000 persons.

The M'Lellan Rooms.—These consist of three large saloons, recently erected by the late Mr Archibald M'Lellan, with the view of giving accommodation to a large and valuable collection of pictures which he bequeathed to the citizens. They are tastefully fitted up, and occasionally serve the purposes of the old dancing assembly rooms in Ingram Street, now converted into an Athenæum.

The Public Green.—This large and well-kept park has been long famed, and is situated at the south-east side of the city. It consists of about 130 or 140 acres. It is much used by the population as a place of recreation, and by the military as a place of drill.

The Botanic Garden lies about a mile north-west from the city, and extends to about forty acres. It occupies the slope which overlooks the wooded banks of the Kelvin. It is tastefully laid out in plots and walks, and boasts a rare and valuable assemblage of curious trees and plants brought from every quarter of the globe. It is furnished with hot and green houses, and water-tanks and rock-work suitable for all kinds of plants. It has two collections, arranged according to the systems of Linnæus and Jussieu, for the use of the students of botany attending the university, the college having contributed L.2000 for the exclusive privilege of their professor giving prelections there. On certain days the working classes are admitted at a charge of a penny each; and as a proof that this boon is taken advantage of, it may be mentioned that during the fair week of 1854 no fewer than 24,822 visited these gardens.

The West-End Park.—The corporation, with the view of improving the city and benefiting the health of the citizens, lately purchased the lands of Kelvin Grove, &c. at a cost of L.100,000. Part of this has been assigned for the sites of handsome domestic residences, and part for the formation of a park for the recreation of the public. The latter is nearly completed, after a plan by Sir Joseph Paxton, and when finished will be one of the finest promenades connected with any city in Europe. The views from the high grounds are splendid, commanding the whole valley of the Clyde, the mountains of Dumbarton and Argyll, Gottfeldt in Arran, Benlomond, &c., while the lower grounds are ornamented with the finest timber, and the flowering shrubs which originally awakened the poet's lyre in praise of "Kelvin Grove."

Climate.

The climate of Glasgow, like most parts of the island, is variable. Lying in the narrowest part of the isthmus betwixt the Forth and Clyde, the air is frequently refreshed by temperate breezes from the sea. The wind is south-west and west for nearly two-thirds of the year. Fogs are not so common as on the east coast; but there are more rainy days than in Edinburgh. The winters are mild, and the springs free from the biting east winds so prevalent on the sides of the Firth of Forth. The following is the meteorology of Glasgow for the years 1851, 1852, 1853, and 1854:—

Days in which rain or snow fell—average of each year	185·75	inches.
Mean quantity of rain that fell each year	37·22	...
Winds, S. 36¼ days, S.W. 55½, W. 83, N.W. 5½, N. 16¼, N.E. 18¼, E. 44½, S.E. 9½, Calm 67¼.		
In 1851 the mean height of barometer was	29·742	inches.
Thermometer, mean max. and min. being	47·1	...

Health, mortality, and disease.

In consequence of burial records having been regularly kept since 1699, the mortality of Glasgow has been always well known; and from these tables it appears, that during the years from 1848 to 1854—which, however, include two visitations of cholera—the deaths amounted to 86,934, being an annual average of 12,417, which, measured by the real population of 1851, shows 1 death in 29 of the population. This, however, is a high exceptional figure of mortality, arising altogether from the presence of cholera. The census year, taken alone, which may be considered a fair average twelvemonth, having only shown 1 death to 33·5. One peculiarity, however, connected with Glasgow mortality is very striking, and that is the great proportion of deaths being under five years of age.

During the seven years from 1848 to 1854 the annual average number of infantile deaths was 5535; and when measured in the population of 1851 under five years of age, shows the deaths of 1 to 8·10, the proportion of infantile deaths to the whole deaths during the same period being 44·56 per cent. The diseases which have chiefly carried off the infant population during the last seven years were, measles 1 in 795, hooping-cough 1 in 539, scarlatina 1 in 711, croup 1 in 2118, and small-pox 1 in 816·6, of the mean population of 1851. The leading agent in swelling the annual bills of mortality among adults is consumption, that insidious and fell distemper having carried off, from 1848 to 1854, 14,933 individuals, or annually on the average of 2133, being 1 in 168·84, or 0·59 per cent. of the mean population of 1851. It appears that this malady destroys regularly every year more than one half of the number which cholera carried off during each of its three visits to Glasgow. It appears also that this distemper has much increased in this locality since the close of the last century, the deaths from phthisis in 1775 being only 1 in 267, whereas in 1854 the mortality was 1 in 168. Upon the whole it appears that while Glasgow shows itself unfavourable to human life during childhood, and that particularly among the working classes, it exhibits that its climate is suitable to adults, being in this respect one of the healthiest cities in the kingdom. The number of deaths in 100 living from fifteen to sixty years of age, being 1·41, London 1·56, Birmingham 1·50, Manchester 1·83, and Liverpool 1·76.

Cemeteries.

To meet the requirements of the large mortality of Glasgow there are twenty-two places of sepulture; and although it is to be regretted that so many of them are still found surrounded by the crowded habitations of the living, it is, at the same time, satisfactory to know that extramural burial is daily on the increase. Every succeeding year shows a growing taste on the part of the living to imitate the civilized nations of antiquity by carrying forth their dead beyond the boundaries of the city. Of late years several beautiful garden cemeteries have been formed, such as Sighthill, Dalbeth, the Southern and Eastern Necropolis, &c., on the plan of the Glasgow Necropolis *par excellence*, which may be fairly accounted the parent garden cemetery of Great Britain. This picturesque burying-ground occupies a rocky eminence on the east of the cathedral, is adorned with trees, shrubs, and flowers, and is already crowded with many striking and elegant monuments. It possesses several winding walks, and affords, from almost every point, the most splendid views of the city and neighbourhood. The singular diversity of its soil and substrata proclaims it to be, of all other spots, the most eligible for a cemetery, calculated, as it is, for every species of sepulture, and suitable for every sort of sepulchral monument. (J. S—G.)

GLASLYN, in North Wales, a romantic river, forming the south-eastern boundary of Snowdonia, has the first part of its course in Caernarvonshire, which it afterwards divides from Merionethshire. It rises in that part of Snowdon adjoining Glyder Vach, and, dashing down an almost perpendicular precipice, produces a fine cascade. On reaching a narrow meadow-valley it turns southward and falls into the beautiful lake Llyn Gwynant, from which it issues at its south-western extremity, and flows through a narrow beautiful vale studded with cottages among the rocks. Here it passes under the Pont-Bayn-y-Wyad, a stone bridge, whence a striking view of Snowdon presents itself. Further down the Glaslyn enters the fine lake of Llyn-y-Dinas, which it quits on the south, amid splendid scenery, and soon reaches the base of Dinas Emris, an isolated rock celebrated in early British history as the retreat of Vortigern. Its course then lies in a narrow vale between lofty hills till it arrives at the Pont-Suggin among most romantic scenery. Further down it flows through the lovely village of Bethgelert, whence it rushes on to the stupendous chasm of Aberglaslyn, whence again issuing, it dashes on through enchanting scenery, and at last glides silently into Cardigan Bay.

GLASS.

The general term *glass* is employed by chemists to denote all mineral substances which, on the application of heat, pass through a state of fusion into hard and brittle masses, and which, though not always transparent, exhibit a lustrous fracture when broken. The glass of commerce, however, to which our remarks are restricted, or the transparent and artificial substance which is usually distinguished by the generic name, is produced by the igneous fusion of siliceous earth with certain alkaline earths or salts, or with metallic oxides.

The etymology of the word has been much disputed. It is derived by some from the Latin *glacies*, ice, its resemblance to which is thought to have suggested the title. Others have remarked, that the common Latin designation of this substance is *vitrum;* and as the Romans applied this term, in common with the word *glastum*, to the plant which we call woad, they have deduced it from the latter of these, either because the ashes of this plant were used in the manufacture of glass, or because it exhibited something of the bluish colour which is procured from woad. *Glassum*, the name given to amber by the ancient Gauls and Britons, has also been assigned as the origin of the word. But none of these etymons appears very satisfactory. The most plausible theory is that which derives the term from the Saxon verb *glis-nian*, or the German *gleissen*, *splendere*, which are probably contractions of the Anglo-Saxon *ge-lixan*, to shine, to be bright. This view is in a great degree confirmed by the sense in which the term glass and its derivatives are employed by our older writers, who frequently apply it to shining or glittering substances, without reference to colour or transparency.

In the most remote ages the art of blowing glass into bottles, making it into vases, colouring it to imitate precious stones, melting it in enormous masses to make pillars, rolling and polishing it into mirrors, and tinting it in parts, were all perfectly well known. For its origin we must look to Egypt, the parent of so many collateral arts. The story of the Israelites having set fire to a forest, and the heat becoming so intense that it made the nitre and sand melt and flow along the mountain side, and that they afterwards did artificially what had been the result of accident, may be set down as equally fabulous with the story of the pirates, who are said to have landed on the sea beach, and wishing to make their cauldron boil, piled up some vitreous stones and placed on them a quantity of sea-weed and blocks of wood, causing so strong a heat that the stones were softened and ran down on the sand, which melting and mixing with the alkali became a diaphanous and glassy mass. The fictitious character of both these stories is proved by the simple fact that it requires the most intense furnace heat to insure the combination of the sand with the nitre.

Under these circumstances we are justified in believing that glass-making had its origin at the same time with the baking of bricks and pottery. The smelting of ores, too, required a furnace sufficiently intense to fuse the silicates analogous to glass, and hence it may be safely inferred, that in the age when melting and working metal was known the art of making glass was also practised. In the book of Job the most precious things are compared to wisdom, but still more precious are gold and glass. The Hebrews must have become acquainted with glass while in Egypt, and in consequence of their proximity to the Phœnicians; and it is now generally believed that these two nations had the merit of originating and establishing its manufacture. The Athenian ambassadors, in order to give an idea of the magnificence displayed at the court of the great King of Persia, said, that they drank in cups of glass and gold. Some writers affirm that the Egyptians in some instances sealed up their dead in a coating of glass, and glass-houses are said not to have been uncommon in that wonderful country. Some authors ascribe, with very plausible reason, the discovery of glass-making to the priests of Vulcan at Thebes and Memphis, the greatest chemists in the ancient world. The Egyptians are also known to have made enamels of divers colours which they applied on pottery, magnificent specimens of which are still extant, and are called Egyptian porcelain. These are chiefly covered with beautiful blue or green, and groups of flowers or designs are traced in black. Glass beads and other ornaments made of that substance, skilfully manufactured and beautifully coloured, have been found adorning mummies, which are known to be upwards of three thousand years old. It is certain that Tyre, Sidon, and Alexandria, were long celebrated for their glass, and furnished the greater proportion of that used at Rome. Under the Roman Empire the Egyptians still preserved their superiority in the art of glass-making, and it is said that Aurelian caused them to pay their tribute in that manufacture. Adrian mentions that he had received drinking-glasses of various colours from a priest of a famous temple in Egypt, and gives instructions that they are not to be used but on the greatest occasions, and on the most solemn feast days. To these places the art was exclusively confined for some centuries, and was an article of luxury, being chiefly in the form of urns or drinking cups of the most elaborate workmanship, and exquisitely embellished with raised, chased, or ornamented figures. The Barberini or Portland vase, composed of deep blue glass, with figures of a delicate white opaque substance raised in relief, is a splendid specimen, and was found in the tomb of Alexander Severus, who died A.D. 285.

The art of glass-making seems to have been introduced into Italy by the Romans after their conquests in Asia in the time of Cicero, and the first glass works there were said to have been near the Flaminian Circus. It is highly probable that these workmen were imported from Egypt. The use of glass seems rapidly to have increased, and to have become very common, for we find an emperor in the third century of the Christian era saying, that he was disgusted with so low and vulgar an object as glass, and that he would only drink from vessels of gold. By this time the manufacture of glass was so considerable that an impost was laid on it, and it was extensively employed in the decorations of buildings, while in glass mosaics were combined the most brilliant colours.

From the circumstance of coloured glass beads and amulets having been found among Druidical remains in this country, it has been argued by Pennant and others, that the art of making glass was known in Britain before its invasion by the Romans. It can hardly, however, be believed that a people who had made very trifling advances in civilization, and who, it is known, were entirely unacquainted with any other art, should be found not only conversant with the manufacture of glass, a complicated and highly ingenious process, but should excel in it; for the beads and amulets spoken of are of exquisite workmanship, and beautifully coloured in imitation of the rarest and most precious stones. There seems little doubt, therefore, that the ancient Britons procured these in the course of traffic with the Syrians, who visited the island, as we do those in the South Seas, to drive a trade with their savage inhabitants in toys and trinkets, giving them these in exchange for skins or other natural productions. By whatever means, however, these ornaments came into Britain, it is certain that they were in extensive use, though principally for religious purposes, long prior to the Roman invasion, as they are found in barrows or tumuli of a much older date. One at Stonehenge, in particular, on being opened, was found to be filled with them.

Glain Neidyr, or Druidical glass rings, generally about half as wide as our finger rings, but much thicker, have frequently been found. The vulgar superstition regarding these was, that they were produced by snakes joining their heads together and hissing, when a kind of bubble like a ring was formed round the head of them, which the others, continuing to hiss, blew on till it came off at the tail, when it immediately hardened into a glass ring. Success was thought to attend any one who was fortunate enough to find one of those snake-stones. They were evidently beads of glass employed by the Druids, under the name of charms, to deceive the vulgar. They are usually of a green colour, but some of them are blue, and others variegated with wavy streaks of blue, red, and white.

Glass utensils have been found in Herculaneum, which city was destroyed by an eruption of Mount Vesuvius in the reign of Titus (A.D. 79). A plate of glass also found there has occasioned much speculation as to its uses. Similar plates, to which Pliny gives the name of *vitreæ cameræ*, seem to have been employed, in a manner not very well understood by us, as panelling for their rooms. It is disputed whether or not glass was used in Herculaneum for windows.

Dion Cassius and Petronius Arbiter concur in their account of the discovery of malleable or ductile glass by a celebrated Roman architect, whose success in the restoration to its position of a portico which leaned to one side had roused the envy and jealousy of Tiberius, and occasioned his banishment from Rome. Thinking that his discovery would disarm the emperor's wrath, the artist appeared before him bearing a glass vessel, which he dashed upon the ground. Notwithstanding the violence of the blow, it was merely dimpled, as if it had been brass. Taking a hammer from his breast, he then beat it out into its original shape; but instead of giving him the reward which he had expected, the emperor ordered the unfortunate artisan to be beheaded, remarking, that if his discovery were known, gold would soon be held of as little value as common clay. This is probably another version of the story told by Pliny, of an artificer who made the same discovery, and whose workshop was demolished by those who had an interest in preventing the introduction of an article which would lower the value of gold, silver, and brass. Although it might not be justifiable to give unqualified disbelief to these stories, yet the knowledge we at present possess would restrict the possibility of such a discovery within the narrowest limits. The union of the properties of malleability and vitrification seems to be incompatible. Some metallic substances, by the application of intense heat, are reduced to the state of glass, but at the same time lose their malleability; which fact would seem to imply that it is impossible to communicate the latter property to glass. The extraordinary stories above mentioned have, however, been rationally enough explained by modern chemists. It has been observed by Kunckel, that a composition having a glossy appearance, and sufficiently pliant to be wrought by the hammer, may be formed: and by Neumann, that, in the fusion of muriate of silver, a kind of glass is formed, which may be shaped or beaten into different figures, and may be pronounced in some degree ductile. Blancourt, in his *L'Art de la Verrerie*, mentions an artist who presented a bust of ductile glass to the Cardinal Richelieu, minister of Louis XIII. But he does not seem to have been more fortunate than his predecessors; for he was doomed to imprisonment for life, for "the politic reasons," as Blancourt with much simplicity observes (we quote from the translation published in 1699), "which, it is believed, the cardinal entertained from the consideration of the consequences of that secret," which no doubt led him to fear lest the established interests of French glass manufacturers might be injured by the discovery. From expressions used by Blancourt in other parts of his work, we think, that by malleable glass, such as was produced by this artist, he understood some composition similar to those which Kunckel and Neumann discovered, and was not very exact in limiting the term to that vitreous substance which we now generally understand when we speak of glass.

The precise period at which the making of window-glass came into practice is not now certainly known. The Roman windows were filled with a semitransparent substance called *lapis specularis*, a fossil of the class of mica which readily splits into thin smooth laminæ or plates. This substance is found in masses of ten or twelve inches in breadth, and three in thickness; and, when sliced, very much resembles horn, instead of which it is to this day often employed by lantern-makers. The Romans were chiefly supplied with this article from the island of Cyprus, where it abounds. So good a substitute for glass is it said to have been, that, besides being employed for the admission of light into the Roman houses, it was also used in the construction of hot-houses, for raising and protecting delicate plants; so that, by using it, the Emperor Tiberius had cucumbers at his table throughout the whole year. It is still much employed in Russia instead of glass for windows.

There is no positive mention of the use of glass for windows before the time of Lactantius, at the close of the third century. But the passage in that writer which records the fact (*De Opif. Dei*, cap. 8), also shows that the *lapis specularis* still retained its place. Glass windows are distinctly mentioned by St Jerome, as being in use in his time (A.D. 422). After this period we meet with frequent mention of them. Joannes Philippinus (A.D. 630) states that glass was fastened into the windows with plaster.

The Venerable Bede asserts that glass windows were first introduced into England in the year 674, by the Abbot Benedict, who brought over artificers skilled in the art of making window-glass, to glaze the church and monastery of Wearmouth. The use of window-glass, however, was then, and for many centuries afterwards, confined entirely to buildings appropriated to religious purposes; but in the fourteenth century it was so much in demand, though still confined to sacred edifices and ornamental purposes, that glazing had become a regular trade. This appears from a contract entered into by the church authorities of York Cathedral in 1338 with a glazier, to glaze the west windows of that structure; a piece of work which he undertook to perform at the rate of sixpence per foot for white glass, and one shilling per foot for coloured. Glass windows, however, did not become common in England till the close of the twelfth century. Until this period they were rarely to be found in private houses, and were deemed a great luxury, and a token of great magnificence. The windows of the houses were till then filled with oiled paper, or wooden lattices. In cathedrals, these and sheets of linen supplied the place of glass till the eighth century; in meaner edifices lattices continued in use till the eighteenth.

The glass of the Venetians was superior to any made elsewhere, and for many years commanded the market of nearly all Europe. Their most extensive glass-works were established at Murano, a small village in the neighbourhood of Venice; but the produce was always recognised by the name of Venetian glass. Baron von Lowhen, in his *Analysis of Nobility in its Origin*, states that, "so useful were the glass-makers at one period in Venice, and so great the revenue accruing to the republic from their manufacture, that, to encourage the men engaged in it to remain in Murano, the senate made them all burgesses of Venice, and allowed nobles to marry their daughters; whereas, if a nobleman marries the daughter of any other tradesman, the issue were not reputed noble."

The skill of the Venetians in glass-making was especially remarkable in the excellence of their mirrors. Beckmann, who has minutely investigated the subject, is of opinion that the manufacture of glass mirrors certainly was attempted, but not with complete success, in Sidon, at a very early period; but that they fell into disuse, and were almost forgotten until the thirteenth century. Previously to this period, plates of polished metal were used at the toilette; and in the rudeness of the first ideas which suggested the substitution of glass, the plates were made of a deep black colour to imitate them. Black foil even was laid behind them to increase their opacity. The metal mirrors, however, remained in use long after the introduction of their fragile rivals, but at length they wholly disappeared; a result effected chiefly by the skill of the Venetians, who improved their manufacture to such a degree that they speedily acquired a celebrity which secured an immense sale for them throughout all Europe.

From Italy the art of glass-making found its way into France, where an attempt was made, in the year 1634, to rival the Venetians in the manufacture of mirrors. The first essay was unsuccessful; but another, made in 1665, under the patronage of the celebrated Colbert, in which French workmen who had acquired a knowledge of the art at Murano were employed, had better fortune. But a few years afterwards, this establishment, which was situated in the village of Tourlaville, near Cherbourg in Lower Normandy, was also threatened with ruin by a discovery or rather improvement in the art of glass-making, effected by one Abraham Thevart. This improvement consisted in casting plates of much larger dimensions than it had hitherto been deemed possible to do. Thevart's first plates were cast at Paris, and astonished every artist by their magnitude. They were eighty-four inches long and fifty inches wide, whereas none previously made exceeded forty-five or fifty inches in length. Thevart was bound by his patent to make all his plates at least sixty inches in length and forty in breadth. In 1695 the two companies, Thevart's and that at Tourlaville, united their interest, but were so unsuccessful, that, in 1701, they were unable to pay their debts, and were in consequence compelled to discharge most of the workmen, and abandon several of their furnaces. Next year, however, a company was formed under the management of Antoine d'Agincourt, who re-engaged the discharged workmen; and the works realized considerable profits to the proprietors, a circumstance which is attributed wholly to the prudent management of D'Agincourt.

Early in the fourteenth century the French government made a concession in favour of glass-making, by decreeing that not only should no derogation from nobility follow the practice of the art, but that none save gentlemen, or the sons of noblemen, should venture to engage in any of its branches, even as working artisans. This limitation was accompanied by a grant of a royal charter of incorporation, conveying important privileges, under which the occupation became eventually a source of great wealth to several families of distinction.

It has been said that the manufacturing of window-glass was first introduced into England in the year 1557. But a contract, quoted by Horace Walpole in his *Anecdotes of Painting*, proves that this article was made in England upwards of a century before that period. This curious document is dated in 1439, and bears to be a contract between the Countess of Warwick and John Prudde of Westminster, glazier, whom she employed, with other tradesmen, to erect and embellish a magnificent tomb for the earl, her husband. John Prudde is thereby bound to use "no glass of England, but glass from beyond seas;" a stipulation which, besides showing that the art of making window-glass was known and practised in England in the fifteenth century, seems also to indicate that it was inferior to what could be obtained from abroad. The finer sort of window-glass was made at Crutched Friars, London, in 1557. In the year 1635, Sir Robert Maxwell introduced the use of coal fuel instead of wood, and procured workmen from Venice; but many years elapsed before the English manufactories equalled the Venetian and French in the quality of these articles. The first flint-glass made in England was manufactured at the Savoy House, in the Strand; and the first plate-glass, for looking-glasses, coach windows, and similar purposes, was made at Lambeth, by Venetian workmen, brought over in 1670 by the Duke of Buckingham. From that period the English glass manufactories, aided by the liberal bounties granted them in cash upon glass sold for export, became powerful and successful rivals of the Venetian and French manufactories. The bounty on glass exported, which the government paid to the manufacturer, was not derived from any tax by impost, or excise, previously laid; for all such were returned to the manufacturer together with the bounty, thereby lessening the actual cost of the article from 25 to 50 per cent., and enabling the English exporter to compete successfully in foreign markets. This bounty provision was annulled during the premiership of Sir Robert Peel, together with all the excise duty on home consumption.

The art of glass-making was introduced into Scotland in the reign of James VI. An exclusive right to manufacture it within the kingdom, for the space of thirty-one years, was granted by that monarch to Lord George Hay, in the year 1610. This right his lordship transferred in 1627, for a considerable sum, to Thomas Robinson, merchant-tailor in London, who again disposed of it for L.250, to Sir Robert Mansell, vice-admiral of England. The first manufactory of glass in Scotland, an extremely rude one, was established at Wemyss in Fife. Regular works were afterwards commenced at Prestonpans, Leith, and Dumbarton. Crown-glass is now manufactured at Warrington, St Helens, Eccleston, Old Swan, and Newton, Lancashire; at Birmingham, Hunslet near Leeds, and Bristol. It is also manufactured of excellent quality on the Tyne and Wear. Great improvements have recently been made in the manufacture of crown-glass; and we believe this article, as made in England, is superior in quality to that of any other nation.

The manufacture of glass was introduced into the American States in 1790 by Robert Hewes, a citizen of Boston, who erected a factory in the then forest of New Hampshire. The chief aim of Mr Hewes was to supply window glass, but he did not succeed. Another attempt was made in 1800, when a factory was built in Boston for making crown window glass; but this was also unsuccessful, till a German named Lint, in 1803, took charge of the works, and the State of Massachusetts agreed to pay the proprietors a bounty on every table of window glass they made; after which the manufacture was carried on successfully, the glass steadily improving in quality, and becoming famed through all the states as Boston window glass. The same company, in the year 1822, erected new and more extensive works at Boston. The mystery attached to the art of glass-making followed it into America. The glass-blower was considered a magician, and myriads visited the newly-erected works, looking on the man who could transmute earthy and opaque matter into a transparent and brilliant substance, as an alchemist who could transmute base metal into gold.

Since the manufacture of flint glass was introduced into the eastern states there have been above forty companies formed from time to time, nearly thirty of which have proved failures. There are now ten in operation, two of which are at East Cambridge, three at South Boston, one at Sandwich, three near New York City, and one at Philadelphia. 48,000 tons of coal, 6500 tons of silex, 2500 tons ash, nitre, &c., and 3800 tons of lead are annually consumed in the manufacture of flint glass.

In the vicinity of Pittsburg, in the western states, are nine manufactories of flint glass and ten of window glass, and in the river towns are fifteen window-glass factories.

There is good reason for supposing that the art of colouring glass is coeval with the art of glass-making itself. It is certain that the art was known in Egypt at least 3000 years ago. We have already mentioned the beautiful imitations of precious stones, found adorning mummies which are known to have existed for that time. We meet with frequent mention of specimens of Eastern workmanship of consummate beauty, upon which great value was placed. The works of Caylus and Winkelmann furnish some striking instances of ancient skill in the formation of pictures by means of delicate glass fibres of various hues, which, after being fitted together with the utmost nicety, were conglutinated by fusion into a solid mass. The art of combining the various colours so as to produce pictures, such as is now practised, is comparatively of recent date. The earliest specimens of this kind of work discover a fictitious joining of different pieces of glass, differently tinged, and so arranged as, by a species of mosaic work, to produce the figure or figures wanted. The various pieces are held together generally by a vein of lead, run upon the back of the picture, precisely at their junction.

It has already been stated that the Romans combined the most brilliant colours in their mosaics; and there can be little doubt that these mosaics gave the first idea of painted or stained glass for windows in the early Christian churches. In all the early specimens of Norman glass, similar colouring and design are to be traced. Starting from the fourth century, there is frequent mention of coloured glass windows by Greek and Latin authors. St John Chrysostom and St Jerome talk of "windows of divers colours;" and Lactantius says, "that the soul perceives objects through our bodily eyes as through windows garnished with transparent glass." The early basilicas were all adorned with coloured glass, and the early Christian poets sung in ecstasies of the effect produced by the windows at sunrise. In the sixth century, Prudentia, speaking of one of these structures, says:—"The magnificence of this temple is truly regal. The pious prince who consecrated it has caused the vaults to be painted at great expense, and has clothed it with golden walls, so that the light of day may repeat the fire of the morning. In the windows is placed glass of various colours, which shine like meadows decked in the flowers of spring." An inscription on St^{a} Agnese states, that that basilica, rebuilt by the Emperor Honorius, was decorated with glass, which produced the most magnificent effect. In the sixth century, Sancta Sophia, at Constantinople, also received painted windows, which Paul the Silent praises highly. Procopius says, that day seemed to be born under the vaults of the temple; and after such glowing description it cannot be doubted that the glass was stained, not colourless.

The use of coloured glass, however, was not confined to Greece and Italy. It rapidly appeared in Gaul. Gregory of Tours, in the sixth century, also tells us that the church of St Julien de Brionde, in that town, had coloured glass windows; and the Bishop of Poictiers, describing Nôtre-Dame of Paris, admired the effect produced by the light falling upon the vaults and walls after passing through the painted glass, and compares it to the first tints of the morning sun.

In England, St Wilfred, who lived early in the eighth century, is said to have been the first to introduce painted glass windows, and for that purpose had workmen brought from France or Italy.

The first painted glass executed in England was in the time of King John; previously to this, all stained or painted glass was imported from Italy. The next notice of it occurs in the reign of Henry III. The treasurer of that monarch orders that there be painted, on three glass windows in the chapel of St John, a little Virgin Mary holding the child, and the Trinity, and Saint John the Apostle. Some time after, he issues another mandate for two painted windows in the hall.

Even at this early period, however, England boasted of eminent native artists in glass painting, amongst the first of whom was John Thornton, glazier of Coventry. This person was employed, in the time of Henry IV., by the dean and chapter of York cathedral, to paint the eastern window of that splendid edifice; and for the beautiful and masterly workmanship which he exhibited in this specimen of his skill, he received four shillings per week of regular wages. He was bound to finish the work in less than three years, and to receive, over and above the weekly allowance, one hundred shillings for each year; and if the work was done to the satisfaction of his employers, he was to receive, on its completion, a further sum of L.10.

From this period downwards there have been many skilful native artists, although the Reformation greatly impeded the progress of the art, by banishing the ungodly ostentation of ornamented windows from churches; indeed, so serious was this interruption, that the art had nearly altogether disappeared in the time of Elizabeth. Amongst the most eminent glass painters who first appeared upon the revival of the art, were Isaac Oliver, born in 1616, and William Price, who lived about the close of the seventeenth century. This artist was succeeded by a person at Birmingham, who, in 1757, fitted up a window for Lord Lyttleton, in the church of Hagley. To him succeeded one Pecket of York, who attained considerable notoriety, but who was entirely ignorant of the true principles of the art.

During all this time, however, and indeed until a comparatively recent date, painted glass was regarded as too costly and too magnificent an article to be otherwise employed than in decorating religious edifices or the palaces of nobles; and even in the latter case it was but sparingly used. Modern improvement has placed this beautiful ornament within the reach of very ordinary circumstances; and the art of staining glass is now practised with great success, and is extensively used in decorating our domestic as well as our palatial and ecclesiastical architecture.

The colours of modern artists, we venture to allege, notwithstanding what is often urged to the contrary, equal in variety and richness those of the ancients, and, with the superior knowledge which we now possess of the principles of drawing, and of bringing several colours together on a single sheet, encouragement alone is wanting to attract artists of talent and inventive genius to the pursuit of the art, and to carry it to a greater height of excellence than it has ever reached in the hands of their predecessors.

MANUFACTURE OF CROWN-GLASS.

In order to secure success to his operations, the glass manufacturer must bestow the utmost care upon the erection of his furnaces. They must be well and substantially built, of the best materials, of the most approved construction, and under the direction of a builder of tried skill and extensive experience. A false economy in these respects cannot fail of leading to the most ruinous results.

Crown-glass is the best kind of glass now employed in the glazing of windows, and is so called to distinguish it from the common, broad, or spread glass, which was in use before the introduction of crown-glass, but which, on account of its inferior quality, is now rarely used. In the manufacture of crown-glass the following furnaces and arches are required, viz. calcar arch, main furnace, bottoming hole, flashing furnace, nose hole, and annealing kiln.

A Calcar Arch for burning frit is a common reverberatory furnace, and is about ten feet long, seven feet wide, and two feet high. A building ground plan and elevation of one is shown in Pl. CCLXXII. figs. 4 and 5. The crown and sides are built of fire-brick, and the other parts of common brick. The bottom should be carefully joined and cemented, as the salt is apt to ooze through it.

The Main or *Glass-making Furnace* is an oblong, built in the centre of a brick cone, large enough to contain within it two or three pots at each side of the grate-room, which is either divided, as shown in the plan, or runs the whole length of the furnace, as the manufacturer likes. Pl. CCLXXII. fig. 3 is a ground plan, fig. 2 is an end elevation, and fig. 1 a front elevation, of a six-pot furnace. 1, 2, 3, fig. 1, are the working holes for the purpose of ventilation, for putting in the materials, and for taking out the metal to be wrought. 4, 5, 6, 7 are pipe holes for warming the pipes before beginning to work with them. 8, 9, 10 are foot-holes for mending the pots and sieges. 11 is a bar of iron for binding the furnace, and keeping it from swelling.

The arch, as shown in fig. 2, is of an elliptic form. A barrel arch, that is, an arch shaped like the half of a barrel cut longwise through the centre, is sometimes used. But this soon gives way when used in the manufacture of crown-glass, although it does very well in the clay-furnace for bottle-houses.

The best stone for building furnaces is fire stone from Coxgreen, in the neighbourhood of Newcastle. Its quality is a close *grain*, and it contains a greater quantity of talc than the common fire stone, which seems to be the chief reason of its resisting the fire better. The great danger in building furnaces is, lest the cement at the top should give way with the excessive heat, and, by dropping into the pots, spoil the metal. The top should therefore be built with stones only, as loose as they can hold together after the centres are removed, and without any cement whatever. The stones expand and come quite close together when annealing; an operation which takes from eight to fourteen days at most. There is thus less risk of any thing dropping from the roof of the furnace.

The inside of the furnace is built either of Stourbridge fire-clay annealed, or the Newcastle fire-stone, to the thickness of sixteen inches. The outside is built of common brick about nine inches in thickness.

The furnace is thrown over an ash-pit, or cave as it is called, which admits the atmospheric air, and promotes the combustion of the furnace. This cave is built of stone until it comes beneath the grate-room, when it is formed of fire brick. The abutments are useful for binding and keeping the furnace together, and are built of masonry. The furnaces are stoutly clasped with iron all round, to keep them tight. In four-pot furnaces this is unnecessary, provided there be four good abutments.

Bottoming Hole. Pl. CCLXXIII. figs. 3 and 4. Elevation and ground plan. The interior is of common fire-brick, the mouth either of common fire-brick or Stourbridge clay, and the outside entirely of common brick.

Flashing Furnace. Figs. 5 and 7. Elevation and ground plan. The outside is built of common brick, the inside of fire-brick, and the mouth or nose of Stourbridge fire-clay.

Nose Hole. Fig. 6. Elevation. This is a small aperture off the flashing furnace, and of the same materials. Fig. 7, ground plan.

Annealing Kiln. Figs. 8 and 9. It is built of common brick, except around the grate-room, where fire-brick is used.

The materials of which crown-glass is usually composed are kelp and fine white sand. Pearl ashes, or certain other alkalis, sometimes supply the place of the former of these substances. The quality of kelp is extremely various. That from Orkney is superior to what is made in Ireland, the Hebrides, or the lower parts of Scotland. It is found to contain less alkali, and to produce glass of a better colour.[1] For the glass-maker's purposes the kelp of the Orkneys is decidedly the best. It is freer from sulphur than the others, the presence of which makes the glass green, crude, and fretful. The following is the course pursued in the preparation of kelp. The fuci are cut from the rocks in the months of May, June, and July. They are then brought to the shore, and, after being spread out and dried, are thrown into a pit lined with stones, in which a large fire of peat has been previously kindled. On this fire the weed is heaped from time to time, until a large mass is accumulated, and the whole is reduced to a state of fusion. It is then well mixed and levelled, and allowed to cool. When sufficiently cold, it is taken from the pit, and broken into portable masses, for the convenience of transportation. To prevent the dissipation of the alkali, a thing very apt to occur, the greatest care is necessary in every part of this process; in the gathering and drying, as well as in the burning of the fuci; in the treatment of the mass whilst in a state of fusion; and in its exposure to the atmosphere during these operations. Kelp burners are but too frequently guilty of carelessness in this respect. In some places they burn the fuci in pits which are not lined with stones, and, of consequence, sand and earthy substances mingle with the fused mass.[2] It is no uncommon thing for the makers to increase the weight of kelp intentionally, foolishly thinking to procure a higher price for it by so doing. Such adulteration is, however, at once detected by the kelp merchant, and the article, which might otherwise have brought a good price, is reduced to less than a third of its value. The inferiority of the Lowland kelp to that of Orkney and the Hebrides, may with safety be attributed as much to this practice as to the inferiority of the fuci. Some idea, but at best a very uncertain one, of the quality of kelp may be formed by the examination of its external appearance. A chemical analysis of its properties can alone give security to the manufacturer. In preparing it for the manufacture of glass, it is first broken into small pieces, either by the hand or by a machine called a stamper. It is then put into a mill and ground into a fine powder, stones and all other extraneous matter being picked out. The powder is afterwards passed through brass wire sieves.

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[1] Some eminent chemists assert that, although the usual quantity of kelp be added in the manufacture of glass, the weight of the glass produced is nothing more than the original weight of the sand. But this is not the case with the Orkney kelp, for though it has less alkali, it contains more insoluble matter than the West Highland kelp, and of course produces a larger quantity of glass. The West Highland yields glass of very inferior colour to that procured by the use of Orkney kelp.

[2] The best mode of preparing kelp, as invented by Colonel Fullarton, is by burning it in a reverberatory furnace, and throwing it down in the form of cakes, in the same manner as frit, which we shall afterwards have occasion to describe. When so prepared, it is more fit for the glass manufacturer, being free of extraneous matter. This method is now employed by extensive makers of kelp in Ireland.

With regard to the other component part of window-glass, namely, sand, that of the best description is procured from Lynn Regis, in Norfolk. That procured from Alum Bay, on the western coast of the Isle of Wight, is also of excellent quality. The superiority of this sand arises from the circumstance of its containing a greater quantity of minute transparent crystals than is found in the sand of any other place in the country. In preparing the sand, it is usually washed in a large vat with boiling or cold water, until the water runs off quite clear. The sand is then put into a calcining arch, where it is subjected to a strong heat for twenty-four hours. During this time it is kept red hot, and immediately on being taken out is plunged into pure cold water. This has the effect of dividing the particles of sand, and making it unite more readily with the alkali during the process of calcining. Some use nitre during this process, which consumes any sulphureous matter that may be present, or extraneous substances of an animal or vegetable nature, and reduces them to an earth not injurious to glass. When this operation is completed, it is removed into the mixing room, where the proportions of material are adjusted and mingled together, previously to their being *fritted* or calcined. Here the materials, the sand and the kelp powder, are carefully proportioned, generally in the degree of eleven of kelp to seven of sand, some manufacturers using eleven to eight, which are mixed up according to the judgment of the mixer. The majority of glass manufacturers are now giving up the use of kelp. Within the last few years the improvements in the manufacture of carbonate of soda have been very great, while it has also fallen considerably in price. Instead, therefore, of using such an impure alkali as kelp with sand, carbonate of soda with sand and lime is employed, which gives glass of as good a colour as plate, and is attended with many other advantages which the old materials do not possess. Manufacturers, instead of kelp, purchase sulphur, and with it make sulphuric acid. With sulphuric acid and muriate of soda they make sulphate of soda, to which lime, coal, &c. are added, and thus produce carbonate of soda, which, with sand and lime, is made into glass. The operations for preparing these materials are carried on within their own premises by several extensive glass manufacturers. The following mixture has been found to produce an excellent quality of glass:—3 cwts. Lynn sand; 2½ ditto carbonate of soda; 14 lbs. nitre; 14 ditto lime; 7 ditto charcoal; one fourth of the above weight of cullet.

This mixture will make a very excellent glass when the furnace is kept at a proper heat. The proportions must, of course, be regulated in some degree by the heat which the furnace attains. The addition of any other ingredient will injure the quality and colour of the glass. It may be either fritted or not before being put into the pots. The use of this mixture saves coals, time, and wages, as the founding occupies from sixteen to twenty hours only, whilst in other cases the time occupied by this process is from twenty to twenty-four hours. It can also be blown to a thinner and finer substance, and is thus liable to a less duty. When the sand and kelp are thoroughly mixed, the compost is put into a calcining arch or reverberatory furnace, where it is subjected to a heat so strong as to reduce it to a semifluid state. Whilst in this state, it is stirred without intermission, to prevent the formation of knots containing more sand than the rest of the batch, an effect resulting from the dissipation of the alkali by excess of heat. The process of calcining requires more or less time according to the varying properties of the ingredients composing the batch. From three to four hours is the time usually occupied by each batch. The frit, as the substance is now called, is taken from the furnace, spread upon a plate of iron whilst yet hot, and, before it becomes quite cold, divided into large cakes. In the opinion of many, it cannot be too old for use; as when new the glass made from it is full of what are called seeds. It is commonly kept about six months by opulent manufacturers. The last operation consists in throwing the frit into the melting pots, which are of the form represented in Plate CCLXXIV. fig. 2.

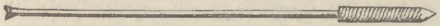
To prevent stones or clay from the furnace falling into the pot, those used in making flint-glass are always covered in on the top; and the same thing has been tried in crown pots, made with two openings, one in the front and one in the back, the back one to be plugged up when beginning to work from the front of the pot. This method succeeded very well, but was abandoned from the length of time it required; a circumstance which more than counterbalanced its advantages.

These pots or crucibles are made of the finest clay. That from Stourbridge in Worcestershire is considered the best. Great care is requisite in the selection, and in cleansing it from extraneous particles, the presence of which, even in the smallest degree, will injure the pot. A fine powder procured by grinding old crucibles is generally mixed, in a proportion seldom larger than a fourth, with what is termed the virgin clay. This mixture dries more rapidly, contracts less while drying, and presents a firmer resistance to the action of the fire and alkali used in the composition of glass than the mere unmixed clay. These ingredients having been mixed, they are wrought into a paste in a large trough, and carried to the pot loft, covered in such a way as to exclude dust and other minute particles. Here a workman kneads this paste by tramping it with his naked feet, turning it from time to time until it becomes as tough as putty. It is then made into rolls, and wrought, layer upon layer, into a solid and compact body, every care being taken to keep it free of vacuities, as latent air would, by its expansion in the furnace, cause an immediate rupture of the pots.

After pots are made, very great care is necessary to bring them to the proper state of dryness before taking them to the annealing or pot arch. In drying they commonly shrink about two inches in the circumference. When pots are made during summer, the natural temperature is sufficient. In winter they are kept in a temperature of from fifty to fifty-five degrees Fahrenheit. They remain in the room where they are made for a period varying from nine to twelve months. Being afterwards removed to another apartment, where the heat is from eighty to ninety degrees Fahrenheit, they are kept there for about four weeks. They are then removed for four or five days, more or less, according to their previous state of dryness, to the annealing arch (of which figs. 1 and 2, Plate CCLXXIII. is an elevation and ground plan), which is gradually and cautiously heated up till it reaches the temperature of the working furnace, whither, after being sufficiently annealed, they are carried as quickly as possible. Pots last upon an average from eight to ten weeks. Their value is usually estimated at L.8 or L.10 each. A section of a crown-glass pot, showing their usual dimensions, is given at Plate CCLXXIV. fig. 2.

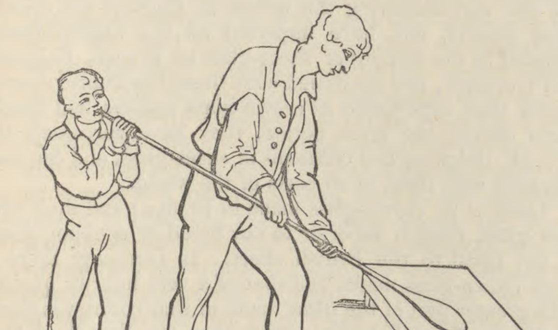
To the frit thrown into these pots there is added a proportion, about an eighth, of cullet or broken crown-glass. After this has been done, the furnace is raised to the highest possible degree of heat. The pots are filled every third hour or so, according as the frit melts, till they are completely full. The intensity of the heat is then increased, if possible, till the metal, as it is now called, is reduced to fine liquid glass, which is then ready for the operations of the workman.[1] From twenty-four to thirty hours in all are required for this process, which is called founding.[2]

The furnace is slackened for about two hours, and the metal being now in a workable state, the first operator who approaches the furnace in which the pot of liquid glass is placed is the *skimmer*, who skims off all crude or extraneous substances from the surface of the metal. Next follows the *gatherer*, who is provided with an iron pipe or tube, six or seven feet in length, and of this shape.

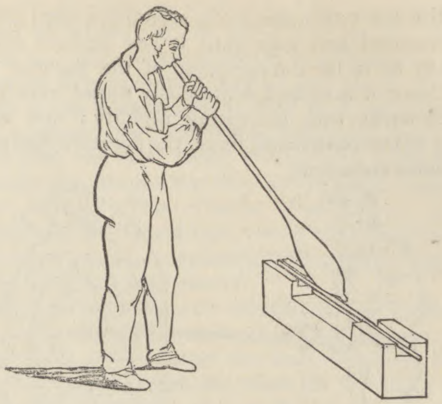


Having previously heated that end of the tube which takes up the glass, he dips it into the pot of metal; and by turning it gently round, gathers about one and a half pound of liquid glass on the end of it. Having allowed this to cool for a little, he again dips it into the pot, and gathers an additional quantity, of from two and a half to three pounds. This is also permitted to cool as before, when the operation of dipping is again repeated, and a sufficient quantity of metal, from nine to ten pounds weight, is gathered, to form what is technically called a table or sheet of glass. The rod, thus loaded, is held for a few seconds in a perpendicular position, that the metal may distribute itself equally on all sides, and that it may, by its own weight, be lengthened out beyond the rod. The operator then moulds the metal into a regular form, by rolling it on a smooth iron plate, called the " marver," a term corrupted from the French word *marbre*.

He then blows strongly through the tube, when his breath penetrating the red-hot mass of glass, causes it to swell out into a hollow pear-shaped vessel, thus:

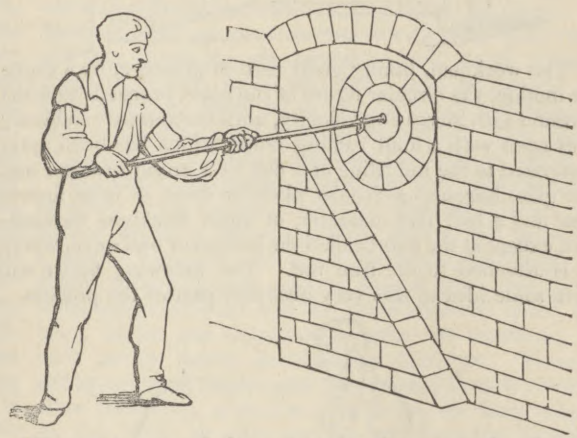


The tube with the elongated sphere of glass at the end of it is then handed to the *blower*, who heats it a second and third time at the furnace, pressing the end, between each blowing, against the bullion bar, so called from the part thus pressed forming the centre of the sheet or bull's eye, thus:

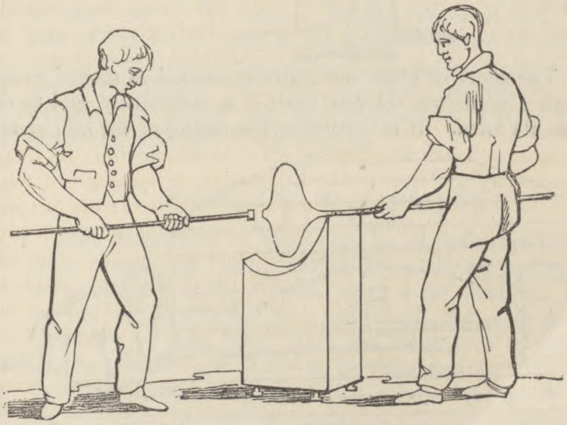


By the dexterous management of this operation, the glass is brought into a somewhat spherical form.

The blower heats a third time at the bottoming hole, and blows the metal into a full-sized globe thus:



When this part of the process has been completed, and the glass has been allowed to cool a little, it is rested on the casher box, and an iron rod, called a "*pontil*" or punty rod, on which a little hot metal has been previously gathered, is applied to the flattened side, exactly opposite the tube, which is detached by touching it with a piece of iron, dipped beforehand in cold water, leaving a circular hole in the glass of about two inches diameter. The operation of attaching the punty is shown by the following plate.



Taking hold of the punty rod, the workman presents the glass to another part of the furnace called the " nose hole,"

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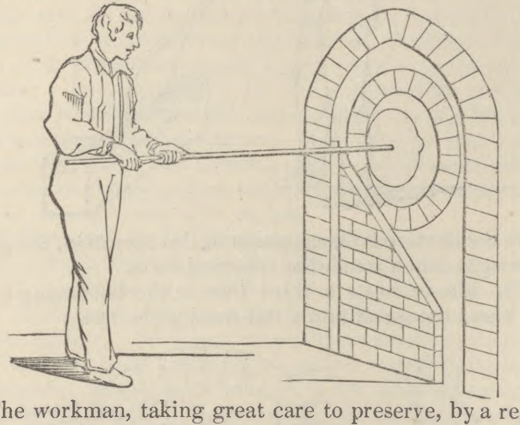
[1] The *sandiver* or glass gall is removed while the furnace is at its extreme degree of heat.

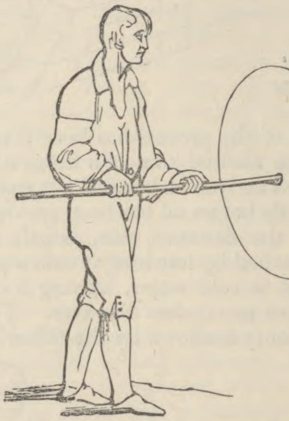
[2] A piece of wood about eleven inches long by seven broad, with a hole three inches by one inch, forms an excellent protection to the eyes from the heat to which they are exposed when examining the metal in the pots.

Crown-Glass.

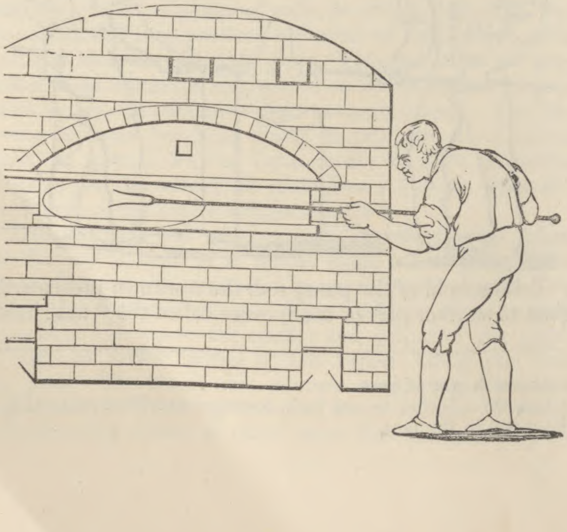
where the aperture made by its separation from the tube is now presented and kept until it has become sufficiently ductile to fit it for the operation of the flashing furnace. Whilst here, it is turned dexterously round, slowly at first, and afterwards with increasing rapidity; and the glass yielding to the centrifugal force, the aperture just mentioned becomes enlarged.



The workman, taking great care to preserve, by a regular motion, the circular figure of the glass, proceeds to whirl it round with increasing velocity, until the aperture suddenly flies open with a loud ruffling noise, which has been aptly compared to the unfurling of a flag in a strong breeze; and the glass becomes a circular plane or sheet, of from four to four and a half feet diameter, of equal thickness throughout, except at the point called the bullion or bull's eye, where it is attached to the iron rod. The following figure will give some idea of this very beautiful part of the process.



The sheet of glass, now fully expanded, is moved round with a moderate velocity until it is sufficiently cool to retain its form. It is carried to the mouth of the kiln or annealing arch, where it is rested on a bed of sand, and detached from the punty rod by a shears. The sheet or table is then lifted on a wide pronged fork, called a faucet, and put into the arch to be tempered, where it is ranged with many others set up edgewise, and supported by iron frames to prevent their bending. From four to six hundred tables are placed in one kiln.



A sketch of the interior of a crown-glass house, during the progress of these operations, has been given in Plate CCLXXIV. fig. 1.

The kiln having been clayed up, the fire is permitted to die out, and the heat diminished as gradually as possible. When the glass is properly annealed, and sufficiently cold to admit of its being handled, it is withdrawn from the oven, after the removal of the wall built into the front of the arch, and is then quite ready for the glazier's use. It is first, however, removed to the manufacturer's warehouse, where the circular sheets are cut into halves, and assorted into the different qualities, known to the tradesmen by the names of seconds, thirds, and fourths.

We conclude our remarks on the manufacture by observing, that the quality of glass does not depend upon the mixtures alone, but also upon the treatment it receives after it has been made, the quality of the coals, and management of the furnaces. Cleanliness in every department of the manufacture, a general knowledge of chemistry, and of the art in all its details, with the most unremitting industry, and skill in the direction and government of the operatives, are all essentially necessary for the production of good glass.

British Sheet.

MANUFACTURE OF BRITISH SHEET-GLASS.

This article is manufactured by Messrs Chances of West Bromwich, near Birmingham, and Messrs Hartley and Company, Sunderland, who, after having visited the glass manufactories of France, Belgium, and Germany, commenced, in 1832, the making of British sheet. The principle upon which it is manufactured is the same as that acted upon in the making of common or green glass. The metal is formed into cylinders, and then flattened into sheets. The French, Belgians, and Germans, having pursued this system for the last fifty years in making their window-glass, have much improved the old mode of making it; and as the parties who are now manufacturing this article in England are crown-glass makers, and have imported all the improvements adopted in the making of sheet-glass in France, Belgium, and Germany, and combined with these the improvements which their experience as crown-glass makers had taught them during the same period, they have surpassed the French, Belgians, and Germans in sheet-glass, and can now compete with them in all parts of the world.

There is no crown-glass made in France; and their window-glass, though superior to our broad or common glass, is not equal to the British sheet. In Germany there is little crown-glass made, and that of a very inferior quality. The greater part of the glass made in that country is sheet, and it is of much better quality than the French or Belgian. In Germany a common sort of glass is made, in the following manner: Three or four workmen form a partnership, and, having fixed upon a place in the woods where clay and sand are easily met with, they proceed to build a glass-house with wood and clay. They then make the pots, and, from the ashes of the wood which they burn, obtain potash, which, after it has been mixed with sand, they melt into glass. They blow the metal into cylinders, flatten it into sheets, cut, pack, in short, perform the whole operations from first to last, themselves. A good deal of the best of the glass made in this manner is sent to Nuremburg, where it is polished and sent into Holland. Some of it is sometimes smuggled into this country, and is known by the designation of Dutch glass.

The expense of making British sheet is about the same as making crown-glass, excepting in the case of large squares, when it is much less; in crown-glass it is very difficult to get a square 34 × 22, but in sheet-glass the common size is 40 × 30; nay, sheets are sometimes made as large as 50 × 36. Its other advantage over crown is, that it has none of that wavy or curved appearance, by which the vision is so much distorted in crown-glass; but, at the same time, sheet-glass has rather an unpleasant appearance when viewed from the outside of a building, in consequence of an unevenness of surface, technically termed *cockled;* when viewed, however, from the inside, it is difficult to distinguish it from plate-glass.

The materials employed in the making of sheet-glass are the same as those used in the making of crown-glass. The large melting furnace is also very similar; in France and Belgium they usually contain six or eight pots, but at the British manufactories such furnaces contain ten pots, each containing seven cwts. of metal, which requires fourteen hours to melt.

In a line with each pot, and four feet from the ground, are erected ten stages, with an open space between each, of about two feet, through which the workman swings his glass when making cylinders. When the metal is ready for working, the ten workmen take their stations, each having his own pot and stage, and also an assistant, and commence making the cylinders, as follows: After gathering the quantity of metal required (which varies from three to twenty pounds), the workman places it in a horizontal position upon a wooden block, which has been hollowed, so that, when the workman turns the metal, it shall form it into a solid cylindrical mass. In the mean time, the assistant, with a sponge in his hand, and a bucket of water by his side, lets a fine stream of water run into the block, which keeps the wood from burning, and also gives a brilliancy to the surface of the glass. The water, the moment it comes in contact with the glass, is raised to the boiling point, and, in that state, does no injury to the metal; but it is only when the metal is at a high temperature that such is the case; for, whenever the glass is cooled to a certain degree, it immediately cracks upon coming in contact with water. When the workman perceives that the mass of metal is sufficiently formed and cooled, he raises the pipe to his mouth at an angle of about seventy-five degrees, and commences blowing it, at the same time continuing to turn it in the wood block, till he perceives the diameter to be of the requisite dimensions, which are usually about ten inches. He then reheats this cylindrical mass, and, when it is sufficiently softened, commences swinging it over his head, continuing to reheat and swing till he has made it the desired length, which is commonly about forty inches. It is now in a cylindrical form, forty inches long and ten inches in diameter, one end being closed, and the other having the pipe attached to it. The workman now begins to open the end which is closed, for which purpose he encloses the air in the cylinder, by stopping the aperture of the pipe with his finger; and then placing the closed end of the cylinder towards the fire, it becomes softened, while at the same time the air within is expanding, and, in about thirty seconds, the glass becomes too soft to retain it, and bursts, a small aperture being formed at the point of the cylinder. The workman then turns the cylinder round very quickly, and, by keeping it warm at the same time, flashes it out perfectly straight; the other end, which is attached to the pipe, has now to be cut off. This is done in the following manner: The workman having gathered a small quantity of metal on the pontil, draws it out into a thread of about one eighth of an inch in diameter, laps it round the pipe end of the cylinder, and, after letting it remain there for about five seconds, withdraws it suddenly, and immediately applies a cold iron to the heated part, which occasions such a sudden contraction, that it cracks off where the hot string of glass has been placed round it. The workman having now formed a perfect cylinder of forty inches in length and ten in diameter, has, before it can be flattened, to split it on one side, so that it can be opened out; but before doing this, he is obliged to let it cool, and then, laying the cylinder horizontally upon a bench, draws a red hot iron two or three times along the inner surface. The cylinder, thus heated, immediately splits along the heated part, owing to the expansion of the glass when heated, its cylindrical form preventing its breaking at the point of expansion.

The blower having now completed his cylinder, hands it over to the flattener to make it into a flat sheet; to accomplish which, two furnaces are built together, the one for flattening the cylinders, the other for annealing the sheets, the former being kept at a much higher temperature than the latter. The cylinder, after being gradually reheated, is placed in the centre of the flattening furnace, upon a smooth stone, with the cracked side upwards. In a short time it becomes softened with the heat, and by its own weight falls out into a flat square sheet of forty inches by thirty. The flattener, with a piece of charred wood, rubs it quite smooth, and then places it in the annealing arch, where it remains about three days to be annealed. A workman will make sixty cylinders 40 × 50 in one day; and a flattener can flatten the same number in the same time. This glass can be made of any thickness from one-twentieth to half an inch.

The same enterprising companies also manufacture extensively every variety of coloured glass used by the glass-stainer, which is gathered, rolled, blown, and flattened, in a similar way with the sheet glass, the pot-metal being gathered from one pot, and the flashed glass from two, one containing colourless and the other coloured metal, which being blown and distended together are combined, while each portion retains its individual character. These oval and square glass shades used for covering French clocks and other ornaments, as well as glass dishes for dairy purposes, are also made by these parties; and since the abolition of the glass duties are much in demand.

There is another species of glass called broad or common window-glass, which is formed of the coarsest materials. The ingredients usually employed are, six measures of soap-boilers' waste, three of kelp, and three or four of sand. After these have been fritted for from twenty to thirty hours, they are removed while red hot to the pots in the working furnace, where, in the space of from twelve to fifteen hours, they are reduced to a fluid state. The metal is taken out in the manner already described, and blown into globes about a foot in diameter. A piece of iron dipped in cold water is run along them, and produces a crack nearly rectilinear; and, while yet warm and ductile, these spheres are opened out and flattened on a smooth iron plate at the mouth of the furnace.

MANUFACTURE OF PLATE-GLASS.

This description of glass may be manufactured in the same manner as broad window-glass, or by casting the materials in a state of fusion upon a flat surface. Little correct information has been published relative to the manufacture of plate-glass, from the reluctance of proprietors to permit their works to be examined by individuals capable of giving an intelligible account of them. If such are permitted to scan the mysteries, they are generally restricted to keep secret the information which they have acquired. The late Mr Parks the chemist, however, seems to have been exempted from this condition, and after having visited the premises of the British Plate-Glass Company, at Ravenhead, in Lancashire, he published a short account of the process as there carried on. Besides the above manufactory in Britain, may be mentioned that of Messrs Swinburne and Company, South Shields, the Thames Plate-Glass Company, the Union Plate-Glass Company, St Helen's; and W. A. A. West's, Eccleston. Plate-glass is also made at St Gobain in France, besides other places upon the Continent.

The following is Loysel's account of the relative proportions of the materials used at St Gobain, in the manufacture of plate-glass. White sand, 100 parts; carbonate of lime, 12 ditto; soda, 45 to 48 ditto; fragments of glass of like quality, 100 ditto; oxide of manganese, ¼. The following proportions of ingredients are said to produce the best description of this article. Lynn sand which has been well washed and dried, 720 parts; alkaline salt containing 40 per cent. of soda, 450 ditto; lime slaked and sifted, 80 ditto; nitre, 25 ditto; broken plate-glass, 425 ditto. These quantities produce one pot of metal which yields 1200 pounds of glass.

Great nicety must be observed in conducting the processes of this manufacture. The materials must be selected with the utmost care. The sand should be of the whitest and finest description, and well washed and passed through a sieve, previously to being mixed with the other ingredients. Soda is always preferred to potash, because it imparts a higher degree of fluidity to the glass, and also because the impurities which it contains are more easily dissipated by the heat. Lime acts as a flux, and manganese has the effect of giving a slightly reddish hue to the mixture by which the colours of the other materials are neutralized, so that scarcely any appreciable tint remains. Cobalt is likewise used in some manufactories, much for the same purpose as manganese. The broken glass, or *cullet* as it is technically called, is those fragmentary portions which are cut from the plates when they are squared, or that which may flow over in the process of casting. The sand, lime, soda, and manganese, being properly mingled in the proportions above given, are fritted in small furnaces, where the temperature is gradually raised to a red or white heat, and there maintained until no more vapour is evolved, nor change undergone by the mixture. This process occupies six hours, and after its completion the other ingredients are added, consisting of cullet and cobalt. At St Gobain there are two kinds of crucibles employed; the one in which the glass is melted is called a *pot*, and has the shape of an inverted truncated cone; the other is entitled a *cuvette;* it is kept empty in the furnace, and exposed to the full degree of heat. Forty hours are requisite to vitrify the materials properly, and bring the glass to a fit state for casting. The pots are skimmed in the manner already described. When the liquid mass has been properly refined, the cuvette is filled by a copper ladle, and after sufficient time is allowed for the bubbles created by this disturbance to escape, it is removed to the table where the plates are cast. Copper was the metal of which tables were formerly constructed; but cast iron has now been found to answer the purpose completely, and it is greatly superior to copper in this respect, that it remains uninjured during all the sudden transitions of temperature to which it must be subjected. The British Plate-Glass Company were the first to introduce this improvement. They procured a plate fifteen feet long, nine feet wide, and six inches thick. The sides are provided with metallic ribs, the depth being exactly the measure of thickness which it is desired the glass should be of. During the casting there is a similar rib temporarily attached to the lower end of the table. The cuvette being filled with melted glass, it is withdrawn from the furnace by means of a crane, taken to the upper end of the casting table, and after being properly scummed, and elevated to a sufficient height by means of a crane, it is emptied of its contents. The surface of the melted matter is then smoothed by means of a large hollow copper cylinder, which extends across the table, resting upon the side ribs. This is set in motion, and rolled over the glass, by which process it is spread out into a sheet of uniform breadth and thickness. When the plate has become completely hardened, it is carefully inspected, to see that no flaws or bubbles appear on the surface. Should any be found, the sheet is immediately divided by cutting through them. It is afterwards removed to the annealing oven, where it is placed in a horizontal position, and remains for about fifteen days. When glass is in a high state of fluidity it is liable to be injured even by a draught of air, so that the apartment must be kept as free as possible from disturbance. The opening or shutting of a door, by setting the air in motion, might impair the value of the plate. After having been withdrawn from the annealing oven, they have to undergo the operations of squaring, grinding, polishing, and silvering, before they are fit for the market. These processes have thus been described by a late writer upon the subject.

"The first process—that of squaring and smoothing the edges—is performed by passing a rough diamond along the surface of the glass, guided by a square rule; the diamond cuts to a certain depth into the substance, when, by gently striking the glass with a small hammer underneath the part which is cut, the piece comes away; and the roughnesses of the edge then left are removed by pincers. The plate is then taken to the grinding apartment.

"The next step is to imbed each of the plates upon a table or frame adjusted horizontally, and made of either freestone or wood, cementing the glass securely thereto by plaster of Paris. One plate being then reversed and suspended over another, the material employed in grinding their surfaces is introduced between the two, and they are made to rub steadily and evenly upon each other by means of machinery set in motion by a steam-engine." River sand and water were formerly used for the purpose of abrading the surface, but ground flint is now substituted, as answering the purpose better. When one side of each plate has been sufficiently ground, it is loosened from the frame, and turned over, so as to present the other surface to be ground in the same manner. Some degree of pressure is employed, by loading the upper plate with weights, as the grinding of each side approaches to completion. The process thus described used formerly to last during three entire days, but this time is now much abridged. The greatest attention is required in order to finish with the surfaces perfectly level and parallel, for which end a rule and plumb-line are employed.

By means of this grinding, the plates will have been made level; but they are too rough to receive a polish. To fit them for this, they must again be ground with emery powder of increasing degrees of fineness. The preparation and sorting of this powder are effected in the following simple and ingenious manner:—"A considerable quantity of emery is put into a vessel containing water, and is stirred about violently until the whole is mechanically mixed with the water. Emery is absolutely insoluble by such means; and if the mixture were left at rest during a sufficient time, the whole would subside in layers; the coarsest and heaviest particles sinking first, and so on successively, until the very finest particles would range themselves as the upper stratum. Previously to this, however, and while these finest grains are still suspended in the water, it is poured off into a separate vessel, and the emery is there allowed to settle. A fresh supply of water is poured into the first vessel, the contents of which are again violently agitated, and allowed partially to subside as before. A shorter interval is allowed for this than in the first case; and then the liquor is poured off into a third vessel, by which means emery of the second degree of fineness is separated. This operation is repeated in order to obtain powders having five different degrees of fineness. The deposits are then separately dried upon a stove to a consistence proper for making them up into small balls, in which form they are delivered to the workmen.

"In this further rubbing together, or, as it is called, *smoothing* of the glass plates, it must be understood that the coarsest emery is first used, and so on, substituting powders having increasing degrees of fineness as the work proceeds."[1]

These processes finished, the glass, although perfectly even, appears opaque or deadened on the surface, and requires polishing. This is effected in the following manner. A piece of wood is covered with numerous folds of woollen cloth, the layers being divided by some carded wool interposed between each, the whole forming a tolerably hard but elastic cushion, which is furnished with a handle. The plate is laid upon a bed of plaster, as already described, and the cushion being wetted, is covered with the red oxide of iron (the *colcothar* of commerce), and moved backwards and forwards upon the surface of the plate. Lastly, if the glass be intended for mirrors, it is silvered, that is, covered on one side with a thin coating of amalgam of tin and mercury.

The process of *blowing* plate-glass differs so slightly from the methods used in producing broad glass, that they need not be hère repeated. Any difference that does exist, arises from the great bulk and weight of the mass of glass operated upon.

STAINED OR PAINTED GLASS.

In an age like the present, when a high state of civilization and refinement demands the most careful and diligent cultivation of those arts which minister to the gratification of refined taste, Glass Painting, as an art now acknowledged indispensable in the decoration of our churches, palaces, &c., has assumed an importance not attained at any former period; and from its progress in connection with our present advances in artistic knowledge, we may safely infer, that if the noble elements in its nature and capabilities be fairly and legitimately applied, it will become the most potent agent in advancing the standard of architectural decoration. Within these few years in our own country, its progress has been altogether wonderful. Since the abolition of the duties on glass, Britain has produced the rarest and the richest coloured glass in endless profusion and variety. Light has been admitted into gorgeous apartments through domes filled with coloured glass of colossal dimensions, the decorations of which, worked out from the designs of the architects, enhance and give power to the other ornamentation of the interiors, and produce a *coup-d'œil* not previously known nor dreamt of. Stained-glass windows for churches have been, and are being executed in Britain, which, for appropriate design, brilliant colour, subdued tone, symmetrical proportion, minute manipulation, and variety of carefully considered detail, stand comparison with the best existing specimens of mediæval times. Windows for palatial and baronial structures have also been recently produced in this country, whereon are traced in imperishable lines, and blazoned in unfading colours, correct effigies of historical personages, representations of historical events, genealogical arrangements of heraldic bearings, and other legends and memorials, which will convey to distant times a favourable idea of the state of British art in the nineteenth century. The earliest record which we possess concerning the existence of this beautiful art is of the age of Pope Leo III., that is, about the year 800, a period in which many of the most magnificent ecclesiastical edifices on the Continent were erected. It is not known with certainty when stained glass was made use of for pictorial or figure subjects, but the historian of a monastery at Dijon, writing in the eleventh century, says, that there existed in his time in the church of his monastery some very ancient glass representing the mystery of the Holy Eucharist, and that this glass picture had been taken from the old church previous to its restoration. The earliest specimens of stained glass are composed of small pieces of glass, embued throughout with colour, united by grooved leaden joinings. It has been suggested, that this arose from the glass-makers of that period not being able to make it in larger pieces. If so, in so far as sparkling brilliancy in glass decorations is a desideratum, it might almost have been as well for the art that the manufacturers of the coloured metals had still been in the same position. Brilliancy is always increased in the same ratio with the number of pieces of glass in the composition.

Nothing could be more instructive or interesting than an investigation of the relative merits of the existing specimens of the art during the six centuries it was so diligently and effectively cultivated in connection with ecclesiastical architecture; but this inquiry would be too extensive to be opened up here. The following remarks, therefore, are confined to a few of the leading points in the glass of the various styles which prevailed in succession from the 11th to the 17th century, in which may be traced very clearly the progress of the architects, under whom the glass painters worked, from clumsy and servile imitators to bold and original designers.

The Norman style, in its early period, was a direct though imperfect imitation of Roman architecture; but when pointed architecture had attained its greatest perfection, its chief feature was originality. During the gradual development of this, its peculiar characteristic, the openings in the walls by degrees were enlarged, until they ultimately became the principal points, and it was requisite that they should be judiciously decorated; and in no branch of art connected with pointed architecture can its onward movement be more clearly traced than in the painted-glass windows.

The painted glass of the eleventh and twelfth centuries, like the Norman architecture of which it formed a part, was stately and of a magnificent character. The colours were of the most vivid and positive description. There was no spot left for the eye to repose on; no neutral tints nor secondary colours were introduced. The whole of the ground and foliage were filled with intense colour, ruby and blue invariably preponderating. The same love of violent and striking contrast as is peculiar to man in a state of semi-barbarism was manifested in the colouring of the windows of that period, and the general effect must have been congenial to the romantic and martial spirit of the age of chivalry. The leading forms were massive and simple, consisting chiefly of the circle and square, filled up chiefly with clumsy imitations of the foliated ornament to be found in Roman architecture. When figures were introduced, they were like those in the Bayeux tapestry, marvellously correct in costume, though disproportionate in drawing, and filled up with strong positive colours, flat, and the outline defined chiefly by the strong thick lines of the lead, resembling those highly titled personages represented on packs of cards, or those in Chinese processions, as delineated by the native artists of the Celestial empire.

In the thirteenth century, the painted glass, like the primary pointed or early English architecture of which it formed a part, was of a light and elegant character. The glass painter had then acquired a more correct idea of what constituted beauty, both in form and colour. The positive colours were now used more sparingly, and indeed were almost confined to geometric bands, central points, and borders continued round each entire light. The general grounds were of a beautiful tint of neutral gray, produced by lines intersected at right angles, from which were relieved by bold lines scrolls of foliated ornament in clear colourless glass. The glass in the Sister windows of York Minster may be named as one of the finest existing specimens of this description. Figures and subjects also, when introduced, were better drawn than formerly. The faces were kept colourless, slightly shaded with brown of a rough gritty texture. The secondary colours were used in the draperies with a most delicious effect, softening and harmonizing the whole composition, and giving a lightness and variety previously unknown. In the leading forms of the ornamental portions also were seen repeated the geometric features of the building; and in the glass of the period we can recognise repetitions of the ground plans of the shafts, with the enrichments on the laps and on the mouldings of the windows and doorways. In the foliaged backgrounds, amid repetitions of the ancient Roman foliage, we now and then get fragments of simple foliage, such as trefoils, evidently taken from nature; and we are able to trace in progress an art which was shortly to become as original as beautiful, and dependent entirely on the artist's knowledge and appreciation of nature and geometry.

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[1] Glass Manufacture, Lardner's *Cabinet Cyclopædia*, No. 26.

During the fourteenth and fifteenth centuries, when the secondary pointed or decorated style of architecture gradually developed its immense resources, and advanced steadily toward perfection, we find that the glass advanced in the same ratio as the art with which it was associated. In accordance with certain fixed rules of proportion, the glass artists elongated, intersected, diversified, and arranged rectangular, triangular, and curvilinear figures, and made these harmonious combinations their leading points for colour. They were thus enabled with certainty to produce a pleasing effect, and to fill up the detail according to their own fancy, with an imitation of the common weeds, flowers, and plants that they found growing around them. This principle was carried out in every portion of the detail in the remarkable structures then erected; and the exquisite imitations of vegetables and plants on the carving of the caps, friezes, and mouldings, show the extraordinary love of nature which must have animated these fraternities of artistic minds by whom these details were worked out. The monks of Melrose made "gude kail," says the old song, and from the exquisite manner in which that vegetable has been carved on some of the portions of that fine old abbey, one would conclude that the carvers must have shared largely and appreciated highly the "gude kail" of the holy brotherhood, a feeling no doubt also entertained by the glass painters of the structure whose works would doubtless exhibit similar genius with the glass of that period, which was well characterized by a rich juicy natural freshness, as well as an easy play of elegant outline and graceful proportion. In many instances also, the gray background produced by intersected lines was abandoned, and a tint of rough gray obscure substituted, which imparted to the whole a softer effect, and gave a better relief to the outlined foliage of which the diapering was composed. At this period also, glass painting had attracted artists of high genius, and the figures and subjects in the glass of the period are perfect specimens of what the art ought to be. These artists tested its capabilities, and how well and thoroughly they did so may be seen in Cologne Cathedral, where the flowing, bold, and elegant outline, the rough semi-transparent texture, the calm expressive countenances and attitudes of the figures of Durer and his contemporaries, fairly set aside and overpower the glowing, brilliant, but frowsy specimens there of modern German art, as practised in Munich, under the auspices of the Bavarian government. Perhaps, also, the ornamental glass of the period in that structure will be found equal to any in the world for geometrical symmetry and natural foliage, the latter imitated from the common weeds and plants indigenous to the locality. So fascinating and far-famed were the painted-glass windows of that period, so novel were the effects produced by the rich semi-transparent shadows and reflected lights, that Mr Eastlake conjectures that the increase of colour in shade which is so remarkable in the Venetian and early Flemish pictures may have been suggested by the rich and fascinating effects of the light modified by the slight shading on the stained glass through which it was transmitted. Over the Lady Chapel in the north aisle of York Minster are two windows of this period remarkable for the brilliancy and quiet feeling formerly alluded to as indispensable in glass painting of a high character.

After the decorated period painted glass degenerated first into the flat, tame insipidity of the perpendicular style, and then ran riot in the extravagant tortuosities and monstrosities of the capped, jewelled, and double gilt details of Elizabethan architecture, which it seems a fallacy to suppose was imported from Italy. At the time of its introduction a strong tide of feeling had set in against everything that pertained to the Roman Catholic religion, and it seems unlikely that after having diverged from the style with which that religion had so long been identified, the nation should have imported anything from Italy, its headquarters and chief stronghold. It rather seems probable that at a time when attempts were made to get quit of every existing form and style of architectural decoration, there would be awakened a strong desire for novelty; and when it is remembered that the newly discovered continent of America was visited by crowds of adventurers, it will not appear unlikely that many of these adventurers must have been delighted and dazzled with the magnificent and unique architectural structures which adorned the ancient cities of central America, and may have imported home and introduced into English architecture many of the features which we are accustomed to believe were originated in the Elizabethan era. The painted glass of that period partakes of the same character; and in Du Paix's great work on New Spain will be found something very like the origin of many of these peculiarities, eccentricities, and heterogeneous conglomerations which characterize the wood and stone carving, as well as the wall and window decorations of that extraordinary style of architecture.

From this rapid sketch of the history of the rise and decadence of painted glass, it appears that there is no limit to its capabilities; and that forming, as it does, a leading architectural decoration, it is as well adapted to one style as another. If the principles of harmonious colouring and symmetrical proportion be carefully attended to, as was the case in the best specimens of the art in the mediæval period, painted glass must ever be regarded as one of the most attractive decorations for church or mansion. It is no doubt a species of mosaic, and the artist must generally depend on harmonious combinations of colour and continuity and firmness of outline for the effect he intends to produce, as the brilliant colouring and mosaic character are lost in the same ratio as shading is introduced.

It is also true that windows are generally intended for the transmission of light, and that in some cases the sacrifice of light required for pictorial effect cannot be made. Yet who can resist the attractions of such pictorial glass as is to be found in the windows of St Gudule at Brussels, or St Jans Kirk at Gouda, where the principles of chiaroscuro and perspective are fully developed, where foreground and distance hold their proper places, and where the lights and brilliant colours are arranged in a manner to rival the best specimens of the ancient masters of painting in oil. This mode of treatment is not to be advocated for general use, but where there is light enough and to spare, and where men of high artistic powers apply themselves to glass painting, they may safely be left to their own genius, and allowed to render their conceptions as vividly and perfectly in glass as others do on canvas. The dull, heavy, uniform opacity which pervaded the glass of the last century, when it was made up in squares, the colours fused, and the whole work looked like cloth transparencies, is not to be tolerated. The brightest colours that can be produced in pot metals joined in the ancient way by leading ought always to be used; and although in general the effect of mosaics in low relief may be preferable, yet the shading and toning requisite to give full effect to a good pictorial design may be given without detracting greatly from the light.

Glass is the most enduring species of artistic medium, and it is to be hoped that this quality will yet cause eminent artists to leave the impress of their genius on painted windows. Had the art of painting on glass been known in the age of Phidias, we might have had preserved, in colours as vivid as when the works were executed, the Jupiter of Homer by Apelles, the pictorial embodiment of the Athenian character by Parrhasius. A singular fact illustrative of the durability of painted glass may here be stated in connection with York Minster. When the nave of that fine structure was destroyed by fire, the heat was so intense that many of the stones were calcined. When the leaden framing of the windows melted, the glass made of many small pieces fell down undamaged, and was afterwards carefully rebuilt in new leading and fixed in its original place, where it now remains the most fragile yet the most enduring portion of the ancient structure.

In ornamental painted glass the positive colours ought generally to be used sparingly, and confined to the chief points in the composition. When overloaded with colour, the sparkling brilliancy so desirable in painted glass is entirely lost. The general ground of the window should be of a neutral tint suitable in tone to its character and situation. In a southern aspect this tone should be of a cool gray, and the positive colours blue, green, and purple, ought to predominate over ruby, yellow, and orange. In a northern aspect the general ground should be of a warm sunny tint, and the warm ought to predominate over the cold colours. An eastern window ought to approximate in colour to a northern, a western to a south window.

It is always desirable to have a combination of straight and curved lines in the leading forms of painted glass. As in the human body, the effect of the elliptic curvature of the muscles is enhanced by the angular position of the straight lines on which they are placed, or by the sharp square indications of the bony extremities, in like manner the curvilineal lines in ornamental decorations appear to more advantage when balanced by a harmonious proportion of straight lines. A very important feature in glass is diapered work in the backgrounds, a great variety of designs for which may be obtained from plants and flowers by the wayside, in the field, or the garden; and the more homely these are, they are often the more suggestive and pleasing. Borderings are almost indispensable in all ornamental painted-glass windows. They bind together what might otherwise be disjointed and scattered, and afford scope for endless variety of design, both in form and colour. Heraldic symbols and emblazonments have always been amongst the most attractive features in stained-glass windows. The points which most shields form for a balance of positive colour; the crests, mantling, supporters, and mottoes, twisting or twining either quaintly or gracefully through the composition, not to speak of the interesting nature of heraldry as a guide through the intricate mazes of family connection, wending through the depths of ages—all tend to render it the most admirable field on which the glass painter can be engaged. For hall or library windows such devices are very appropriate, and indeed so highly are they appreciated, and so much is painted glass now coming into repute, that there is scarcely a new house of any pretensions without its library or staircase stained-glass window. In towns where back drawing-room windows look into mean or filthy lanes, what a delightful remedy is found in light sparkling stained glass. Either heraldic blazon, family monograms, or ornamental devices, may be used; and if the inner window be fitted up flush with the inner wall, and the room lighted at night mainly from lights placed between the outer and inner windows, the effect is chaste and beautiful.

Restorations of windows connected with ancient edifices afford fine media for embodying local legends or historical local incidents. In new structures for public purposes what place so fitting or so striking as the windows for representations of men eminent in connection with such institutions. Monumental windows have recently been introduced into churches with excellent effect, and they afford scope for invention as various as the characters of those whose virtues they are designed to commemorate. In churches even in Scotland stained glass is rapidly assuming its ancient importance, and there can be little doubt that it will ultimately be so much encouraged and cultivated that the windows of our public edifices will be the honoured medium of transmitting to remote posterity the works of the master-minds of British art.

Except in the name, painting on glass has no resemblance to any other department of the pictorial art but that of porcelain. Both the colours, and the process of their application throughout, are entirely different. While animal and vegetable substances are freely used as colouring matter in every other department of the pictorial art, they are wholly excluded in that of glass painting, where all the pigments used are subjected, after being laid on, to the operation of fire, to make them penetrate the body of the glass, or become fused on its surface—a process which would wholly destroy the colouring properties of such substances. All the colours employed in glass painting and staining are oxides of metals or minerals, as gold, silver, cobalt, which not only stand the fire, but require the powerful interference of that agent to bring out their brilliancy and transparency. Some colours, on the application of heat, penetrate the body of the glass, and, from this circumstance, are called stains; while others, being mixed with a vitreous substance called flux, become fused or vitrified on the surface. The former produces a variety of colours, and all of them are perfectly transparent. The produce of the latter are only semitransparent, but they may be made to yield any colour or tint required.

In preparing these colours, the most important point to be attended to is, to have all those that are to be used at the same time of an equal degree of softness. To attain this, those that are hard, and require a great degree of heat to make them effective, must be fixed first; leaving the soft colours, for which a slight heat only is necessary, to the last. If used promiscuously, and without regard to this precaution, some of the colours would be rendered too fluid, while others would be insufficiently fused, and the work in consequence spoiled.

GLAZING OF WINDOWS.

Putty, an important and indispensable article in the glazier's trade, is composed of whiting and linseed oil. Chalk is sometimes used instead of the former, but the expense and labour incurred in preparing it is much greater, and besides it generally contains sand, so that it is no object to the glazier to employ it. Whiting is in every way to be preferred; it must be thoroughly dried before the oil is added to it, otherwise the union will not be effected, or at least it will be very imperfect.

After the whiting has been thoroughly dried and prepared, it ought to be passed through a very fine sieve, and all the remaining lumps and knots pulverized, and then also passed through the sieve. Great care must be taken to keep the whiting free of sand and other extraneous substances.

When putty is to be made, put the proper quantity of oil into a tub or other open vessel, and gradually add the whiting whilst yet in a hot state, at the same time keeping the whole in motion with a stick, until it becomes of a sufficient consistency to admit of being wrought by the hand on a board or table. Having been removed thither from the tub, it must be wrought up with dry whiting, until it is converted into a compact mass. When brought to this state, it ought to be put into a hollowed stone or mortar, and beat with a wooden mallet till it becomes soft and tenacious, when more whiting must be added, until it has attained a proper consistency.

When putty is required of a superior degree of fineness, and which will also dry quickly, add a little sugar of lead or litharge; and if an increase of strength be wanted, a little white lead.

When the panes have been fitted into the cheeks of the sashes, they must be removed, and the checks well bedded with beat putty. This done, the panes are again returned to their places, and gently pressed or lodged in the bedding, the workman, as it were, humouring the glass should it be bent or twisted, and taking care that there is no hard extraneous substance mingled with the putty, which might endanger, if not actually break, the glass. When a pane is perfectly bedded it lies quite firm, and does not spring from the putty; but when, either from a perverse bend or twist in the glass, or any other accidental cause, it happens that it cannot be made to go quite close to the check, the vacant space must be carefully and neatly filled upon the back puttying, otherwise the window will not be impervious to the weather, and will be very apt to fall into decay by the admission of moisture.

The convex or round side of the pane, where such a shape occurs, should be presented to the outside, and the concave or hollow to the inside. When thus placed, they resist the weather better than if the hollow sides were exposed to it.

After the pane has been bedded, the next process is the outside puttying. This putty should be kept in the fore check, about the thirty-second part of an inch below the level of the inside check, so as to allow the thin layer of paint which binds these two substances together to join the putty and glass; and that it may not offend the eye by being seen from the inside; and that, when it is painted, the brush may not encroach on any visible part of the pane, leaving those ragged lines or marks which are so often seen from the inside on ill-finished windows, and which are so displeasing to the eye. This operation, and finishing the corners, are two nice points in the art, and therefore, when properly done, discover the neat-handed and skilful workman.

All frames or sashes of windows ought, before being glazed, to receive one or two coats of white paint, to which a small portion of red lead has been added to facilitate its drying, and to give increased strength and durability to the paint.

Lattice or Lead Windows.—This antique and singularly beautiful style of glazing has unaccountably fallen much into disuse, although of late years it has certainly undergone something like a resuscitation, in consequence of a revival of the public taste for stained glass, and a growing predilection for Mediæval architecture in churches, cottages, and the like. For these, and for staircase windows, and indeed all windows similarly situated, as in halls, lobbies, or the like, it is peculiarly adapted.

It may be proper to premise, that lead windows require stained or coloured glass for producing their fullest and best effects, and it was with stained glass only that they were originally constructed; but very neat and elegant windows are executed in this style with plain glass, where variety and beauty of figure are made to compensate in some measure for the absence of colour.

Lead windows may be made to any pattern, and in this there is great scope for the display of a correct taste. In the time of Elizabeth, this branch of the glazier's art was carried to great excellence, especially by one Walter Geddes, who was employed in glazing most of the royal and public buildings of that period. Geddes executed in this style some windows of transcendent beauty, displaying an endless variety of the most elegant and elaborate figures. The most useful and most common description of plain glass lead windows, however, are those of the diamond or lozenge shape; but, as already said, they may be made to any pattern desired.

The lead work can be adapted with ease to any pattern that may be chosen for the glass; and it can likewise be made to any breadth, from one-eighth to five-eighths of an inch.

The apparatus and tools necessary for producing this are, a glazier's vice, or lead mill, moulds for casting the lead into slender bars or rods of about eighteen inches in length, which is the first process; a three-fourth inch chisel; a hard-wood fillet for forcing the glass into the grooves in the lead frame-work; and an opener or wedge tool, made also of hard wood, or ebony, for laying open the grooves for the reception of the glass; two copper bolts for soldering, the end formed like an egg. A correct delineation of the vice or mill alluded to is given in Plate CCLXXV., in describing which, in its various connected parts, the same letters of reference are adapted to the different figures, so far as necessary, which, with the isometrical views, will facilitate the comprehension of their parts and properties.

Fig. 1, an end view, partly open, of a mould for casting three varieties of patterns, which are thus prepared for being forced through the machine. By an ingenious construction of the handle, it is made to lock and unlock by inclined planes, acting on studs *aa*. Fig. 2, a side view, also partly open; and fig. 3, an isometrical view of the mould prepared for pouring in the metal.

The metal or cast being removed from the mould, a pair of the dies (one only of each pair is represented), according to the pattern required, figs. 4, 5, 6, 7, are placed in the machine, as seen at *cc*, fig. 8, isometrical view. After they are put in, a thin iron cover (*b*, fig. 10), with an oblong hole in the middle, is put on to guide the metal into the rollers. Figs. 9, 10, and 11, represent three views of the machine as prepared for operating. In figs. 9 and 11, the metal *dd* is represented passing through the machine, which is accomplished by turning the winch handle *ee*, acting on two equal-sized toothed wheels *ff*. On the axles of these are two rollers *gg*, slightly serrated (dotted through in figs. 8 and 10); these rollers draw the metal through, while the dies give the desired form. To allow the axles and rollers to be placed in the frame or body of the machine A, the cover *h* is removed by unscrewing the bolt *i*, figs. 8, 10, 11. The toothed wheels *ff* are also taken off, by unscrewing the nuts *kk*. The tempering screw bolt *l* is for adjusting the dies after they are put in their place. The screw bolts *mm* are for fixing the machine to a table or bench.

Fig. 12 is an isometrical view of the cover *h*, removed to show the ports *nn*, through which the axles of the rollers pass.

Fig. 13 shows the shape of the bolt used for soldering the lead windows, and fig. 14 the opener already described.

The lead intended to be employed in window-making must be soft, and of the very best quality; and great care must be taken to have the moulds properly tempered, otherwise the lead will not be equally diffused in them, and the castings consequently not perfectly solid throughout, as they ought to be.

The castings are, as already noticed, usually about eighteen inches in length, and are afterwards extended by the mill represented by the figure above, to the length of five or six feet.

It may not be unnecessary to add, that the mill not only extends the lead, and reduces it at the pleasure of the operator to the dimensions required, but at the same time forms the grooves into which the edge of the glass is afterwards introduced in forming the window.

When the lead has been prepared in the manner described, the glazier ought to proceed to cut out the panes wanted. For this operation he must prepare by first outlining the full dimensions of the window, and then lining it off to the pattern required, shaping the panes accordingly. If the window is of a large size, this may be done by compartments, to be afterwards united, and thus be more conveniently wrought.

When all the glass has been cut for the window, the next thing to be done is to open the grooves in the lead with the opener or wedge tool. The panes are then, in order that they may be water-tight, fastened very firmly into the grooves with the wooden fillet already spoken of (which may be fixed on the handle of the chisel or cutting tool), the parallel lines of lead being secured in their proper places on the board, when the window is of the diamond shape, by a small nail at either end, until the course is finished, when the work is permanently fastened by running a small quantity of solder gently over the two connecting pieces of lead at each joint, or angular point. When the window has been completed, it should be removed from the working board to a flat table, and there covered with a thick layer of cement, composed of white lead, lamp black, red lead, litharge, and boiled linseed oil, with a half-worn paint-brush, and the composition carefully rubbed into every joint. This will render the window completely impervious to the weather, as the cement, if properly laid on, will fill every chink, where it will soon become as hard and durable as any other of the materials of which the window is composed.

The window, on being fitted into the frame, that is, on being set in its place in the building for which it is intended, ought to be supported with iron rods, extending three-eighths of an inch beyond the breadth of the frame on each side, running across it at the distance of from twelve to fourteen inches from each other, and secured to the lead frame-work at intervals with copper wire.

THE CUTTING DIAMOND.

Before the introduction of the diamond as an agent in cutting glass, that operation was performed by means of emery, sharp pointed instruments of the hardest steel, and sometimes red-hot iron. These were the only contrivances known and practised by the ancient glaziers.

In considering the diamond in its relations to the purposes of the window-glass cutter, there occur some circumstances not unworthy of remark. Amongst these, it may be noticed, that the cutting point of the diamond must be a natural one; an artificial point, however perfectly formed, will only scratch the glass, not cut it. The diamond of a ring, for instance, will not cut a pane, but merely mark it with rough superficial lines, which penetrate but a very little way inwards. Artificial points, corners, or angles, therefore, produced by cutting the diamond, are adapted only for writing or for drawing figures on glass, and such were those used by Schwanhard, Rost, and the other old artists who were celebrated for ornamenting glass vessels. The cutting diamond does not write so well on glass, from the circumstance of its being apt to enter too deeply, and take too firm a hold of the surface, and thus become intractable. It may further be noticed, that an accidental point produced by fracturing the diamond, is as unfit for cutting as an artificial one. Such a point will also merely scratch the glass. No point, in short, that is not given by the natural formation of the mineral, will answer the purposes of the window-glass cutter.

The large sparks, as the diamonds used for cutting glass are called, are generally preferred to the small ones, from the circumstance of their being likely to possess (although this is by no means invariably the case) a number of cutting points; while the very small sparks are not always found to possess more than one. Thus, if the point of the latter is worn or broken off, although the spark be turned, and reset in its socket, it will still be without the power of cutting, and consequently useless; while the former, on undergoing the same operation, will present a new and effective point.

The large sparks are called *mother sparks*, and are sometimes cut down into as many smaller fragments, bearing the same name, as there are natural points in them. Each of these, therefore, can have only one cutting point, and are consequently only proportionately valuable to the glazier, since they cannot be restored by resetting.

The Setting of Diamonds is a process with which every glazier ought to be acquainted; nor is it an art of difficult acquirement; some practice, and a little patience, are all that is necessary.

After having selected a stone, as clear and pellucid as possible, and of an octahedral shape, or as near to that form as it can be procured, the workman proceeds to ascertain which is its cutting point, or, if it has more than one, which is the best. This will be found to be that point which has the cutting edges of the crystal placed exactly at right angles to each other, and passing precisely through a point of intersection made by the crossing of the edges.

He then provides a piece of copper or brass wire, a quarter of an inch in diameter, having a hole drilled in one of its ends large enough to contain three-fourths of the diamond to be set. Having temporarily secured the diamond in this hole, the setter ascertains the cutting point by trying it on a piece of glass; and when he has discovered it, he marks its position by making a slight notch in the wire with a file or otherwise, exactly opposite to the cutting point, as a guide to him in his operations when he comes to fix it permanently in the socket head of the handle. When doing this, care is taken to keep it exactly parallel with the inclined plane of the socket head.

The cutting point having been ascertained, and the diamond fixed into its place, the wire is then cut off about a quarter of an inch below the diamond, and filed down to fit exactly into the aperture in the socket head, into which it must be soldered. The rough or superfluous metal around the stone is removed with a file; and, lastly, the setting is polished with emery or sand paper. Such is the most approved method of setting new diamonds, and it applies equally to the resetting of old ones. But in the latter case, the first process, that of detaching the stone from its bed, is accomplished either by means of a knife, or by applying the blowpipe.

The art of managing the diamonds in glass-cutting, so as to produce effective results, can only be attained by considerable experience. The diamond must be held in a particular position, and with a particular inclination, otherwise it will not cut, and the slightest deviation from either renders an attempt to do so abortive. In the hands of an inexperienced person it merely scratches the glass, leaving a long rough furrow, but no fissure. The glazier judges by his ear of the cut made. When the cut is a clean and effective one, the diamond produces, in the act of being drawn along, a sharp, keen, and equal sound. When the cut is not a good one, this sound is harsh, grating, and irregular. On perceiving this, the operator alters the inclination and position of his diamond, until the proper sound is emitted, when he proceeds with his cut.

The diamonds employed in glass-cutting are of the description known by the technical name of *bort*, a classification which includes all such pieces as are too small to be cut, or are of a bad colour, and consequently unfit for ornamental purposes. These are accordingly selected from the better sort, and sold separately, at an inferior price.

Though there are many substances that will scratch glass, the diamond was thought to be the only one that would cut it; but some experiments of Dr Wollaston have shown that this is not strictly correct. That eminent philosopher gave to pieces of sapphire, ruby, spinel ruby, rock crystal, and some other substances, that peculiar curvilinear edge which forms the cutting point in the diamond, and in which, and in its hardness, its singular property of cutting entirely lies, and with these succeeded in cutting glass with a perfectly clear fissure. They lasted, however, but for a very short time, soon losing their edge, although prepared at a great expense of labour and care; while the diamond comes ready formed from the hand of nature, and will last for many years.

MANUFACTURE OF FLINT-GLASS OR CRYSTAL.

This branch may be defined the art of forming useful and ornamental articles of glass, and is the most ancient department of glass manufacture. The manipulatory processes have scarcely been varied and only slightly extended since the earliest times. The progress of chemistry has supplied purer materials but introduced few new ones. Thus we find that baryta has replaced the lead, and soda the potash in ancient glass, while in the production of coloured glasses purer and additional metallic oxides are used. Yet this art has shown less tractability in the hands of the improver than perhaps any other industrial art.

The best flint glass or crystal is composed of silica, potash, and lead, the average proportion being one-half sand, one-third red lead or litharge, one-sixth carbonate of potash, and a little saltpetre, manganese, and white arsenic to correct and improve the colour or accidental impurities of the other materials. For inferior glass, or "tail metal" as it is technically called, soda is substituted for potash, and baryta for lead or litharge. In still cheaper "metal" for common small phials or bottles, a mixture approximating that for window-glass is used. For optical purposes the proportion of lead is increased to improve the refractive properties, which increase in proportion to the density of the medium. The specific gravity of the metals varies from about 3·6 to 2·5.

The furnaces employed are generally circular, and contain eight or ten pots of the form represented in fig. 2, Plate CCLXXVI. The "found," as the period of melting the materials is termed, commences generally on a Friday evening. The materials or "batch," and a portion of broken glass or "cullet" being mixed together are gradually introduced into the heated pot. Fig. 1, Plate CCLXXVI. represents the interior of a glass-house; the building in the centre being a large cone or chimney built over and around the furnace which is seen through the arches *a*. The holes into which the men at 5 and 6 are dipping iron tools are the openings through which the batch is introduced and the metal withdrawn. The grate is in the centre of the furnace, and there are flues at the back of the piers between the arches. As the batch melts there is a considerable evolution of gases, which at length subsides, when the metal begins to "fine" and reaches the "crisis." It is then cooled until about the consistency of thick honey. The evolution of the gases disperses air bubbles through it; and the glass-maker endeavours so to regulate the heat of the furnace that the bubbles may rise to the surface, burst, and leave the metal plain and fine, but if the heat be continued beyond the crisis, the quality of the metal is deteriorated. For some time after the greater part of the gas has escaped, little bells or beads, technically called "seeds," rise and are extricated more freely by agitation or alteration of temperature. If the metal becomes solid while these bubbles are rising, it retains them, and if the "crisis" is not quickly passed, although the seed may be overcome by long continued fusion yet bad colour and other defects arise. Strings and striæ, which upon close examination may be found in nearly all glass, are very common and troublesome. They may be caused by improper mixing of the materials, separation in the pot of metal of different densities, large grains of sand or pieces of refractory clay. But as strings and striæ in clear ice give pure water when melted, so in glass, mechanical rather than chemical means must be used for their prevention and cure. For optical glass Bontemps has carried out the recommendation of Faraday, and by systematically stirring the fluid glass has nearly reduced the manufacture of optical glass for large lenses to a certainty.

Crystal glass is popularly called colourless, but a practised eye quickly detects colour, which is more readily perceptible in the mass. It is probable that even pure silica, oxide of lead, and carbonate of potash will not produce colourless glass, but that there is a colour proper to glass as there is to air and water. But the main causes of colour in crystal are slight impurities, consisting of the oxides of iron or compounds of sulphur or carbon. A large excess of lead gives a yellow colour,—the oxides of iron, orange or olive-green tints, and compounds of sulphur or carbon, orange or blue. The peroxide of iron gives orange of a light tint, compared with the olive-green produced by the same quantity of the protoxide of iron. The addition of the black oxide of manganese or of saltpetre, produces purple, peroxidizes the oxide of iron, and, combined, forms what is called white, but practically an approach to black, and by a large dose of these materials glass of opaque blackness may be produced. Saltpetre also peroxidizes the iron, and heightens the colour due to manganese. Purity of materials is essential to success, and oxide of manganese was formerly called glass-makers' soap; but although it reduces the colour arising from iron, it does not annihilate it. Glass rendered colourless by manganese becomes pink by exposure to the direct rays of the sun, and if too much is used in the "batch" the metal is rendered pink, and is called high-coloured. Glass with too little manganese has a "low colour." The high colour may be reduced by the deoxidizing agency of a pole of wood, with which, in such case, the metal is stirred. Some of the high colour is lost in the annealing, and thick vessels remaining long in the "leir" or oven lose more than the light articles which are passed quickly through; therefore to obtain equality of colour, the metal for thick goods must be highest coloured. Arsenious acid is also employed as a corrective of colour. Sulphur is a powerful agent in colouring glass. Sometimes a pot of metal foams while melting and is of a dark amber or orange colour, which occasionally it retains when cool, or at other times changes to the light blue tint of the common soda-water bottle. Both tints are caused by the presence of sulphur, the orange by the larger quantity. One part of sulphur to two hundred of glass produces a dark colour; hence, by adding a sulphuret to the melted metal the tints can be deepened at will. Splitgerber shows that glass containing one of sulphur in three hundred of glass becomes at a moderate low red heat nearly black and opaque, but becomes more transparent at a higher temperature. Similar changes are produced by heat on sulphur in its pure state. At its melting point it is lemon-yellow; at higher temperatures it becomes orange, and gradually deepens nearly black, and at a still stronger heat is volatilized in yellow vapours. Similar results are obtained with glass coloured by gold, silver, and copper; glass coloured by sulphur takes a deeper stain from silver than other glass, but if overheated becomes a light greenish-yellow on the reverse, and dark chestnut on the obverse, and is rendered useless. In Bohemia, glass consisting only of potash, silica, and lime is stained of a bright scarlet colour by copper: the process is not followed in Britain probably in consequence of British glass always containing lead or soda.

The metallic colours used for flint glass are cobalt for blue; chromium or a mixture of iron and copper for green; manganese for purple; copper for deep scarlet or light blue; gold for crimson; antimony or iron for yellow; uranium for topaz. Glass coloured by the oxide of uranium exposed in a dark room to the dim light of the electric Aurora becomes translucent and illuminated throughout, and is partially so when exposed to the hydrogen flame. White enamel is obtained by the addition of oxides of arsenic, tin, fluor spar, or phosphate of lime, and coloured enamels are produced by adding the appropriate metallic oxides.

In the manipulation of the glass the men are arranged in sets of four, called chairs, and there are generally four chairs to a furnace. The principal workman of each chair is called the *gaffer*, the second the *servitor*, the third the *footmaker*, and a boy completes the set. The wages of these men vary from 60s. to 20s. per week. The work is heavy, and requires such skill and dexterity that few-first class workmen are found. The men work in six-hour shifts, there being a complete double set. The first operation of the glass-blower is to skim the metal, as most impurities float on its surface, and this is done with an iron rod heated at its extremity and dipped into the metal, a little of which adheres. This is flattened on an iron plate and repeatedly introduced, gradually growing larger until it gathers and removes all the floating matter from the surface of the metal. The operation of making crystal articles then goes on as follows.

An iron tube is heated at the end and dipped into the semifluid metal, see Plate CCLXXVI. figs. 5 and 6, a portion of which is collected, withdrawn from the pot, and then rolled on an iron plate called the *marver*, as in fig. 7, until it has acquired the circular shape seen there. The *marver* also equalizes the heat of the gathering, which the iron tube cools and stiffens, and which requires to be equally ductile in all its parts. The servitor now prepares a *post*, as a flattened round hot lump of metal on a punty or iron rod is called, and applies it to the end of the globe as shown in fig. 9. The two masses of glass are thus united together, and that attached to the hollow tube is separated by touching it, near to where the tube enters the globe, with a small piece of iron wetted with water. By this means the glass cracks, and a smart blow on the iron tube completes the disunion. The workman now takes the punty from his assistant, and laying it on his chair arm, rolls it backward and forward with his left arm, while with his right he moulds it into the various shapes required, by means of a very few simple instruments. By one of these called a procello, the blades of which are attached by an elastic bow like a pair of sugar tongs, the dimensions of the vessel can be enlarged or contracted at pleasure. Any superfluous material is cut away by a pair of scissors. For smoothing and equalizing the sides of the vessel a piece of wood is used. After the article is finished it is detached from the punty and carried on a pronged stick to the annealing oven or leir, a representation of which is given in Plate CCLXXVI. fig. 3.

For a fluted or ribbed *cane*, as a solid glass rod is technically called, the metal is forced into a mould of the requisite shape and then withdrawn; after which, if attached to another *post* and the two punties be twisted and drawn in opposite directions, the ribs become spiral lines, which become more acute as the drawing is extended. Venetian filigree work is produced in this way; and if in the hollow flutes of the mould coloured glass or enamels are inserted, and the gathering introduced, the coloured glass or enamels are welded to and withdrawn with it. When again heated, and twisted or drawn, these streaks of colour or enamel become spiral, and ornament the surface. If before being drawn the mass be redipped into the pot of crystal glass and then twisted, the spiral lines of colour or enamel become internal. By the repetition of this process spirals can be formed within spirals, and by placing these filigree *canes* side by side and welding them together, very curious and intricate patterns are obtained. By the ordinary process of blowing, vessels are formed with smooth and concentric interior and exterior surfaces, and do not exhibit the brilliancy of the crystal so much as when it has numerous inequalities. The most brilliant effect is produced by cutting, but moulding is much cheaper, and this branch of the art has now reached a high state of excellence. The moulds are generally of iron highly polished, and are kept a little below a red heat. The surface of the metal is injured by contact with the mould, but its transparency is restored by being reheated. A very exact regulation of the temperature is necessary in reheating fine mouldings; too little heat does not give the "fire polish," too much softens the metal and obliterates the mouldings. The moulds for pressed goods are made in pieces so hinged or connected as to close and leave a vacuity, the form of the article required, the hollow in which is not however produced by blowing but by the plunger of the press under which the mould is placed. The required quantity of metal is then dropt in, when the plunger descends and forces it into all parts of the cavity, completing the formation of the article, which is then stuck to a punty, and fire-polished and annealed.

What is called cased glass is crystal covered with coats of coloured glass. It is thus obtained. The gathering of crystal is thrust into a coloured or enamelled shell, which is previously prepared. The welding is completed by reheating; and two or more coats of different colours or enamels may thus be employed. When cut through to the crystal in various figures, the edges of the different colours on enamel are seen.

The Venetian frosted glass is obtained by immersing the hot metal gathering in cold water, quickly withdrawing it, reheating and expanding it by blowing, before it becomes so hot as to weld together the numerous cracks on the surface caused by the cold water. These cracks only penetrate where the metal has been cooled by the water, and remain as depressions until the article is finished.

Venetian vitro-di-trono consists of spiral lines of enamels or colours, crossing each other diamond-wise, in the body of the glass, and inclosing an air-bubble in the centre of each diamond. It is thus formed: a gathering is blown in the mould with the necessary canes twisted and blown out as formerly described for spiral filagree, the canes being left projecting from the outside like ribs or flutes. A similar piece is made and turned inside out. The projecting canes on this piece are inside, and the spiral lines reversed. The one piece is then placed under the other, and both are welded together. The ribs or flutes projecting from the two surfaces in contact inclose air in the diamonds, which gradually assumes the bubble shape. The vessel is then formed in the ordinary manner. The most beautiful regularity of lines is thus obtained; and when the ends are closed by the procellos, the lines are drawn to a centre as regularly arranged as if they had been turned in an engine.

Incrustations are formed by placing the substance to be incased on the surface of the article, and dropping melted metal on it, or by preparing an open tube of glass, inserting the object, and welding the open end. By suction instead of blowing, the metal is collapsed on the object, and the air withdrawn. From the unequal contraction between the object and the crystal by which it is surrounded there is much difficulty in the annealing, and to avoid the risk of breakage the object should be made of materials expanding and contracting like the glass itself.

The round, heavy paper weights containing various ornaments apparently in the body of the metal are made as follows:—Canes are made to the required pattern—say, for example, a star within a tube. A gathering of white enamel is formed in a star-shaped mould, and coated with crystal. After this is marvered, it is dipped into a coloured enamel, and drawn out into a cane; and if this is covered with crystal, the eye cannot detect the junction of the external crystal with that of the cane, but the enamel casing will appear as a tube with the star standing in the centre. Devices of numerous kinds are thus made in canes, and then welded together. The end is then ground, and, after being heated and incased in crystal, the lens-like shape of the paper weights adds to the effect by magnifying the incrusted canes.

The light-refracting properties of crystal are best shown by cutting and polishing. Fig. 4, Pl. CCLXXVI. represents a glass-cutter's mill. A is the pulley and band communicating motion to the mill, which is made of wrought or cast iron. Stones of various textures, or wood, sand, or emery, in water, are used with the metal mills, water only with the stones, and pumice-stone and putty-powder with the wood for smoothing and polishing. The articles are held in the hand, and applied to the mill while rotating. The punty marks are ground off tumblers, wine-glasses, and such like, by boys holding them on small stone mills. Ground or frosted glass is made by rubbing the surface with sand and water. Iron tools fixed on a lathe and moistened with sand and water are used to rough out the stoppers and necks of bottles, which are completed by hand with emery and water. The neighbourhood of the coal-fields is of course the chief seat of the manufacture, and probably the best crystal is now made in Manchester.

BOTTLE-GLASS.

Plate CCLXXIV., fig. 4, is a ground-plan, showing all the necessary buildings for two bottle-houses, and in one of the houses the ground-plan of a four-pot furnace and ash arches. The furnace is an oblong, similar to what we have described the crown-furnace to be, but arched over in the barrel shape. It is erected in the centre of the brick cone, above a cave, which admits the atmosphere to the grating. The working holes of this furnace, opposite each pot, for putting in the materials and taking out the liquid glass, are each about one foot in diameter. At each angle of the furnace there is also a hole about the same size communicating with the calcining arch, and admitting the flame from the main furnace, which reverberates on and calcines the materials in the arch. Fig. 1 shows the main furnace; 2, 3, 4, 5, the ash arches for calcining the materials; 6, 7, 8, 9, 10, 11, annealing arches; 12, two-pot arches; 13, what is considered an improved plan; 14, clay-house, for picking, grinding, sifting, and afterwards working the clay into paste for the purpose of manufacturing pots; 15, mill house for grinding clay; 16, a building containing a calcar furnace for experiments, or for preparing the materials, when the ash arch attached to the main furnace is under repair, including, 1, a sand crib, and, 2, an ash crib for sifting and mixing the materials, sufficient for two houses.

The common green or bottle-glass is made of the coarsest materials; sand, lime, sometimes clay, any kind of alkali or alkaline ashes, whose cheapness may recommend it to the manufacturer, and sometimes the vitreous slag produced from the fusion of iron ore. The mixture most commonly used is soap-maker's waste, in the proportion of three measures to one measure of sand. The green colour of this glass is occasioned by the existence of a portion of iron in the sand, and, it may be, also in the vegetable ashes of which it is composed.

When castor-oil or champaigne bottles are wanted, a portion of crown-glass cullet is added, to improve the colour. The impurity of the alkali, and the abundance of fluxing materials of an earthy nature, combined with the intense heat to which they are subjected, occasion the existence of but a very small proportion of real saline matter in the glass, and thereby render it better than flint-glass for holding fluids possessing corrosive properties.

The soap-maker's waste is generally calcined in two of the coarse arches, figs. 3 and 4, which are kept at a strong red heat from twenty-four to thirty hours, the time required to melt the materials and work them into glass, which is termed a journey. After the soap-maker's waste is taken out of the arch, it is ground and mixed with sand in the proportions already mentioned. This mixture is put into the fine arches, and again calcined during the working journey, which occupies about ten or twelve hours more. When the journey is over, the pots are again filled with the red-hot materials out of the fine calcining arch. Six hours are required to melt this additional quantity of materials. The pots are again filled up, and in about four hours this filling is also melted. The furnace is then kept at the highest possible degree of heat, and in the course of from twelve to sixteen hours, according as the experience of the founder may determine, the materials in the pots are formed into a liquid glass fit for making bottles. The furnace is now checked by closing the doors of the cave, and the metal cooling, it becomes more dense, and all the extraneous matter not formed into glass floats upon the top. Before beginning to work, this is skimmed off in the way already described in our account of crown-glass making. A sufficient quantity of coals is added at intervals, to keep the furnace at a working heat till the journey is finished.

After the pots have been skimmed, the person who begins the work is the gatherer, who, after heating the pipe, gathers on it a small quantity of metal. After allowing this to cool a little, he again gathers such a quantity as he conceives to be sufficient to make a bottle. This is then handed to the blower, who, while blowing through the tube, rolls the metal upon a stone, at the same time forming the neck of the bottle. He then puts the metal into a brass or cast-iron mould of the shape of the bottle wanted, and, continuing to blow through the tube, brings it to the desired form. The patent mould now in use is made of brass, the inside finely polished, divided into two pieces, which the workman, by pressing a spring with his foot, opens and shuts at pleasure. The blower then hands it to the finisher, who touches the neck of the bottle with a small piece of iron dipt in water, which cuts it completely off from the pipe. He next attaches the punty, which is a little metal gathered from the pot, to the bottom of the bottle, and thereby gives it the shape which it usually presents. This punty may be used for from eighteen to twenty-four dozen of bottles. It is occasionally dipped into sand to prevent its adhering to the bottle. The finisher then warms the bottle at the furnace, and taking out a small quantity of metal on what is termed a ring iron, he turns it once round the mouth, forming the ring seen at the mouth of bottles. He then employs the shears to give shape to the neck. One of the blades of the shears has a piece of brass in the centre, tapered like a common cork, which forms the inside mouth; to the other blade is attached a piece of brass, used to form the ring. The bottle is then lifted by the neck on a fork by a little fellow about ten years of age, and carried to the annealing arch, where the bottles are placed in bins above one another. This arch is kept a little below melting heat, till the whole quantity, which amounts to ten or twelve gross in each arch, is deposited, when the fire is allowed to die out.

W. C—R. AND J. B.

Burning Glass. See Burning Glasses.

Looking Glass. See Mirror, and Foliating *of Looking-Glasses.*

Musical Glasses. See Harmonica.

Weather Glass. See Barometer.

GLASSITES or **Sandemanians**, a religious sect that first appeared in Scotland about A.D. 1728, when Mr Glass, a minister of the Scottish Established Church, avowed opinions on church government approaching very nearly to those of the Congregationalists. About 1757 Robert Sandeman appeared as an advocate of the same opinions, and in 1762 he organized a congregation. The prominent distinguishing doctrine of the Glassites relates to the nature of justifying faith, which Sandeman maintained to be "no more than a simple assent to the divine testimony passively received by the understanding." Certain peculiar practices also are observed by this sect, which are by them supposed to have been prevalent among the primitive Christians, such as weekly communions, love-feasts, mutual exhortations, washing each others' feet, plurality of elders, the use of the lot, and several others.

In 1851 the number of Glassite congregations in Great Britain was twelve, with aggregate accommodation for about 2000 persons.

GLASTONBURY, a municipal borough and market-town of England, county of Somerset, 24 miles S.W. of Bath. It occupies a peninsula (formerly an island, the *Avalonia* of the Romans) formed by the river Brue, between the Poldew and Mendip hills. Glastonbury was long celebrated for its abbey, one of the richest and most powerful of the monastic institutions in England. It is said to have been founded by Joseph of Arimathea, whose staff, according to the legend, was converted into a budding thorn, and hence the term "Glastonbury thorn." Having fallen into decay, the abbey was rebuilt with great splendour by Ina, king of Wessex, about 708. A.D. It was in great part rebuilt in the twelfth century, and was subsequently repaired or enlarged. At the dissolution of the monasteries in 1539, the last abbot, being unwilling to surrender his abbey, was hanged without trial. The abbey buildings were surrounded by a high wall inclosing about 60 acres. The remains of this structure consist of some fragments of the church, the chapel of St Joseph, and the abbot's kitchen. This last, which is in better preservation than any other part, is an octagonal building, with a turret surmounted by a double lantern. The town of Glastonbury took its rise from the abbey, to which also it was mainly indebted for its prosperity. It was destroyed by the Danes in 873, but was subsequently rebuilt by King Edmund. It was burnt down with part of the abbey in 1184, and was rebuilt by Henry III. Again it was destroyed, or nearly so, by an earthquake in 1276, after which it was gradually restored chiefly by the help of the abbey. It is governed by a mayor, four aldermen, and twelve councillors. In the centre of the town stands the cross, an ancient and now ruinous structure. The churches of St John and St Benedict are fine old buildings, and the former is surmounted by a beautiful tower. On a hill N.E. of the town is a curious old tower called the Tor, or Tower of St Michael. The other buildings of interest are St George's Inn, formerly the abbey hospitium; the tribunal, the abbey-house, gate-house, hospital of St John, and the town-hall. Many of the houses are composed of the stones of the abbey. It carries on some trade in timber, slates, tiles, and agricultural produce by means of a canal connecting it with the Bristol Channel. The silk manufacture is carried on to a small extent. St Dunstan was a native of this town. Pop. (1851) 3125.

GLATZ (Slav. *Kladsko*), a fortified town of Prussian Silesia, government of Breslau, and 52 miles S.S.W. of a town of that name. It stands in a narrow valley on the left bank of the Neisse, not far from the Austrian frontier. It is strongly walled, and is further defended by an old castle built on a high hill on one side, and by a regular modern fortress erected on a hill on the opposite side of the town. It has several Lutheran and Catholic churches, a gymnasium, asylum for destitute children, infirmary, a large barracks, and other military buildings. Its chief manufactures are linen, damask, broadcloth, leather, and hosiery. It surrendered to Frederic the Great in 1742, was retaken by the Austrians in 1759, and restored to Prussia at the peace of 1763. Pop. (1849) 8222, exclusive of the garrison, which amounted to 2342.

GLAUBER, **John Rodolph**, a German chemist, born at the commencement of the sixteenth century, was one of those who were most ardently occupied with "the great work"—the discovery of the philosopher's stone. Full of love and enthusiasm for the marvellous, he abandoned himself without reserve to the extravagant ideas which then prevailed in chemistry. His long and painful labours, pursued with indefatigable perseverance, and an energy worthy of a nobler object, were almost always directed towards the discovery of the panacea, the philosopher's stone, and other chimeras with which the alchymists amused themselves. Infatuated with the doctrine of the adepts, he may be said to have passed his life over alembics and furnaces; and, in fact, he is regarded as a second Paracelsus. Not less presumptuous than his model, he boasted of the discovery of several wonderful secrets. Whether he was truly convinced of the reality of his inventions, or whether, like empirics of all classes, he proposed to profit by the ignorance and blind credulity of men, he had the art to seduce many persons by promises as vain as they were exaggerated. He is even reproached with having carried on a vile traffic in pretended secrets, which he sometimes sold at an exorbitant price to different individuals, and afterwards published with his name in order to enhance his reputation. Devoid of the instruction and force of mind necessary to enable him to deduce just inferences from the numerous experiments which he had performed with ability and address, Glauber only attained a subaltern or secondary rank amongst the chemists. But he, nevertheless, discovered several important facts, which have materially contributed to make better known certain salts and some metals, which, eventually, had a marked influence on the progress of chemistry and materia medica. Thus, in examining the residue of the decomposition of sea-salt by the sulphuric acid, this laborious chemist discovered the sulphate of soda, to which his name is permanently attached under the denomination of Glauber's Salt. His writings on dry baths and sulphurous fumigations entitle him, in certain respects, to be regarded as the inventor of confined vapour baths, which have been latterly brought forward as a new discovery; and he is equally the inventor of several chemical medicaments, the use of which is still preserved in most of the pharmacopœias.

We are also indebted to him for a great number of works (thirty in all), an exact list of which may be found in the curious article entitled Glauber, in Adelung's *History of Human Folly*. A collection of them was printed in several volumes 8vo, and in two volumes 4to, at Frankfort, 1658, 1659, and translated into English by Pack, London, 1689, folio. Of these the principal are—*Deutschlands Wallfahrt*, Amsterdam, 1656, often reprinted; *Furni Novi Philosophici*, or Description of a new Method of Distilling, Amsterdam, 1648, 8vo, translated into French by Duteil, Paris, 1659, 8vo; *De Medicina Universali, sive de Auro potabili vero*, Amsterdam, 1658, 8vo; *Miraculum Mundi*, Amsterdam, 1653, 8vo; *Pharmacopœia Spagyrica*, Amsterdam, 1654, 8vo; *De Tartaro ex Vini fœcibus*, 1655, 8vo; *Dissertatio Medica Hermetica et Catholica magni Naturœ magisterialis Mysterii*, Frankfort, 1656, 8vo; *Consolation of Navigators*, Amsterdam, 1659, 8vo; *Opus Minerale*, Amsterdam, 1651, 8vo; *De Elia Artista*, Amsterdam, 1668, 8vo. Glauber published many other alchymical productions, which are neither less obscure or less enigmatical than the preceding. All his works are in German; and although most of them have the first words of the title in Latin, there is good ground for believing that Glauber did not understand that language. (J. B—E.)

GLAUCHAU, a town of Saxony, circle of Zwickau, on the right bank of the Mulde, 12 miles S.E. of Altenburg. It has several churches, a normal and other schools, an orphan asylum, poorhouse, two hospitals, two castles, and extensive manufactures of woollen and linen goods, hosiery, leather, iron and copper wares, &c. Pop. (1849) 10,350.

GLAUCOMA (γλαυκός), a disease of the eye, in which the crystalline humour assumes a bluish or greenish colour, and its transparency is diminished. (See Lawrence's *Lectures on Surgery.*)

GLAUCUS, son of Sisyphus and Merope, grandson of Æolus, and grandfather of Bellerophontes. He dwelt at Potniæ; despised the power of Venus or Aphrodite; and prevented his mares from breeding, in order that they might be the stronger for the race. Another version is, that he fed them on human flesh for the purpose of rendering them spirited and warlike. This roused the anger of Aphrodite, so that she destroyed him—some say by causing his horses to take fright and throw him out of the chariot, while he was contending at the funeral games in honour of Pelias; others, that his horses tore him to pieces, having drunk from the waters of a sacred well in Bœotia, which caused them to go mad. One of the lost tragedies of Æschylus was called Γλαῦκος Ποτνιεύς.

Glaucus, son of Hippolochus, and grandson of Bellerophontes, was a Lycian prince, who assisted Priam in the Trojan war. When he and Diomede, to whom he was bound by ties of hospitality, recognised each other in battle, they desisted from the contest, and exchanged arms. Glaucus was afterwards slain by Ajax, but his body was taken back to Lycia.

Glaucus, a son of Antenor; he fought in the Trojan war, but was killed by Telamonian Ajax.

Glaucus, one of the sons of Priam.

Glaucus, one of the sons of the Cretan king Minos, by Crete or Pasiphaë. When a child, playing at ball or pursuing a mouse, he fell into a cask of honey, and was smothered. He was, however, discovered by the soothsayer Polyidus of Argos, who was pointed out by Apollo for the purpose. Minos then desired him to restore his son to life; but failing to do this, he was buried alive with young Glaucus, when a serpent most opportunely revealed an herb which restored the dead body to life. The story of Polyidus was a favourite subject with ancient poets and artists.

Glaucus, a fisherman of Anthedon in Bœotia, who became a sea-god by eating part of the divine herb which Cronos had sown. A general belief prevailed in Greece that Glaucus every year, accompanied by marine monsters, visited all the coasts and islands, and delivered his prophecies. Fishermen and sailors especially were attentive to his oracles, in which they placed implicit confidence. He is said to have instructed even Apollo in the prophetic art. The stories about his various loves were favourites with the poets, but the place of his abode varied according to local traditions.

Glaucus, a sculptor in metal, who dwelt in Chios, and was considered by the Greeks as the inventor of the art of soldering metals. He lived about 490 B.C.

GLAZING *of Earthenware*. See POTTERY and STONEWARE.

GLEBE (Lat. *gleba*), in *Law*, the land annexed to a parish church, and belonging to the parson or vicar.

Glebe, among *miners*, a piece of earth containing some mineral ore.

GLEE, in *Music*, a composition for three or more voices, in simple counterpoint; the words generally upon some lively subject. When the words are grave or pathetic, and passages of fugue and imitation are introduced, the composition is more properly called a madrigal.

GLEIG, George, afterwards Bishop of Brechin, was born 12th May 1753, at Bog-Hall, in Kincardineshire. He received the rudiments of his education in the school of Arbuthnot, and passed from thence, at the age of thirteen, to King's College, Aberdeen, where his career was one of the most brilliant on record. His scholarship was of a high order; and in mathematics and the moral and physical sciences he carried off the first prizes. He won for himself also an exhibition or bursary before the close of the first session, and was selected, while yet an undergraduate, to assist Professor Skene in the instruction of his class. For, at the period of which we are writing, each professor in King's College, Aberdeen, carried his pupils through the entire academical course, and was therefore glad to avail himself of the co-operation of the ablest of his scholars, in order to bring up such as could not keep pace with their fellow-students except by extra care and labour bestowed upon them.

There is reason to believe that Mr Gleig, after taking his degree, might have aspired (in good hope) to the office of assistant-professor, with the certainty of succeeding to the first chair which should fall vacant. In this case, however, it would have been necessary for him to subscribe to the *Confession of Faith* of the Established Church of Scotland, and to take the oaths of allegiance and abjuration; but he was one of a family of Scotch Episcopalians which had adhered to the house of Stuart, and suffered for it; and the time had not yet come when Jacobites could, with a safe conscience, accept a descendant of the Elector of Hanover as legitimate sovereign of these realms. Mr Gleig, therefore, declined the tempting proposals that were made to him; and having resolved to take orders in the Episcopal Church, gave himself up for a while to the careful study of theology and a severe course of patristic reading. It is due to the subject of our memoir to add, that he never gave to the arguments of Irenæus or Chrysostom the respect which was due only to the statements of inspiration. His opinion of the degree of deference which ought to be paid to the fathers was this, that on matters of fact with which they were conversant their evidence deserved to be accepted as conclusive; that in the discussion of doctrinal questions their authority was not greater than that of any correct and learned modern who takes Holy Scripture for his guide.

Mr Gleig had barely attained his twenty-first year when he was ordained to the pastoral charge of a congregation in Pittenweem, in Fife. The condition of the Scottish Episcopal Church, though less perilous than it had been a few years previously, was then critical enough. The penal laws remained on the statute-book in all their ferocity; and it was still in the power of any common informer to force the magistrate into the execution of them. Mr Gleig, therefore, like his brethren in general, officiated, so to speak, by stealth, to a few faithful families who met in a room to worship God according to the manner of their fathers. Not that there prevailed among those in authority the slightest inclination to persecute either Episcopalians or Jacobites, as such. All fear of a renewed struggle for the throne had subsided, and with it was passing away the disposition to treat Episcopalians as necessarily disaffected persons, and the use of the Liturgy in Scotland as high treason. Still, the law, while it excluded from office under the crown all laymen who attended the ministrations of the Episcopal clergy, exposed the clergy themselves to imprisonment, and even to transportation, should it be proved against them that they had read the Liturgy to more than four persons over and above the members of their own families. The consequence was, that by little and little the lay members of the Scottish Episcopal Church fell away; and that such as could not bring themselves to conform to the Presbyterian ritual, brought down clergymen from England to officiate to them, under license from the civil government. This procedure, which at the outset might have been defended on the score of necessity, led by degrees to a habit of thinking at least as fatal to the Episcopalian principle as direct conformity to the Established Church. And Mr Gleig, with others brought up in a sterner school, uniformly protested against it.

The death of Prince Charles Edward and the peculiar position of his brother Cardinal York, removed at length the only obstacle which stood between the Scottish Episcopalians and the enjoyment of their full rights as citizens. In anticipation of this event, Mr Gleig had for some years previously laboured to soften down the prejudices of the body to which he belonged. A correspondence was opened with Moor, Archbishop of Canterbury, the Lord Chancellor Thurlow, and other leading statesmen, which gave good hope that a little yielding on the part of the Jacobites would ensure the repeal of the penal laws, and the restoration of the Episcopal Church to the condition in which it stood during the latter part of Queen Anne's reign. Mr Gleig, indeed, made a journey to London, in 1786, with a view to bring this important negotiation to an issue. Unfortunately, however, there were those among his brethren who could not be persuaded to accept free toleration except on their own terms; and an arrangement eminently advantageous to the little church was in consequence set aside. By and by a second treaty was set on foot, which relieved the Episcopal Church from the pressure of the law; but placed it, towards the sister Church of England, on a footing somewhat disadvantageous for both. For this defect in the bill, which gave to his church her status, Mr Gleig was not responsible; and he lived to see the most obnoxious clause in it so modified as to amount to a virtual repeal.

All this while the subject of our memoir was pursuing an honourable and useful career as a man of letters. He contributed to several of the leading magazines of the day; he was in correspondence with almost all the distinguished authors of the age; elected into the Royal Society of Edinburgh, he read at the meetings of that body several able papers on literary and scientific subjects. It is, however, because of his connection with the *Encyclopædia Britannica* that we are chiefly bound to make a record of his merits. Having contributed some able articles (especially that upon Instinct) to the third edition of that miscellany, he was chosen, on the death of Mr Ferguson, the original editor, to bring the work to a conclusion—a task which he accomplished with consummate ability, no slight portion of the matter being supplied by his own pen. The two supplemental volumes which appeared soon afterwards, he wrote almost entirely without any assistance whatever.

Mr Gleig removed from Pittenweem to Stirling in 1790; and married, soon afterwards, Janet, the youngest daughter of Robert Hamilton, Esq. of Kilbrachmont, and widow of Dr Fullton. By her he had four children, of whom one only (the present chaplain-general to the forces) survives.

Mr Gleig was consecrated Bishop of Brechin in 1808, and died at Stirling in February 1839, in the eighty-sixth year of his age.

He was a man of rare piety, unostentatious, charitable, and generous. As a metaphysician, he deserves to take rank with Dr Reid and Dugald Stewart. His learning was profound, his reading extensive, and his memory—till growing years and infirmities affected it—singularly tenacious. His conversational powers were, moreover, of a very high order, and his wit and humour remarkable. He has left behind him few separate writings—only a volume of sermons, and *Letters on the Study of Theology*—a very valuable treatise. But his edition of Stackhouse's *History of the Bible* contains much original matter, which deserves a better place than amid the pages of that heavy compilation. He was a regular contributor, for many of their best years, to the *Anti-Jacobin* and *British Critic*, and embellished an edition of Dr Robertson's works with one of the most agreeable lives of that eminent historian which have appeared. (G. R. G.)

GLEIM, Johann Wilhelm Ludwig, a German poet, born April 2, 1719, near Halberstadt, where he also died Feb. 18, 1803, at the age of eighty-three, after having occupied, during half a century, the lucrative situation of secretary to the chapter of Halberstadt. "Father Gleim," for such was the title accorded to him throughout all literary Germany, is considered one of the best German poets of his time. He distinguished himself particularly in his fables, tales, epigrams, and songs for children. His war-songs, composed for the Prussian army, were very popular, and his lighter strains obtained for him the designation of the Anacreon of Germany. Originally his poems appeared in periodical publications, but were republished at Leipzig in 6 vols. 8vo, 1798. A complete edition of his works was printed at Halberstadt in 7 vols. 8vo, 1811–13. The odes and songs (*Lieder*) of Gleim are not destitute of grace and elegance, but their monotony soon fatigues the ear. His fables are in general more simple and unaffected than those of Gellert, and deserve honourable mention. Still, the serious drawback in many of his romances is the close imitation of the pretentious style of Gongora, the Spanish poet, whose conceits sound badly when clothed in German phraseology; but the merit belongs to Gleim of having introduced to the Germans this kind of popular literature.

GLEIWITZ, a town in the Prussian province of Silesia, government of Oppeln, and 35 miles S.E. of the town of that name; on the Klodnitz, and on the railway between Oppeln and Cracow. It is the seat of a royal mining board, and has very extensive iron-works. Pop. (1849) 8506.

GLENCOE, a valley of Scotland, Argyllshire, extending for about 10 miles in a S.E. direction from Loch Leven. The lower portion of the glen next Loch Leven is cultivated and wooded, but the signs of cultivation gradually disappear on approaching the upper portion, which presents a scene of unmingled wildness and grandeur. On both sides mountains rise almost perpendicularly to a great height, while in the huge clefts of their rocky and blackened summits wreaths of snow may be seen all the year round. In the middle of the valley is the small lake Treachtan, from which issues the Cona. The well-known massacre of Glencoe occurred here in February 1692. See Britain, vol. v., p. 443–4.

GLENDALAGH, or Glandelagh. See Wicklow, County of.

GLENDOWER, or Glendwr, *Owen*, a famous Welsh chief, descended in the maternal line from Llewellyn, the last Welsh Prince of Wales, and notable for the long contest which he maintained against Henry IV. He was born in A.D. 1349, crowned by his followers and adherents in 1402, and died in 1415. See Wales, and Britain.

GLIN, a market-town and seaport of Ireland, county of Limerick, on the left bank of the estuary of the Shannon, 30 miles W. by S. of Limerick. It has a considerable trade in butter, grain, and salmon. Pop. (1851) 1243.

GLISSON, Francis, an English physician, born in 1597, at Rampisham, in the county of Dorset, was educated at Cambridge, and during forty years occupied the chair of medicine in that university. In 1634 he was admitted into the College of Physicians in London, of which he afterwards became president; and in 1639 this body appointed him professor of anatomy. He filled this situation with much credit at the commencement of the civil war, when he took refuge in Colchester; but after the surrender of that city to the parliamentary forces he went to London, and became a member of that association of learned men which afterwards formed the Royal Society.

In 1650 he published his treatise *De Rachitide, seu morbo puerili*, a malady then new in England, where it had only appeared about thirty years before. In 1654 appeared his *Anatomia Hepatis*, in 8vo, in which he first described the capsule of the *vena portarum*, known by his name; in 1672 the *Tractatus de natura substantiæ energetica, seu de vita Natura ejusque tribus primis facultatibus*; and in 1677, the year of his death, the book *De Ventriculo et Intestinis*, in 4to, the first work containing conjectures as to the nature of the simple fibre, and an exposition of the innate principle of irritability. Glisson was also the first who attributed the contraction of the heart, and of the other muscles, to the action of a stimulus on their irritable principle. The greater part of his works have often been reprinted in different countries. He was also the author of a treatise *De Lymphæductis nuper repertis*, Amsterdam, 1659, which, with his book entitled *Anatomica prolegomena et Anatomia Hepatis*, are considered the best of his works. Boerhaave regarded him as the most exact of all anatomists; but Glisson's views on physiology are now held in little estimation. (J. B—E.)

GLOBE, a sphere; a round solid body which may be conceived to be generated by the revolution of a semicircle about its diameter.

Artificial globes, for illustrating problems in geography and astronomy, are fully described, and their uses explained, under GEOGRAPHY, § *Mathematical Geography*, chap. iii.

GLOGAU, or GROSS GLOGAU, a strongly fortified town of Prussia, province of Silesia, and government of Liegnitz, on the left bank of the Oder, 35 miles N. of Liegnitz. The Dominsel or Cathedral island, in the Oder, is likewise strongly fortified, and is connected with the town by a wooden bridge. Glogau is the seat of a superior court, and has numerous churches, a synagogue, two hospitals, a Roman Catholic and a Protestant gymnasium, a citadel, and manufactures of woollens, cottons, hosiery, tobacco, paper, straw hats, &c. It carries on some trade by means of the river, and is connected by a branch with the Berlin and Breslau railway. Pop. (1849) 12,190, besides 3146 military. *Ober* or *Klein Glogau*, a town also in the province of Silesia, government of Oppeln, and 23 miles S. of the town of that name, on the right bank of the Hotzenplotz. It has a castle, a Roman Catholic seminary, and manufactures of linen and woollen goods. Pop. (1849) 4334.

GLOMMON, a river of Norway. See NORWAY.

GLOSS (γλῶσσα, tongue; Lat. *glossa*, interpretation), in literature, a comment in explanation of the text, particularly of an antiquated or obsolete word or phrase.

GLOSSARY, a dictionary explaining obscure and antiquated terms found in old authors. Such are Du Cange's Latin and Greek Glossaries, Spelman's Glossary, and Kennet's Glossary at the end of his *Parochial Antiquities*.

GLOSSOP, a township of Derbyshire, near the Manchester and Sheffield railway, 14 miles E.S.E. of Manchester. It is the chief seat of the cotton manufacture in Derbyshire, having in the town and neighbourhood above fifty cotton mills. It has also woollen and paper mills, dyeing, bleaching, and print works, iron foundries, &c. Pop. (1851) 5467.

GLOUCESTER, a city, and the capital of a county situated in the west midland census district of England. It is 106 miles from London by the highroad, and 114 miles by railway. The authorities are divided relative to the origin of Gloucester; some hold that it was founded by the Britons, who called it Caer-Gloew, signifying "the city of the pure stream;" others, that it was so called after its founder, Gloew, a British chief; others, that the Claudian legion, which landed in Britain with Julius Cæsar, having been stationed there to check the irruptions of the Silures, it was called Claud-cestra (Latin *castra*, signifying camp or barrack), now corrupted into Gloucester; and others, that the West Saxons having captured the city in A.D. 575 called it Gleaucester, whence comes the present name. It is certain that Gloucester became a Roman station under the name of Colonia *Glevium*; and at the present time the soil is rarely stirred without the discovery of pavements, altars, coins, pottery, and other Roman remains, and especially in the suburb of Kingsholm, which seems to have been a place of sepulture, situated, according to the Roman manner, beyond the bounds of the city. In the eighth century, Gloucester, it is stated by Bede, was one of the noblest cities in the land; but it was repeatedly ravaged and burnt by the Danish invaders, and in the civil wars of later ages. In the contest between Charles I. and the parliament, the citizens of Gloucester espoused the cause of the latter, though they professed to hold the city—"to obey the commands of the king, as signified by both houses of parliament;" but they really turned the tide against him, at a moment when the nation was wavering, by successfully resisting a siege carried on by 30,000 men. Gloucester was the only place in the south-west that the parliamentarians held; and if it had been lost the king would have been master along the whole course of the Severn. The inhabitants, rather than surrender the city, burnt its suburbs, thereby sacrificing property worth L.26,000; so that, to use the words of a civic dignitary of that time, "we are a garment without skirts, which we are willing to part withal, lest our enemy should sit upon them." The defences of Gloucester were levelled at the Restoration, but some portions of the walls still remain, and the trenches here and there have been turned into gardens. The city is seated on a gentle knoll, overlooking the river Severn; it is sheltered on the east by the Cotswold hills, and looks towards the Malvern hills, which, impressive by their magnitude, and softened by distance, rise up like shadows on the western horizon. North and south of the city the country is almost a dead level. The river Severn divides into two channels at Gloucester; these inclose the island of Alney, where Canute and Edmund Ironside met to fight a battle, but agreed instead to share Britain between them. The tide reaches Gloucester, though the city is forty miles from the mouth of the river; and at certain times, owing to a sudden contraction of the channel at Newnham, it rushes up in a great wave called the Bore, from seven to nine feet high. Gloucester consists of four principal streets, intersecting each other at the cross, where the Tolsey or guildhall stands, like the Roman forum of old; these streets, indeed, formed part of Roman roads traversing the county. Of late years a large number of new houses have been built in the suburbs beyond the boundaries of the city, but the city itself still retains many marks of its age—quaint old gables and timber houses being intermingled with handsome modern buildings, chief amongst which are four banking-houses. The discovery of a spring of saline chalybeate water on the south side of the city in 1814 led to the erection of what is now the handsomest portion of Gloucester.

The New Inn, the oldest inn, and perhaps the oldest house in the city, is a very remarkable building; it was built for pilgrims by Abbot Sebroke about the end of the fifteenth century. The chief public building is the cathedral, which is 427 feet long and 154 feet broad. The central tower, a beautiful structure in the perpendicular style, is 223 feet high. The cathedral is remarkable not only for general beauty, but as furnishing an epitome of the growth of ecclesiastical architecture in this country. It has gradually grown up from a monastery founded in 672 by Wulphere, king of the Saxons; it was twice burnt down and rebuilt in the eleventh century, and was completed in the fifteenth century. The crypt is early Norman, the nave later Norman, and nearly every style of Gothic architecture was incorporated in the building as it proceeded. The east window is the largest in England, and is ingeniously curved to give it an appearance of greater size. Among the historical personages buried within its walls are Robert and Richard, sons of William the Conqueror, and Edward II., who was murdered at Berkeley Castle, and lies in a beautiful canopied tomb; a great part of the building was erected with the offerings made by pilgrims at the shrine of the "sainted king." There is also a marble statue in memory of Dr Jenner, the discoverer of vaccination, who was a native of the county; and a monument to the Rev. Richard Raikes, the originator of Sunday schools, the first of which was held in Gloucester. The other public buildings of the city are the shire hall, containing two assize courts, and a large apartment used for public meetings, a building erected in 1814 by Smirke, and presenting externally an Ionic portico; the county jail, which stands on the site of the ancient castle, close to the Severn; the county lunatic asylum; the corn exchange, and a handsome market-house, both recently erected; a castellated militia store; a blue-coat school; a general infirmary; and St Bartholomew's Hospital, an almshouse for the maintenance of indigent citizens, built in the style of architecture which prevailed in the reign of Henry VIII., the period of its foundation. There are also three other almshouses, but though ancient their appearance is mean. Gloucester is divided into ten parishes, with several extra-parochial places attached to them; and there are fourteen churches, besides several handsome dissenting chapels in the city. While, however, some of the parishes have two or three churches, others have none. Oliver Cromwell declared that in Gloucester there were "more churches than godliness," and several were destroyed by public ordinance; one was converted into a guildhall. There are three endowed schools—the college school, founded by Henry VIII., as part of the cathedral establishment; the crypt school, founded in the same reign by Dame Joan Cooke, and a blue-coat hospital, founded by Sir Thomas Rich in 1666 for the education and maintenance of thirty boys.

Gloucester has returned two members to parliament since the 23d year of Edward I. It was created a county at an early period, and city as well as county assizes are held. It also possesses a court of quarter sessions. Richard III. granted a charter to the city, under which it elected a corporation consisting of a mayor, sheriff, twelve aldermen, and twelve burgesses; it is now governed by a mayor, six aldermen, and eighteen burgesses. The corporation formerly possessed a considerable income arising from land, but they were obliged to sell the property in 1855 to defray the cost of new water works, new markets, sewers, and other public improvements. The custom of borough English, by which landed property descends to the youngest son instead of the eldest, prevails in this city. The city and county were created a bishopric by Henry VIII., but the see is now united to that of Bristol. Gloucester was anciently very busily engaged in iron-founding and cloth-making; to these succeeded cap-making, pin-making, and bell-founding, but they have all ceased to exist. A considerable foreign commerce has, however, sprung up. Not long since the only vessels frequenting the port were a few coasters, which came up the Severn to the old Roman quays; but the tortuous and dangerous navigation of the river has been superseded by a noble ship canal sixteen miles long, falling into the Severn at Sharpness Point; and great quantities of timber and wheat are imported, and salt, iron, and coal are exported. The imports amounted in 1853 to 242,094 tons, and the exports to 59,989 tons. Gloucester is admirably situated for commerce, as it is the centre of a system of railways, as well as on the course of a large river navigated by steamers, and connected by canals with the interior of the country. In the reign of William the Conqueror the population of Gloucester, it is stated, was 2500; in 1801 it amounted to 7597; in 1811 to 8280; in 1821 to 9744; in 1831 to 11,993; in 1841 to 14,497; and in 1851 to 17,572. (F. C.)

GLOUCESTERSHIRE, a county in the west midland census district of England; its name is derived from its capital town, like all the other counties comprised within the Saxon kingdom of Mercia. This county is bounded on the N. by Worcestershire and Warwickshire, on the S. by Somersetshire, on the E. by Oxfordshire and Wiltshire, and on the W. by Herefordshire and Monmouthshire. Its boundary is formed on the W. by the river Wye, and on the S. by the Somersetshire Avon. The shape of the county is irregular; its greatest length is about 70 miles N. and S., and its greatest breadth 45 miles E. and W. Some parts of the county were formerly detached, and situated within the counties of Worcester and Warwick; and detached parts of Worcester and Wilts were situated within the boundaries of Gloucestershire; but by an act of parliament passed in 1844, these detached parts were incorporated with the counties by which they were surrounded. The area of Gloucestershire was thus diminished by about 3000 acres. The total area of the county, according to the tithe surveys, is 805,102 acres, exclusive of 17,688 acres of water, and nearly the whole of it is capable of cultivation. The county is divided into twenty-eight hundreds and 351 parishes, and contains two cities, Bristol and Gloucester, and twenty-eight market-towns.

Gloucestershire exhibits three natural divisions—the hill, the vale, and the forest. The hill country is an undulating tableland, on the summit of a range of hills called the Cotswolds, which gradually rise at Chipping-Campden, traverse the county nearly north and south on the eastern side, and pass out of the county into Somerset, forming the high ground on the north side of Bath. The average elevation of these hills is about 700 feet, though some of them are much higher, as for instance Cleeve Hill, which is 1134 feet. The vale is that part of the county extending from the slope of the Cotswolds to the east bank of the river Severn. The upper part of this expanse is locally known as the Vale of Gloucester, which is a continuation of the Vale of Evesham, and the lower part as the Vale of Berkeley. The forest formerly consisted of the whole district on the western bank of the Severn, but is now limited to that part of it which lies upon the slopes and between two high ridges, bounded by the Severn and Wye, and extending from East Chepstow to the Malvern range of hills. The hill, the vale, and the forest districts run parallel to each other, north and south; and if the views of geologists be correct, the vale was formerly the bed of a strait which connected the Bristol and Irish Channels. It is impossible to look down from any of the outlying hills of the Cotswolds upon the fertile Vale of Gloucester, watered by the tortuous course of the broad Severn, without being struck with the conviction that its beauty is the result of some great physical change; and Murchison has come to the conclusion, from the sandy nature of the soil, the shingle beaches raised high above the Severn, the indigenous marine plants, and the outlying hills—some of which present the same strata as the Cotswolds, but reversed, as if they had been undermined by water and toppled over from the cliffs—that the vale was once a rolling sea, the waves of which beat against the Cotswold cliffs on the east, and May Hill and the Malverns on the west; that the bed of the vale has been raised by volcanic action and the drifting of detritus; and that the lovely little hollows, beautifully rounded in the escarpment of the Cotswolds, were quiet little bays, worked by the tide of the ancient "Strait of Malvern."

The soil of the hill country is a few inches of calcareous sand, resting on freestone rubble, locally called *stone brash*. Every time it is ploughed a large quantity of stone is turned up, and the custom is therefore to plough very shallow furrows, leaving an alternate strip of the surface. There is so much lime in the soil that it requires much manure; this is supplied both by folding sheep, and by paring and burning the turf, and strewing the ashes upon the surface. Good crops of barley and oats are thus obtained, and even of wheat when the soil is mixed with clay. The poorest land on the hills, however, affords excellent pasturage for sheep; and these are the staple produce of the district. Sainfoin grows wild, and its cultivation yields abundantly. The Cotswold sheep, it is said, are the progenitors of the famous long-woolled sheep of Spain, and are certainly the finest breed in the south of England. They are hardy and prolific; the lambs quickly become clothed with fleece, and are proof against any degree of dry cold, as indeed is necessary to their existence, for the air of the hills is sharp and bracing, and vegetation is always a month later than in the vale. The indigenous breed has been greatly improved by crossing it with the Leicester sheep, and the produce has reached high perfection in point of shape, weight, quality, and fleece. Some of the Cotswold sheep have weighed eighty lbs. per quarter. The hill farmers are generally very enterprising, and the agriculture of the district has greatly improved of late years. This has been much aided by the establishment of the Royal Agricultural College of England, an institution incorporated by royal charter in 1845 for the purpose of instructing young men in the general sciences connected with agriculture, and in the practice of farming. For this purpose lectures are delivered by resident professors, and the pupils also engage in the practical cultivation of a farm of 700 acres attached to the institution. The college, situated near Cirencester, the chief town of the district, is a Gothic structure, ornamented by a central tower, and has hitherto contained on an average about 100 pupils. Notwithstanding the march of improvement, the naturally sterile and dreary look of the district still remains. There are few trees, as may be gathered from the name, for "wold" signifies in Saxon a place without wood; there are no hedgerows, but rough stone walls instead; the homesteads and cottages scattered over the farms, which run from 300 to 1200 acres, are hidden in the undulations of the ground, to shelter them from the biting blasts of winter; and thus the hills, thinly peopled in reality, appear to be depopulated. Descending to the vale, the soil is a rich deep loam, both black and red, and is well adapted for cattle; while a moist, mild climate, partly arising from defective drainage, is highly suitable for the growth of grasses and root crops. Fully one-half of the vale is in permanent pasture; and as the vale farmers rely on hay for the subsistence of their stock during the winter, they have become very skilful in making it. The hay is very frequently stacked on the third or fourth day after cutting, and is as green and sweet as new-mown grass; indeed, the hay made in this county is rarely equalled in quality elsewhere. The cattle in the vale are chiefly shorthorns, though the Herefords predominate in that part of the county adjoining Herefordshire. They are generally fine animals; one is kept for every four or six acres, and the total number in the vale cannot be much less than 10,000. Some are fed for distant markets, others used for dairy purposes. Where the grass is rich, feeding is preferred to rearing and to the dairy. The vale has long been famous for butter and cheese; that known as "double Gloucester" is made only in the Vale of Berkeley. The average produce is about 350 lbs. each cow; and dealers, judging of the quality of the produce from that of the land upon which the cattle are pastured, are accustomed to contract for the whole "make" of a farm. In former years the vale was famous for its vineyards; and, according to William of Malmsbury, who wrote in the twelfth century, the grapes grown in Gloucestershire, and the wine made from them, were very nearly as sweet as those of France. Wine-making has, however, entirely ceased in this county as well as throughout England; not, as the notion is, for want of heat, for Sweden produces excellent grapes, but because the vine requires an intensity of light rarely if ever observed in this misty climate. The surface of the vale country varies in character; north of Gloucester it is almost a dead level, while south of that city it presents a series of gentle undulations. The aspect of the vale is highly pastoral; grass lands succeed each other almost without interruption, they are hemmed in by a profusion of hedges and hedgerow timber, and dotted by apple, pear, and elm trees, which overshadow the soil, suck out its fertilizing properties, diminish the surface, while they impart richness and picturesque beauty to the landscape. The vale is subject to severe storms of wind and rain, the result of its position and the varying climate of the county.

The forest district formerly included the greater part of the county west of the Severn, but has now become contracted to a surface of 8 miles in length and the same in breadth, the boundary being a circuit of 30 miles. The centre of the forest is about 5 miles N.W. of Newnham, on the bank of the Severn. The surface is agreeably diversified by numerous undulations, varying in height from 120 to 1000 feet, and much of it has been suffered to become waste. The soil is a sandy peat; but though unfit for agricultural purposes, it is admirably adapted for the growth of timber, and it has formed one of the royal forests from time immemorial. In the middle ages it afforded a safe refuge for robbers, who used often to go afloat on the Severn and plunder the vessels. The commanders of the Spanish Armada had orders not to leave a tree standing in it, "if," says Evelyn, "they should not be able to subdue our nation." In the time of Charles I. the forest contained 105,537 trees; pressed for money, the king granted it to Sir John Wyntour for the sum of L.10,000, and a fee-farm rent of L.2000. The grant was cancelled by Cromwell; but at the Restoration the number of trees had been reduced to 30,000, and Wyntour having obtained another grant, destroyed all but 200 of the trees fit for shipbuilding. To repair the mischief, 11,000 acres were inclosed and planted; and at the present time the forest is nearly covered with timber in various stages of growth. The oaks are of the finest quality and size grown in England.

Generally speaking, the soil as well as the climate of Gloucestershire, except on the Cotswold Hills, is admirably adapted for mixed husbandry. The geological formation chiefly regulates the nature of the surface soil, which is of medium friability. Part of the county rests upon the blue lias and oolite, the new and old sandstones, and the mountain limestone; the soils are consequently somewhat retentive, but drainage would greatly improve them. There are extremely rich meadows on the banks of the Severn, where river deposits are still going on, and they might be rendered as fertile as any in England by freeing them from water. Not only, however, is drainage neglected, but the facilities for irrigation presented by the level surface, and the existence of streams of water, are overlooked. The soil is seldom stirred beyond a depth of ten inches, and the process of paring and burning is much used. The produce of wheat for the whole county averages from 20 to 25 bushels an acre. Barley is grown more generally than wheat, as it yields more money, though it is of inferior quality; oats are not much cultivated, as the horses employed in agriculture are fed on hay and chaff, and chemical analysis has demonstrated the accuracy of the local belief, that oats form a scourging crop. Beans of excellent quality are produced in the low-lying lands, as they luxuriate in a warm climate, and on a clay soil; the yield averages four quarters an acre. Teazles are also grown largely and profitably. Many of the farms have orchards, and a large quantity of cider and perry is made. The best cider, after being kept a year, resembles the light Rhenish wines; the worst is sold to retailers. It is less profitable to grow apple-trees than beef and mutton, but the farmers cannot get labourers without providing cider for them. The allowance is half a gallon daily for each man, and as much more as they can consume in harvest time. The horses of this county are a race peculiar to the S.W. of England—lean, slow, and clumsy; but attempts are now making to improve the breed by the introduction of Flemish and Suffolk stallions. Defective sight is very common amongst them,—this is attributable to inflammation caused by the dust of the limestone with which the roads are made, but chiefly to the mode of feeding; the animals are compelled to stuff themselves so full of chopped hay to satisfy their hunger, that when they exert themselves the collar used presses on the vessels of the neck, and checks the passage of the blood to and from the brain. Oxen are also much employed for draught; and, occasionally, a yoke may be seen drawing a cart with a pole, and even with solid wheels similar to those of the Roman times. A large number of pigs are reared, principally of the Berkshire breed. In curing bacon, instead of removing the hair with hot water, it is burnt off with straw.

Gloucestershire is at present the resort of invalids and pleasure-seekers, who form large populations at Cheltenham and Clifton, where there are medicinal springs. If the soil were better cultivated, not only would the beauty of the scenery be heightened, but the climate would be rendered even more salubrious than it now is.

Gloucestershire is a maritime as well as an agricultural county; its cities, Bristol and Gloucester, carry on an extensive foreign commerce. The approach to the first is by the Somerset Avon, and to the latter by the Severn. The navigation of the Severn below Gloucester is, however, very dangerous, owing to its tortuous course, rapid tides, and shifting sandbanks; and having been superseded by the Gloucester and Berkeley canal, it is now deserted except by a few country barges. This canal was commenced in 1794, but from want of funds it was not completed till 1827. Its entrance is at Sharpness Point, near Berkeley, and it terminates in very spacious docks at Gloucester. It is 16 miles long, without a single lock, is 18 feet deep, 60 feet wide, and is navigable by vessels of 600 tons fully laden. Prior to the construction of the canal, the trade of Gloucester was confined to a few coasters, which shot up and down the Severn at particular tides. Not only does the Severn, the second of the English streams, cease to be a river in this county, but the first, the mighty Thames, begins its existence within its boundaries. About three miles south of Cheltenham, at the back of Leckhampton Hill, two little streams take their rise, one at Thames Head, the other at Seven Springs, and mingling about a mile from their source, form the Chura, which becomes the Isis, and afterwards the Thames. It is a moot point which is the true head of the river; but the general opinion is in favour of the Seven Springs, which pour forth the greater volume of water. The springs lie in a little dell, close to a highroad, and are shaded by overhanging trees; the water issues forth clear and pure from seven openings. A canal unites the Severn and the Thames at points where vessels of 70 tons burthen can navigate them. It commences at Lechlade, on the latter, and joins the Stroudwater canal, which crosses the Gloucester and Berkeley canal, and opens into the Severn at Framilode. The summit level of the Thames and Severn canal is at Sapperton, near Cirencester; here it passes by a tunnel $2\frac{3}{4}$ miles long through a hill chiefly composed of hard rock, rising 250 feet above it. The tunnel is reached from the bank of the Thames by an ascent of 134 feet, which is effected by 14 locks; and from the bank of the Severn by an ascent of 243 feet, effected by 28 locks; the latter are concentrated between Sapperton and Wallbridge, in a space of $7\frac{3}{4}$ miles. The total distance from river to river is 39 miles. The other rivers of the county are the Upper Avon, which, after passing through the county for five miles, flows into the Severn at Tewkesbury; the Chelt rising near Cheltenham, the Ledden rising in Herefordshire, the Frome rising near Brimpsfield, and the Middle Avon rising near Berkeley, all of which also feed the Severn; the Colne rising to the east of Cheltenham, and the Leach near Northleach, tributaries of the Thames; and the Windrush, which rises near Winchcomb, and flows into Oxfordshire. The Wye is also occasionally included amongst the rivers of this county, but it merely skirts part of its western boundary. In addition to the canals already described, there is one which runs from the Severn at Gloucester to the city of Hereford, about 35 miles. A large sum of money has been spent in improving the Severn from Gloucester to Stourport, in Worcestershire, where it is connected with a system of canals ramifying throughout England. The county is also traversed north and south, and east and west, by railways, which intersect each other at Gloucester; these different means of communication afford great facilities to the trade of the county.

The mineral productions of the county are—good freestone found in the hills, paving-stone and grit in the forest, and an excellent limestone near Bristol. Lead is found in different parts of the county, but the veins are too poor to repay the cost of working them. There are also beds of coal alternating with ironstone a short distance north of Bristol and in Dean Forest. The ironstone in the former district is not worked, but iron mines were opened in the latter as early as the days of the Romans, and extensive workings, locally called *scowles*, partly attributable to that people, still exist. There are upwards of 200 coal mines in the forest, and they present the peculiarity, that while the highest and middle of the three seams of coal which it exhibits are worked by deep pits, the lowest seam is worked by adits or levels driven into the side of the hills until they strike the coal. This apparent anomaly is in accordance with a general law of stratified rocks, by which the strata lowest in geological position usually rise to the greatest altitude above the level of the sea. The forest is locally governed by two deputy-gavellers appointed by the crown to superintend the woods and mines, besides four verderers elected by the freeholders; but the office of the latter has become purely honorary, especially since the herds of deer which used to wander through the forest were destroyed, to put a stop to poaching and its demoralization. The mining customs of the forest are ancient and peculiar. From time immemorial, all persons born in the hundred of St Briavel's, who have worked a year and a day in a coal-mine become freeminers, and are entitled to work coal in any part of the forest not previously occupied. Of late the custom has grown up of assigning the permission formally obtained from the crown, or *gale*, as it is locally termed, to "foreigners," that is, persons who are not freeminers. But though the practice introduced capital, the operations of persons contending for the possession of mines to which no limit was assigned, led to contests underground, and created great confusion of rights. To remedy this, an act of parliament was passed in 1844, by which the ancient customs have been moulded into a rational and provident system of mining. The forest is traversed by tramroads, and has been opened on the east and west sides by locomotive railways. In the centre of the forest is the Speech House, where the king's officers used to meet to administer the forest laws, and the freeminers to regulate their affairs. It is now merely a picturesque inn, situated in the midst of highly romantic scenery.

Gloucestershire is also an important manufacturing county. The manufacture of woollen cloth has been established for centuries in the valleys or "bottoms" of the Cotswold Hills; and several of these valleys meet in the Stroud district, and are watered by clear and rapid streams, which, after supplying the mills, unite in one stream, the Frome, and flow into the Severn at Framilode. The parishes of Bisley, Minchinhampton, Painswick, Woodchester, Horsley, Stonehouse, Stanley, Ebley, Dursley, and Wotton-under-Edge, were formerly the principal seats of the manufacture; but it has fallen into decay in many of these parishes; and the town of Stroud is now the centre of the fine-cloth manufacture. Large and increasing manufacturing establishments have been formed in the immediate neighbourhood of that town, and give employment to several thousands of workmen. Since the introduction of power-looms into the chief establishments, the whole process of manufacturing is performed by machinery, which is of a very elaborate and superior description. Although the counties of Lancashire and Yorkshire have made greater comparative progress, this county is still unrivalled in the manufacture of fine woollen cloths. The best cloths are manufactured from the fine wools of Saxony and Silesia, and the consumption of the better description of Australian wools is also greatly increasing. Formerly, a large quantity of the wools from Cotswold, Hereford, and Southdown sheep, was used in making cloth for the East India Company's trade; but this branch of manufacture has become almost extinct. Most of the cloth manufactured in this county is intended for the home trade; the light texture and superficial character of the cloths usually required for exportation precludes the Gloucestershire manufacturers from engaging largely in the foreign trade; still they occasionally export to the colonies and America. The dyers in this district are celebrated for the scarlet colours which they produce, the beauty and brilliancy of which are attributed to some peculiar property in the water of the Stroud valleys. The dark blue colours dyed in this district are also of very durable quality. The greater part of the cloths are now dyed in the wool, and not in the piece as formerly, The Great Western railway passes through Stroud, connecting it with London and Wales; and the Midland railway connects it with the north and west of England.

Henry III. was crowned at Gloucester; Edward II. was murdered at Berkeley; the wars of the Roses were quenched at the battle of Tewkesbury, where Queen Margaret and her son, Prince Edward, were taken prisoners; and Charles I. lost his crown mainly through the repulse he sustained at Gloucester. The county is strewed with relics of past ages and events. It is traversed by four Roman roads—the Fossway, Ermine Street, Ikenild Street, and the Via Julia. Many Roman pavements have been found at Cirencester, Gloucester, and Woodchester, those at the latter place being far superior to all others in this country. Camps—British, Saxon, Danish, and Roman—exist in numerous places; and there are many interesting remains of the middle ages. Amongst these are the ruins of Sudeley Castle, near Winchcombe, built in the reign of Henry VII., by Ralph Boteler, and described by Fuller as being "of subjects' castles the most handsome habitation, and of handsome habitations the strongest castle;" Thornbury Castle, the intended strength of which having excited the jealousy of Henry VII., he destroyed it while in an unfinished state, and beheaded its owner, the Duke of Buckingham, in 1522; St Briavel's Castle, built in the time of Henry I., by Milo Fitzwalter, to curb the incursions of the Welsh, now the village post-office and prison; and Berkeley Castle, built prior to the time of Henry II., and now a fine example of the feudal residences of ancient times, in perfect preservation, and inhabited by a descendant of its founders, Earl Fitzhardinge. The machicolated gatehouse by which the castle is entered, the baronial hall and chapel attached, the keep and its towers, its dungeons, in one of which King Edward II. was murdered, serve to recal the times when the bold barons were petty kings. The chief mansions in the county are Badminton House, the residence of the Duke of Beaufort; Barrington Hall, of Lord Dynover; Oakley Park, of Earl Bathurst; Tortworth Park, of Earl Ducie; Sherborne House, of Lord Sherborne; Clearwell Court, of the Earl of Dunraven; Highnam Court, of T. Gambier Parry, Esq.; and Southam House, a perfect specimen of the domestic building of the time of Henry VII., the seat of the Earl of Ellenborough. Besides these, there are many other residences of note, though inferior in size.

Gloucester is formed into two divisions for election purposes, each of which returns two members.

Population of Gloucestershire.

In 1831		387,398	
1841		431,495	
1851	Males	218,187	458,805
	Females	240,618	

Area, in square miles, 1258; in statute acres, 805,102.

Pop. to a square mile, in 1851, 364 persons, or 69 houses.

The county returns 4 members to parliament—viz., 2 for the eastern division, and 2 for the western division; Cheltenham 1, Cirencester 2, Gloucester 2, Stroud 2, and Tewkesbury 2, in the eastern division; and Bristol 2, in the western division. Total 15.

Annual value of real property assessed to property tax, 1850–1, L.2,235,627.

Principal Towns and their Population in 1851.

Bristol (Gloucester and Somersetshires)	137,328	Newent	1,547
Cheltenham	35,051	Stroud	36,535
Cirencester	6,096	Tetbury	2,615
Dursley	2,617	Tewkesbury	5,878
Gloucester	17,572	Thornsbury	1,470
		Winchcomb	2,052

Religious worship.—Belonging to Church of England; places of worship, 433; sittings, 165,003. Other denominations, 495; sittings, 129,798.

Education.—Day schools, 1283; day scholars, 56,218; Sunday schools, 606; Sunday scholars, 59,154. (F. C.)

GLOVE (Sax. *glof*), a covering for the hand, with a separate sheath for each finger.

Among our ancestors, to throw down the glove or gantlet was equivalent to a challenge to single combat; and the person thus defied signified his acceptance of the challenge by taking up the glove, and casting down his own; which ceremony was regarded as a mutual compact to meet at the time and place specified. This custom, according to Favyn (*Theatre d'Honneur et de Chevalerie*), was derived from the Oriental mode of contracting sales of land and the like by giving the purchaser a glove, by way of delivery or investiture; and to this effect he quotes the book of Ruth, iv. 7, in which passage the Chaldee paraphrase renders by *glove* the word commonly translated 'shoe.' He adds that the rabbin interpret similarly that passage in Psalm cviii.—"over Edom will I cast out my shoe." It may be observed that in several of the modern European languages a glove is termed a *hand-shoe*.

The use of gloves is of high antiquity. There is reason to believe the ancient Persians wore them, since it is mentioned in the *Cyropædia* of Xenophon that on one occasion Cyrus went without his gloves; and we know they were used by the Greeks and Romans in certain kinds of manual labour. During the middle ages gloves were worn by ecclesiastical dignitaries and others as a mark of distinction; but as civilization advanced they gradually became common to all classes of the community.

The glove manufacture has long been an important branch of industry. The materials employed are very various, including the skin of the chamois, kid, lamb, beaver, doe, elk, and other animals, besides cotton, wool, silk, linen thread, &c. Glove-leather is prepared by curing the skins with alum, which renders them soft and pliable. Woodstock and Worcester, but particularly the former, are famed for the manufacture of kid-gloves of superior quality; and Dundee has long been celebrated for the excellence of its kid gloves. Those of France, however, still continue to maintain their superiority over the kid gloves of British make, and are very largely imported into this country. This also holds true of the ordinary French leather, the durability of which, combined with superiority of style and fitting, has occasioned the French boots and shoes to be preferred to those of British manufacture. Machinery is sometimes employed in sewing and pointing leather gloves, though only on a very limited scale in this country, almost the whole being made by the hand, and for the most part by females; but in Paris it is much used, and is said to have had the effect of reducing the price of gloves 30 per cent. below their former wholesale prices. Besides the English towns above mentioned, large quantities of leather gloves are produced in London, Yeovil, Ludlow, Leominster, and elsewhere. Limerick has long been famous for a very fine kind of ladies' leather gloves, known as *chicken gloves.* Until the year 1825 the importation of leather gloves and mits was prohibited, but since that time they have been admitted on payment of a certain duty. Large quantities of cotton gloves are made at Nottingham and Leicester. According to the census of 1851 the total number of persons employed in the glove manufacture in the kingdom was 32,982.

GLOVER, RICHARD, author of *Leonidas*, was born in 1712 in London. His father was a Hamburg merchant, and, as Richard was intended to join him in business, the youth's school-education was of the commonest kind. He early displayed a love of letters, however, and at the age of sixteen wrote a poem to the memory of Sir Isaac Newton, which was highly thought of at the time. In 1737 (the year of his marriage) appeared the work with which his name is now always associated—his *Leonidas.* This is an epic poem on the subject of the great Persian war with Greece; but as it was believed by some of the leading statesmen of the day to have a present political significance, it was very warmly commended by the regent and his court, by Lord Lyttleton, and the novelist Fielding. Through their influence the poem enjoyed a success altogether beyond its real merit, and in less than two years passed through three editions. Like the tragedies of *Boadicea* and *Medea*, published respectively in 1753 and 1761, the *Leonidas* exhibits a well-cultivated taste, some skill in versifying, and a good ear for music; but no passion, no poetry—none of the qualities, in short, which are the soul and marrow of the epic. In 1739 Glover wrote his *London, or the Progress of Commerce*, and a ballad entitled *Hosier's Ghost*, with a view, it is said, to rousing the nation to a Spanish war. This ballad is certainly effective, if it be nothing more, and was in its day nearly as popular as Cowper's ballad of *John Gilpin* at a later period. Glover was twenty-seven years of age when he wrote *Hosier's Ghost*, and he used to sing it regularly himself to the end of his life, though Hannah More, who tells us that she heard him sing it in his last days, is mistaken in saying that he was then past eighty. He died in November 1785, in the seventy-fourth year of his age.

During his lifetime Glover was highly esteemed for his practical qualities. He was distinguished as a city political leader, and ably advocated liberal views in opposition to

Walpole. On entering parliament in 1760, as member for Weymouth, he made a considerable figure in the house as a speaker, but was valued still more highly for his sound and sagacious views on commercial questions. (Johnson's *English Poets;* Chalmers's *Biog. Dict.;* Craik's *English Lit.*; Spalding's *English Lit.*)

GLOW-WORM, the female of *lampyris noctiluca.* See index to ENTOMOLOGY.

GLUCHOW, a town of European Russia, government of Tchernigov, and 140 miles E. by N. of the town of that name; on the Jasmen. It is surrounded by an earthen wall, has several churches and convents, and a considerable trade. It is the seat of three annual fairs, which are well attended. Pop. (1849) 8006.

GLUCK, CHRISTOPHER WILLIBALD VON, an eminent musical composer, born July 2, 1714, at Weidenwang, near Neumarkt, in the Ober-Palatinate, where his father resided as a forester. He was placed, from his twelfth to his eighteenth year, in the Jesuit seminary at Kommotau, where he acquired some practical knowledge of music.[1] In Italy, whither he went in the service of a nobleman, he received instructions from Martini, and produced his first opera at Milan. He came to England in 1745. The rebellion having then just broke out, foreigners were regarded with jealousy, and the opera was on that account closed; but through the exertions of Lord Middlesex it was re-opened with a temporary political performance called *La Caduta de' Giganti*, the music of which Gluck was employed to compose. He afterwards brought out his *Piramo e Tisbe*, which was little else than an assemblage of favourite airs from his previous works. The cold reception this opera met with first convinced him that music to be effective must be strictly adapted to the spirit and character of the poetical subject. This consideration induced Gluck to lay down certain general principles, which are said to have influenced all his subsequent labours in composition. These were, first, to impart to music all the force and expression it is capable of producing, and which was best attained by uniting it to simple but animated poetry full of natural and well-defined ideas; secondly, to make the air follow the rhythm and accents of the words, and construct the accompaniments so as to invigorate the sentiment, or to contrast them with it. The system he adopted may be described as one entirely subservient to the effect of dramatic performance, where the music is never estranged from the scene and situations of the characters, and where the interest results from the perfect interfusion of sound with sense.

His unsuccessful attempts in England at length induced Gluck again to visit Italy, where, in pursuance of his new design, he applied to the study of the classical Italian poets. His great object now was to connect himself with some man of true poetic genius; and he was so fortunate as to find such a co-operator in Calsabigi, who undertook to write dramas exactly to his taste.

The opera of *Orfeo* was the first attempt of Gluck in the new course he had shaped out for himself. It was produced at Vienna, and at first excited astonishment, which, however, soon gave way to delight; and the opera was performed in all the principal cities of Italy with rapturous applause. The Italians were transported with a style at once so novel and chaste, so masculine and energetic. When the *Orfeo* afterwards came to be translated into French, Rousseau was so much charmed with it that he did not miss a single representation; and it is in allusion to this circumstance that he says—"If so much exalted pleasure can be enjoyed in the space of two hours, it serves to convince us that life is really good for something."

In 1774 Gluck came to Paris, where he composed his famous operas of *Iphigénie en Aulide* and *Alceste*, which were received with a degree of enthusiasm unparalleled in the annals of music. By these successes Gluck came to be regarded as the national musician of France. The congeniality of his style with the standard favourites Lulli and Rameau called forth general admiration.

Gluck composed in 1774 his opera of *Armide*, which was followed by *Iphigénie en Tauride*, and some others; and after having completely revolutionized the music of France, he returned to Vienna, where he remained until his death, which took place in 1787.

Gluck has been well called the Michel Angelo of music. He was the originator of a school which has opened up great and various sources of enjoyment to taste, and mightily influenced the character of the whole art. His genius was of the highest order. His invention was unequalled, particularly in dramatic painting and theatrical effect. Some critics complain that he is defective in song; but an intimate acquaintance with his works disproves the assertion It is true that we cannot perhaps cull from his compositions such melodious flowers as luxuriate in the *chef-d'œuvres* of Cimarosa, Mozart, and Rossini, and which gratify the sense frequently as much when detached as when blended in their original wreath. The melodies of Gluck will not, with a few exceptions, stand the test of such a partition. They are essentially musical phrases which belong to a great and expanded work of imagination. They are the links of a chain, the component elements of a comprehensive design, which must be judged of relatively, and with reference to combination. Thus it is that, when we criticise Gluck, we should not examine his operas in detail. We must consider them as we would a noble edifice, in the aggregate of its beauty. The same spirit that actuates us in reading the epics of Virgil and Tasso should exercise its dominion when we listen to the music of Gluck.

Whatever may be the opinion of some persons in regard to the general effect of the music of Gluck, all are agreed in assigning to him the palm of superiority in his treatment of classical subjects, and depicting scenes of deep and overpowering grief. "He is," says an anonymous author, "the only master capable of grappling with a classical subject; he could give us, better than any,

> 'Ariadne passioning for Theseus' injury
> And unjust flight.'

No lovers, tyrannically separated for ever, have the despair of his." "It is," says a writer in the *Harmonicon*, "in scenes of great distress, in which the human heart is rent by complicated misery, or in situations where it is torn by the tempestuous fury of unbridled passions, that Gluck, transported beyond the bounds of ordinary genius, shows such energy and colouring of passion, as to become at once poet, painter, and musician. It may be that his expression of passion is sometimes too strong for common hearers: but

> 'Il échappe souvent des sons à la douleur,
> Qui sont faux pour l'oreille, mais sont vrais pour le cœur.'"

The operas of Gluck, much to the discredit of modern taste, are seldom heard in France or England; but in Germany they are frequently performed; and in Berlin, when any of his great operas are given, the theatres are crowded. The style of his airs is studied, and great attention bestowed on their effect; and there is a warmth and an intensity displayed by the performers in taking the recitative, and an energy in their action, which nothing but such music as Gluck's could inspire.

Gluck is described as having been of a frank and open character, although his temper was hasty and choleric. He was very rigid in exacting from performers the utmost purity and correctness of execution. (A. H.)

GLÜCKSTADT, a town of Denmark, capital of the duchy of Holstein, on the right bank of the Elbe, where it receives the small river Rhin, 28 miles N.W. of Hamburg. This town was founded by Christian IV. in 1616, and fortified in 1620. In 1627-8 it was in vain besieged for fifteen weeks by Tilly. In 1815 its fortifications were demolished, and in 1830 it was made a free port. It is the seat of several courts, and has a gymnasium, navigation school, &c. Its arsenal is now used as a prison and workhouse. The inhabitants are chiefly engaged in trade and navigation. Glückstadt is connected by railway with Altona, Kiel, and Rendsburg. It is traversed by several canals, but is very deficient in water for culinary purposes, so that the rain has to be carefully preserved in cisterns. Pop. (1849) 6186.

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[1] See Anton Schmid's Life of Gluck (in German), Leipzig, Fleischer, 1855.

GLUE, inspissated animal jelly, much used as a cement, especially for wood. It is made from various animal substances, according to the uses for which it is designed. Common glue is prepared from the parings of hides, hoofs, and other offal, which are first digested in limewater to free them from grease and all extraneous matter, then washed in water, and afterwards boiled. The viscid solution thus obtained is first strained through a wicker basket, and then gently evaporated to a proper consistence. The heat is generally so regulated as to keep the liquid near the boiling point, without entering into ebullition. The liquid glue is poured into flat moulds; and when it has become firm, it is cut up into square pieces, and placed on a coarse net to dry. Glue improves by age, and that is considered as the best which, if steeped in cold water for three or four days, swells without melting, and resumes its former dimensions after being dried. The clear pale brown glue is the best, though the darker and less pure is often ignorantly preferred. A transparent and beautiful glue is made of the shreds and parings of vellum, fine white leather, or of isinglass. (See also Gelatine.)

A preparation of glue, convenient on account of the facility with which it is rendered fit for immediate use, is made by adding a small proportion of any good spirit, or of wood naphtha, to melted glue. It is to be kept in a well-corked bottle, and when required for use may readily be liquefied by placing the bottle in hot water. It answers all the purposes of ordinary glue.

Indian Glue, as it is called, consists of common glue melted with a little sugar, and moulded for convenience into small flat cakes. When used, the edge of the cake is moistened, and rubbed upon the surfaces to be united. It is a slight cement, used only for such purposes as mending prints, &c.

Jeffery's Marine Glue.—This powerful cement has been most successfully used as a substitute for pitch in the seams of decks, as well as for strengthening large timbers for naval purposes. It is said to consist of caoutchouc dissolved in coal naphtha, to which shellac (previously dissolved in wood naptha ?) in proper proportions is afterwards added. The joinings of built masts secured with this cement are said to have resisted separation by the wedge after ten years' service.

Liquid Glue.—Under this name is frequently sold a cement consisting of shellac dissolved in wood-naphtha.

GLUTEN, a viscid, elastic, grayish-coloured substance which exists in greater or less quantity in most plants that afford farina, as well as in the leaves of many esculent vegetables (such as the cabbage for instance), but more particularly in wheat, which of all the cerealia appears to contain, in proportion to its bulk, the greatest amount of nutriment, a property derived from its abounding in this substance. Gluten may be readily obtained from wheaten flour by making it into a paste, and then working the mass with the hands below a stream of water, when the starch and other soluble matters are carried away, and the gluten remains in a pure state. In its properties gluten bears a strong resemblance to animal substances; and, indeed, it is found by chemical analysis to contain a large proportion of nitrogen. Hence it may be considered as the most animalized of vegetable products.

GLUTTON. See index to Mammalia.

GLYCAS, Michael, a Byzantine historian, often called Siculus, from his supposed native island Sicily. The time when he flourished is very uncertain. He was probably an ecclesiastic. He knew several languages, and is justly reckoned among the better Byzantine historians on account of the terseness and perspicuity of his style. His MS. letters still extant are addressed to the last Constantine, who perished in the storming of Constantinople by the Turks in 1453. Their authenticity, however, has been questioned. His chief work is Βίβλος χρονική (or *Annals*), which is divided into four parts: the first treats of the creation of the world; the second narrates the history from the creation to Christ; the third, from Christ till Constantine the Great; and the fourth, from Constantine till the death of the emperor Alexis I. Comnenus, A.D. 1118. The best edition of this work is that by J. Bekker, in the Bonn collection of the Byzantines, 1836, 8vo.

GLYCERINE. Oils and fats, whether of animal or vegetable origin, are compounds of certain acids, such as the stearic, margaric, and oleic, with a base named glycerine. (See Oil.) Fatty substances may, in fact, be represented as salts of glycerine, and as such are capable of being resolved into their proximate elements like other salts. Thus, in the process of soap-making, a fat or an oil is saponified by means of potash or soda; that is, the caustic alkali unites with the stearic, margaric, or oleic acid, and glycerine is set free. If, for example, the stearate of glycerine be treated with caustic soda, the stearic acid unites with the soda, and forms stearate of soda, while the glycerine is liberated. A fatty body may also be decomposed by means of oxide of lead, as in the process for making diachylon plaster (*Emplastrum plumbi*). By boiling a mixture of finely pulverized or newly precipitated oxide of lead in water with any ordinary fat or oil, the lead unites with the fatty acids, and forms a solid compound, while the glycerine dissolves in the water. The solution contains a considerable portion of lead, which may be separated by passing sulphuretted hydrogen through it, and filtering; the solution is then evaporated to the consistence of syrup, and the evaporation is completed *in vacuo*, in the presence of sulphuric acid, until it ceases to lose weight.

The uncrystallizable inodorous syrup thus obtained has a sweet taste, and was hence termed by Scheele, who discovered it in 1789, the *sweet principle of oils*, or *glycerine*, from γλυκυς, sweet; but it was not until Chevreul undertook the investigation of fatty substances in general that the true chemical relations of this body were understood.

During many years large quantities of impure glycerine had been produced as a waste product in the preparation of lead plaster from olive oil and litharge, and in the manufacture of soap and of stearic candles. In this last example the palm oil or other fatty substance was decomposed by means of lime, and the liberated glycerine was allowed to run to waste. In the remarkable series of improvements in this manufacture, which are due to the scientific knowledge and enterprise of the managing directors of Price's Patent Candle Company at the Belmont Works, Vauxhall, London, the lime saponification was superseded by the action in the first instance of sulphuric acid, which combines with the whole of the fatty substance, and the glycerine is afterwards isolated under the action of water and of a high temperature in the form of sulphoglyceric acid, and is obtained pure by distillation. This process was partly superseded by the discovery made by Scharling in the year 1853, that neutral fats may be decomposed by the action of steam alone under great pressure.

In this process steam, at a temperature of from 550° to 600° Fahrenheit, is introduced into a distillatory apparatus which already contains a quantity of palm oil. Under these circumstances, the fatty acids take up their equivalents of water; the glycerine also combines with an equivalent of water, and the whole of these compounds distil over, and the condensed glycerine, from its greater specific gravity, sinks below the fat acids in the receiver. In this process a sufficient quantity of steam must be supplied, and the proper temperature be kept up, or *acroleine*, an acrid vapour, especially irritating to the eyes, will be produced by the decomposition of the glycerine. According to another process, contrived by Tilghmann, water mixed with the oil or fat which is to be decomposed, is forced through tubes at a temperature of from 500° to 600°, or even higher.

Glycerine is distinguished by remarkable solvent powers, and hence, as obtained by the former processes, it was scarcely possible to get rid of such impurities as lime or lead. Indeed, several specimens of the "pure glycerine" of the shops, which have been sold at double the price of common glycerine, have been found to contain lead—a circumstance which may have greatly interfered with the medicinal or economical application of this valuable substance. By this new process, however, glycerine is obtained in combination with water only; if it be discoloured it can be rectified by a second distillation, and it can be concentrated so as to have at the temperature of 60° a density of 1·240, in which case it contains 94 per cent. of anhydrous glycerine. It can even be concentrated to 1·260 or 98 per cent. of pure glycerine, the remaining 2 per cent. being combined water.

Since this new source of glycerine has been opened, a variety of applications have been made for it, and they are briefly stated in a paper read at the Glasgow meeting of the British Association (1855) by G. F. Wilson, Esq., F.R.S., one of the managing directors of Price's Patent Candle Company. The first suggestion of a use for glycerine which Mr Wilson has been able to trace was by Mr T. De La Rue, who, early in 1844, operating on some glycerine which he procured from Mr Warington of Apothecaries' Hall, tried the effect of it on a burn and irritation of the skin. He found it to have a soothing effect, and to keep the part moist, and he suggested the use of it to Mr Startin, through whose means it came to be extensively applied in the hospital for skin diseases. It is being introduced as an article of the toilet, as a soothing remedy for chapped hands and sun-burnt faces. In June 1849 Mr Thomas Wakley published in the *Lancet* the results of one year's experience on the use of glycerine in diseases of the ear, giving a number of cases in which it had proved a cure for deafness. M. Cap (*Journal de Pharmacie et de Chimie*, February and October 1854) suggests a number of valuable uses for glycerine as follows:—"Glycerine dissolves the vegetable acids, the deliquescent salts, the sulphates of potassa, soda, and copper, the nitrates of potassa and silver, the alkaline chlorides, potassa, soda, baryta, strontia, bromine, iodine, and even oxide of lead. It dissolves or suspends the vegetable alkaloids in the same manner as the aqueous liquids, and at the same time the resulting products may be used for the same purposes as though mixed with oil. Thus the salts of morphia dissolve in it completely, even cold, in all proportions. Sulphate of quinine, in the proportion of $\frac{1}{10}$th, dissolves in it when hot, but when cold separates into clots, which, when triturated with the supernatant liquid, give it the consistence of a cerate very useful for frictions and embrocations. It is the same with the salts of brucine, strychnine, veratrine, and most preparations of the same order, which enables us to consider that we have now, if not medicinal oils with a vegetable alkaloid base, at least a series of new preparations which will fulfil a perfectly analogous use in therapeutics."

M. Cap further speaks of glycerine as a solvent for sulphuret of potassium, sulphuret of lime, iodine, iodide of sulphur, iodide of potassium, iodide of mercury, for some chlorides, and for quinine and sulphate of quinine.

From the great solvent power of glycerine, Mr Wilson suggests that it might be injected into the bladder for the purpose of dissolving calcareous deposits; from its blandness it might not cause irritation, while as a solvent of urea and phosphate of lime it might answer the desired purpose. Some of the medical authorities have received glycerine for the purpose of this experiment. Glycerine is also used in the same way as cod-liver oil as a medicine. In the preparation of several medicines, glycerine has been most advantageously substituted for the syrup of sugar, with the effect of preserving the medicine in an active state free from change, and also of greatly improving its taste.

Glycerine has a remarkable preservative power on animal and vegetable substances, an application of it which formed the substance of a patent taken out by Mr Warington in 1846. A portion of a neck of mutton kept in glycerine for several months was cooked by Soyer, and eaten with great satisfaction. Glycerine has been used for mounting objects for the microscope, and also for preserving objects in natural history. Mr Wilson's first experiment was upon a brilliantly coloured two-pound trout, caught in one of the Perthshire lochs. Immediately on taking it out of the water a quantity of glycerine was poured over it, and a cloth wrapped round it. Next day it was again wrapped in a saturated cloth. Two days afterwards, in Edinburgh, the colour of the scales was unchanged. When it arrived in London, part was steeped in water, and then cooked. It was perfectly fresh and firm, but had lost nearly all its flavour. The uncooked portion, immersed in glycerine, was sent to Professor Owen, who suggested that the brilliant fishes of tropical seas might be brought home in kegs of glycerine. Specimens of trout, roach, and perch, preserved in glycerine, some of them for more than two months, were shown by Mr Wilson to have retained their natural colours.

Glycerine consists of $C_6 H_8 O_6$. The chemistry of glycerine involves a number of highly interesting points, for an account of which we must refer to a memoir by Berthelot in the *Annales de Chimie* for 1854. (C. T.)

GLYPTICS (γλύφω, I engrave), the art of engraving figures of any kind on precious stones or other hard substances, either in raised work (as in *cameos*), or by figures cut into the surface, when it is called *intaglio*. See ENGRAVING *on Precious Stones*, vol. viii., p. 813.

GMELIN, JOHANN FRIEDRICH, a German naturalist of some celebrity, was born at Tübingen in 1748. After taking his degree of M.D., he travelled through England and Holland, lecturing on his favourite subjects of botany and natural history, and finally settled at his native town as extraordinary professor of medicine. He afterwards removed to Göttingen in the same capacity, and remained there till his death in 1804. His name is preserved by his edition (the thirteenth) of Linnæus' *Systema Naturæ*, which, however, is hardly so well known as Cuvier's criticism of it, in which it is described as "an ignorant compilation, useless to the professor, and more likely to mislead the student than to enlighten or instruct him. In fact, under the pretence of giving a complete list of synonymes, he collected indiscriminately all the names which he found in different authors, without observing whether such a plant, animal, or mineral had been differently designated by different naturalists, so that the same name has often been given to distinct objects. This double error, which constantly recurs throughout Gmelin's work, shows that the too prolific writer had but a very superficial knowledge of his subject, and did not study the book of nature."

Though these charges of the great French critic are quite true, yet Gmelin's book is acknowledged to possess a certain value, as being the only book which even professes to include all the objects of natural history described up to the year 1790. His other works are not entitled even to that humble praise.

Gmelin, *Johann Georg*, a distinguished German naturalist, was born Aug. 12, 1709, at Tübingen. Soon after graduating as M.D., at the early age of nineteen, he went to St Petersburg, where, in 1731, he was appointed professor of chemistry and natural history. He was afterwards sent by the Empress Anna, along with G. F. Müller and a scientific party, to explore Siberia, which he penetrated as far as the Lena. After an absence of nine years and a half, Gmelin returned to St Petersburg, and published his *Flora Sibirica*. On revisiting Germany in 1747 he was chosen professor of chemistry at Tübingen, where he died in 1755, not long after the publication of his *Reise durch Sibirien*, or, *Travels in Siberia*. Linnæus named a genus of Asiatic plants *Gmelina* in honour of him.

Gmelin, *Samuel Gottlieb*, nephew of the preceding, was born at Tübingen in 1745. Like his uncle, he graduated as M.D. at the age of nineteen, but instead of practising medicine, he devoted himself to natural science. In 1766 he went to St Petersburg, and obtained leave from Catherine II. to join a scientific expedition then on the point of setting out to explore the S.E. possessions of the Russian empire. Departing in June 1768, he wintered at Woronetz, and thence sailed down to Tcherkask, the capital of the Cossacks of the Don. In the following year he reached Astrakhan, and explored the lower part of the course of the Wolga. In 1770 he directed his chief attention to the Caspian Sea and those parts of Persia that bordered on it, and wintered at Enzelli. Next year, after visiting the southern shores of the Caspian and the Persian provinces of Ghilan and Mazanderan, he returned to Astrakhan, and wrote out the narrative of his travels. The year 1773 he devoted to the Caspian; and in 1774, when on his way back to Russia, he was seized by Usmey Khan, of the Kaitak tribe, as a hostage, and was so ill-used by that chief that he died, June 27, at Achmetschet in the Caucasus. Some of his papers, however, were recovered, and published under the editorial care of the famous Pallas. His principal works are his *Historia Fucorum iconibus illustrata*, St Petersburg, 1768, 4to; *Voyages dans différentes parties de l'Empire de Russie, pour faire des Recherches relatives à l'Histoire Naturelle*, St Petersburg, 1770, 1774, 1784, in four vols. 4to; several Memoirs in the Collections of the Society of Haarlem, and of the Academy of St Petersburg.

GMUND, a town of Würtemberg, circle of Jaxt, on the Rems, 28 miles E.N.E. of Stuttgart. It is surrounded by old walls, flanked with towers, and has three very ancient churches, a handsome town-hall, normal school, hospital, deaf-mute institution, a blind and an orphan asylum, &c. The chief manufactures are woollens, jewellery, and wooden wares. Pop. 6898.

GMÜNDEN, a town of Upper Austria, circle of Traun, at the northern extremity of the Traun or Gmünden Lake, where the river Traun issues from it, 36 miles S.W. of Linz, with which it is connected by railway. It is noted for the beauty of its situation; and in the vicinity are numerous salt-mines, which afford employment to the greater part of its inhabitants. Pop. 3300.

GNESEN, a town in the Prussian province of Posen, government of Bromberg, 32 miles E.N.E. of Posen. In early times the archbishop of Gnesen was primate of all Poland, and the kings were crowned here. The archbishop of Gnesen now resides at Posen. Besides the cathedral there are eight Roman Catholic churches, convents, ecclesiastical seminary, &c. A great horse and cattle market is held here annually. Pop. (1849) 7341.

GNOME (γνώμων, from γιγνώσκω, *I know*), a name given by writers of the cabalistic school to a certain class of imaginary beings supposed to inhabit the inner parts of the earth, and to be the guardians of mines, quarries, &c. The reader need hardly be reminded of the admirable use that Pope has made of the gnomes and sylphs in the *Rape of the Lock*. Darwin, also, in his *Botanic Garden*, has employed similar machinery.

GNOMON, the style of a dial; so called because it makes known, by its shadow, the hour of the day. See Dialling.

GNOSSUS, an ancient town of Crete. See Cnossus.

GNOSTICISM, a general name applied to various forms of speculative heresy in the early Church, from the Greek γνωστικος, a verbal derivative of γινώσκω, I learn. The term is now only used in this heretical sense; but in the early ecclesiastical writers it had also a favourable signification. A *Gnostic* did not then necessarily denote a heretic. The enlightened and philosophical Christian was also called by this name. The expression abounds in this latter use in the writings of Clemens Alexandrinus. In the seventh book of the *Stromata* of that father, the Gnostic is considered to be the true and perfect Christian.

Gnosticism, in its different heretical forms, sprung out of the mixture of Oriental and Hellenic elements of culture with Christianity towards the close of the first, and throughout the second century. In one and all of these forms it may be said to represent the systematic attempts made by the prevailing religious philosophies to understand Christianity, and adapt themselves to it. Refusing to accept it in its simple historical character, in its simple majesty of divine truth, and having with it in these respects no affinity, these philosophies could not yet help recognising in Christianity a sublime spiritual power of which they must give an account. They sought, therefore, to find, from their own point of view, a theosophic meaning in it, and to bring it into alliance with their own wild and fantastic schemes of cosmogony.

The fundamental questions with which Gnosticism concerned itself are the same which in all ages have agitated inquiry and baffled speculation, viz., the origin of life and the origin of evil. How life sprung from the Infinite Source? How a world so imperfect as this could proceed from a supremely perfect God? The Oriental notion of matter as utterly corrupt is found to pervade all Gnostical systems, and to give so far a common character to their speculations. It may be said to be the ground-principle of Gnosticism.

Setting out from this principle, all the Gnostics agree in regarding this world as not proceeding immediately from the Supreme Being. A vast gulf, on the contrary, is supposed to separate them. In the general mode in which they conceive this gulf to be occupied they also agree, although with considerable varieties of detail.

The Supreme Being is regarded as wholly inconceivable and indescribable—as the unfathomable Abyss (Valentinus)—the Unnameable (Basilides). From this transcendent source existence springs by emanation in a series of spiritual powers (δύναμεις). It is only through these several powers or energies that the Infinite passes into life and activity, and becomes capable of representation. To this higher spiritual world is given the name of πλήρωμα, and the divine powers composing it, in their ever-expanding procession from the Highest, are called Æons.

So far a common mode of representation characterizes all the Gnostical systems. All unite in this doctrine of a higher emanation-world. It is in the passage from this higher spiritual world to the lower material one, that a speculative distinction of an important character begins to characterize them. On the one hand, this passage is apprehended as a mere continued degeneracy from the Source of Life, at length terminating in the kingdom of darkness and death—the bordering chaos surrounding the kingdom of light. On the other hand, this passage is apprehended in a more precisely

Dualistic form, as a positive invasion of the kingdom of light by a self-existent kingdom of darkness. According as Gnosticism adopted one or other of these modes of explaining the existence of the present world, it fell into two great divisions, which, from their supposed origin, have received the respective names of the Alexandrian and Syrian Gnosis. The one obviously presents more a Western, the other more an Eastern type of speculation. The Dualistic element in the one case scarcely appears beneath the Pantheistic, and bears resemblance to the Platonic notion of the ὕλη—a mere blank necessity, a limiting void. In the other case, the Dualistic element is clear and prominent, corresponding to the Parsic doctrine of an active principle of evil as well as of good—of a kingdom of *Ahriman* as well as a kingdom of *Ormuzd*.

In the Alexandrian Gnosis a link of subordination is preserved between the two kingdoms, separated as they are. For the ὕλη only becomes a living and active power of evil through the quickening impartation of some element from the higher kingdom in its progressive descent from the supreme Source. The stream of being in its ever-outward flow at length comes in contact with dead matter, which thus receives animation, and becomes a living source of evil. Its life and power, however, are withal only derived from the higher kingdom. But in the Syrian Gnosis the kingdom of darkness has no such dependence upon the kingdom of light. There appears from the first a hostile principle of evil in collision with the good.

Out of this main distinction other more special distinctions arise, still more clearly defining the one form of γνῶσις from the other. According as the two kingdoms are recognised as subordinate the one to the other, or as opposed to each other, it is obvious that different views will prevail as to the character of the Δημιουργός, or maker of this world, whose name and functions are so prominent in all systems of Gnosticism. In the one case, his relation to the supreme Source of life will be apprehended as more dependent—in the other, as more hostile. In the former view, the γνῶσις, while rising in its pride of speculation far above all mere earthly relations and historical religions, could yet find in these a point of contact, whereby the higher spiritual truth, penetrating this lower world, would gradually raise it to its own elevation. In the latter, no such point of contact is left between nature, or history, and the γνῶσις. Accordingly, while the Alexandrian form of Gnosticism was found to embrace Judaism, as a truly divine institution, although very inferior and defective in its manifestation of the Divine character, the Syrian rejected it as being wholly the work of the spirit of the lower world—the Δημιουργός warring with the supreme God. This anti-Judaical spirit is found developed to its extreme in *Marcion*.

The Gnostic conception of Christ, in so far uniform, is also of course greatly modified by the different relations which the systems thus bore to Judaism. In all he is recognised as a higher Æon, proceeding from the kingdom of light for the redemption of this lower kingdom of darkness. But, in the one case, however superior, he is yet allied to the lower angels and the Δημιουργός, governing this lower world. His appearance, accordingly, admits of being historically connected with the previous manifestations of the Divine presence upon earth. But, in the other case, he is apprehended as a being wholly distinct from the Δημιουργός, and his appearance takes place in this lower world without any previous preparation, in order that he may draw to himself all kindred spiritual natures held in bondage by the Power of this lower world. If any point of connection is admitted in this latter case betwixt Christianity and the lower world, it is certainly not found in Judaism or any historical religion, but in the theosophic schools, where an esoteric knowledge of the Supreme was cultivated.

The rise of Gnosticism can be traced back even to the apostolical age. Simon the Samaritan appears to have been a Gnostic. He appears, in fact, not merely to have taught a kind of Gnosticism, but to have represented himself as an impersonation of the Divine. This is implied in the statement of the Acts of the Apostles (viii. 10), and is plainly asserted by Irenæus (*Adv. Hær.* i. 23, § 1) and Jerome. Cerinthus, according to well-known tradition, disputed with St John; and the opening chapter of the fourth gospel was probably directed against his false Gnostical conception of the doctrine of the Logos. He is regarded by Neander as forming the connecting link between the Judaising and the Gnostic sects. He taught that this world was created by an Æon proceeding from the supreme God, and that this Æon was to be considered as the special ruler of the Jewish people, and the being through whom the supreme God revealed himself to them. The divine character of the Mosaic economy was thus recognised, but in a subordinate degree. In order to complete it, and to raise those under it to the full knowledge of the truth, Christ came a second Æon from the Source of Light. This higher Æon became united with the man Jesus at his baptism, and abode with him till his last sufferings and death. The human being was simply the organ or vehicle of the Divine; and the former alone suffered, or could suffer—the notion of the true Christ suffering being altogether abhorrent to Gnosticism. This higher Æon or Christ, Cerinthus further taught, would again unite himself to the man Jesus, and establish a blessed millenium in Jerusalem. The mixture of purely Gnostic and Jewish conceptions throughout this scheme of Cerinthus is obvious at a glance.

It was only, however, in the course of the second century that Gnosticism became developed under a succession of able teachers into definite and elaborate systems. Throughout the whole of this century, and onward into the third, Gnosticism constituted a very powerful element of disturbance, and, to some extent, of advancing culture in the Christian Church. It appears to have exercised a living sway over some of the highest minds drawn to the truth. Whatever absurd opinions may have long prevailed as to the Gnostic teachers, these are now entirely exploded under the more impartial and more critical labours of modern historians; and, wild as we may still think their speculations, such men as Basilides and Valentinus stand out in the pages of Neander and Bunsen as truly noble and earnestly thoughtful men.

These two teachers are the most illustrious representatives of the Alexandrian or Hellenic Gnosticism. Basilides, probably born in Syria, taught in Alexandria about the year 125. He represented existence as springing from the infinite and unnameable Source (θεὸς ἀνονομαστος) in a sevenfold series of Æons, under the several names, Νοῦς, Λόγος, Φρόνησις, Σόφια, Δύναμις, Δικαιοσύνη, Εἰρήνη. These, with the unknown and inexpressible Original, constituted the first octave (πρώτη ογδόας) of existence. From this first kingdom of spirits (οὐρανός) emanated a second, and so on in unbroken gradation, each successive kingdom forming a less perfect expression of the original. This sevenfold emanation is supposed to have repeated itself no fewer than 365 times, so that the whole spirit-world or πληρωμα was represented by the days of the year. From this correspondence he applied the mystical name of ἀβραξάς or ἀβρασάξ (whose letters denote 365) to this completed manifestation of the Primal essence. Through the contact of the lowest range of this spirit-world with the bordering chaos, and especially through the operation of the Archon (ἄρχων) or chief angel of this lowest kingdom, arose the present world. The Archon is the immediate creator of men, and the spiritual ruler of the Jews. He is not evil, but only limited, and unable in his strife with dead matter to raise those under his rule to a true communion with the Divine.

To effect this, the highest Æon, the Νοῦς, descended to earth and united himself with the man Jesus at his baptism. The higher aims of the redeeming Æon are not opposed by the Archon when made known to him; and being successfully accomplished, he separates from the man Jesus before his crucifixion, and ascends again to his kingdom of light, into which he has provided an entrance for all kindred and purified natures. The followers of Basilides continued into the fourth century, and rendered themselves in certain cases particularly obnoxious by their impious indifference to the crucified One, and the slackness of their moral code.

The system of Valentinus is perhaps the most elaborate and ingenious of all the Gnostical systems. This teacher came from Alexandria to Rome about the year 140, and died in Cyprus about 160. The principles of life, or Æons, were conceived by him to proceed from the ineffable Source (Βυθός προπάτωρ) in pairs. In the evolution of the primal being, there is first of all the consciousness of himself (ἔννοια, σιγὴ). Thence spring, on the one hand, three male or formative Æons, respectively named Νοῦς, Λόγος, and Ἄνθρωπος, and three female or receptive Æons, respectively named Ἀλήθεια, Ζωή, Εκκλησία. From the Λόγος and the Ζωή there spring further ten Æons, and from the Ανθρωπος and Εκκλησία twelve, making in all thirty, which form together the πλήρωμα. They were all duly arranged according to their nature and power, each occupying its proper position to all the others; and this order and proportion (ὁροθεσία) it was which constituted the harmony of the πλήρωμα. But through the passionate desires of the last Æon, the Σοφία, to attain to the full knowledge of the Βυθός, which is only given to the Νοῦς, disturbance was introduced into the πλήρωμα. Out of the same undue desire of the Σοφία arose the Achamoth (ἡ καπ σοφία), an untimely being, who, wandering outside of the πλήρωμα, came in contact with the surrounding void or dead matter, and communicated life to it. Hence sprang various orders of existence, some more allied to the spiritual, others more allied to the material element. The Demiurge, who is the production of the Σοφία, and represents her, is the immediate former of this mixed world, according to the course of which the spiritual natures are to be evermore separated from the material, and restored to the higher kingdom of light. In the meantime there arose a restorer of the disturbed harmony of the πλήρωμα, a saviour, variously represented as the Νοῦς or highest Æon, the Λόγος, the Christ. His redeeming power is first exercised in the Achamoth, who, becoming united to him, inspires the Demiurge with the same exalted ideas, and thus prepares the way for the redemption of the lower world. This is effected by the manifestation of the σωτηρ in the man Jesus, the psychical Messiah, with whom, as usual, he becomes united at baptism.

The most illustrious disciples of the Valentinian Gnosticism, which prevailed on till the sixth century, were Ptolemæus, Heracleon, and Marcus. Each of these had of course their own peculiarities of system—such theosophic dreams admitting of endless confusion and diversity.

Carpocrates of Alexandria, with his son Epiphanes, stand in some degree by themselves. Their Gnosticism appears, upon the whole, to have been of a simple character, arising more directly out of a mixture of Platonic ideas with Christianity. The Divine Being they conceived as simple unity (μόνας). Hence proceeded a succession of spirits, or angels, by the lowest of whom the world was formed and governed. The spirit of man is confined in the body as in a prison, and it is the aim of the γνῶσις to liberate the spirit from this confinement, and to enable it to attain to a truly divine communion. Pythagoras, Plato, and Aristotle are all representatives of such a γνῶσις—of that mystical contemplative spirit, by which man frees himself from bondage to the Demiurgi, or rulers of this world. Jesus was merely the man in whom this spirit was developed in the highest degree. The mystical abstract views of the sect are said to have led to great laxity of social and moral principle.

Among the most singular of the Gnostic sects were the Ophites or serpent-worshippers, whom we may mention here, as considered by Neander, to form the connecting link between the Alexandrian and the Syrian Gnostics. Very different opinions, however, prevail as to their proper position in a classification of the Gnostic systems. Bunsen, founding on the lately-discovered treatise of Hippolytus, would trace their origin even to the apostolical age. According to their doctrine, so far as it seems possible to find any consistent meaning in it, life sprung from the Abyss in a threefold order of emanation, viz., *the first man*, *the second man*, or *Son of man*, and *the Holy Spirit*. The last gave birth, by means of the first two, to the perfect masculine or heavenly nature—*the Christ*, and the defective female Σοφία. From this latter, in her descending contact with the lifeless void, proceeds the Δημιουργός, Jaldabaoth, who is an evil spirit or demon, altogether hostile to the higher world. Jaldabaoth, by means of the living principle transmitted to him, calls into being six planet-spirits, and, through their agency, men. In man, however, there was also implanted some portion of a higher spirit, and of a longing after the higher order of things. It is the aim of Jaldabaoth to crush and destroy this better spirit in man; but the Σοφία, awakened to a renewed consciousness of her heavenly origin, watches over him, and never ceases to impart to him fresh supplies of the spiritual influence. His redemption is at length completed by the manifestation of the heavenly nature, or *Christ of the Æon-world*, in the man Jesus. In this mystical process of conflict and redemption there is also in the Ophitic system a further agent, under the name of Ὀφιόμορφος. The distinct function of this agent seems involved in confusion, but the etymology of the term suggests that it must have been, in such a sect, of an important character.

The chief representatives of the Syrian or Oriental Gnosticism are Saturninus, Tatian, and Bardesanes, although some have classed the latter as a follower of Valentinus. The general characteristic of this Gnosticism, as we found already, was the more definite development of the doctrine of Dualism. This was associated with a more rigid practical asceticism, and altogether with a deeper and more earnest moral spirit.

In the system of Saturninus, who lived at Antioch under the emperor Hadrian, the Æon-world proceeded from the original Source (Πατὴρ ἄγνωστος) in a successive development, much the same as that of the preceding systems; but opposed to this spiritual kingdom stood a living principle of evil (ὁ Σατανᾶς). The lowest stage of the emanation-world consists of seven planet-spirits, at whose head is the God of the Jewish. These, removed to a distance from the supreme Source of Light, create the present world and men, and strive to defend them from the power of the prince of darkness. This, however, in their weakness and distance, they are unable to do, when God himself infuses into man sparks of the true light, and especially sends down an Æon fully animated by this light to be their redeemer. It remains for man, through ascetic self-denial, particularly through abstinence from marriage and the eating of flesh, to separate themselves from all contamination of the evil principle, and render themselves capable of sharing in the higher kingdom.

Tatian was an Assyrian, and a disciple of Justin Martyr at Rome. He distinguished himself, while yet an adherent to the common doctrines of the Church, by a well-known discourse on behalf of Christianity, addressed to the Greeks. It was after his return to Syria, about the year 170, that he appears to have adopted Gnostic views, and to have become particularly remarkable for his ascetic abstinence from marriage and the use of flesh, and of wine even in the celebration of the Lord's Supper.

Bardesanes flourished towards the end of the second century, in Edessa. Although he seems clearly to have adopted certain Gnostical tenets, and especially that of the independent existence of the evil principle, he yet retained his connection with the church, and even acquired a high reputation in it as a learned and accomplished man—one of the first of those hymn writers to whom, reaching down to Ephraim Syrus in the fourth century, the Syrian Church owed so much.

In Marcion and his school, as we formerly observed, is to be seen the extreme development of the Syrian Gnosticism on that side on which it naturally stood opposed to Judaism. Excommunicated, as is commonly alleged, by his father, who was bishop of Sinope, Marcion attached himself to a Gnostic of Antioch, of the name of Cerdo, and founded with him a Gnostic school. He taught that there were three principles (ἀρχαι), viz. the Θεὸς αγαθός, the Δημιουργός δίκαιος, and the ὕλη, with its ruler Satan. The Demiurge is of course the creator of this world and men, and the special guardian of the Jews, to whom he gave the Mosaic law. This law, however, was quite ineffectual to deliver them from the evil principle, and guide them to moral purity; and for this purpose Christ descended to earth with the appearance of a body, and proclaimed to men the good God, hitherto unknown. The God of the Jews, or the Demiurge, opposed him in this redeeming mission, and thus it was that the opposition between Christianity and Judaism became sharpened on the system of Marcion. The cause of Christ, however, triumphed on his apparent death. All who have faith in him have power to rise above the thraldom of the Demiurge, and enter into communion with their Lord, the giver of a new pneumatic life. In conformity with the spirit of his whole system, Marcion rejected the Old Testament, and, of the New Testament, accepted only the gospel of St Luke and ten of the Pauline epistles, with corruptions, however, in both cases. In a work, bearing the title *Antitheses*, of which some fragments still exist, it was his aim to prove in detail the opposition between Judaism and Christianity.

Gnosticism survived throughout the third, and even into the fourth century, passing, in its Syrian type, into Manichæism. Its influence on the Church, irrational in many of its aspects as it may now seem, is by no means to be considered wholly detrimental. It served by its opposition to impart depth and comprehensiveness to Christian science, to destroy the narrow spirit of Judaism, and to awaken the Church to a more expansive consciousness of its true doctrine and strength. (J. T—H.)

GNU. See index to MAMMALIA.

GOA, formerly a celebrated city of Western India, and the capital of the Portuguese settlements in the East Indies, but now fast becoming a mass of deserted ruins. Its original grandeur may, however, be distinctly traced in its decay; the streets are straight, the houses regularly and handsomely built of stone in the European style, many of them large and magnificent, though now no longer inhabited. Among the public buildings are many noble churches, exhibiting specimens of architecture superior to anything attempted by Europeans in other parts of India, particularly the church and convent of St Augustin. Pangaum, which has supplanted the old city, is now the residence of the viceroy and of the chief Portuguese inhabitants, and the seat of the supreme court of judicature. The new town is connected with Goa by a stone causeway about 300 yards long. From this bridge it extends towards the harbour, but the site of Pangaum is said to be low and sandy, and its buildings poor and wretched. Algoada Point, which is in E. Long. 73. 57. 15., N. Lat. 15. 28. 18., forms the northern extremity of Goa Bay. It has a lighthouse and small fort on it; but the principal fort is situated close to the east on the S.E. side of the headland, where there is a well of excellent water, from which the shipping are supplied. Nostra Senhora de la Cabo, a large monastery, of a white appearance, is situated on the summit of the bluff point of land, about two miles and a half S.E. of Algoada, which forms the S. side of the bay. The common anchorage is abreast of Algoada Fort, the flag-staff bearing about north at half a mile distance from the shore. The bar at the entrance of the river is about two miles to the eastward of Algoada Point, having sixteen or eighteen feet on it at high-water of spring-tides. The bottom is hard and rocky; and the channel so winding and intricate, that a ship ought not to enter the river without a pilot. After the early part of May, when it is considered unsafe to remain at the anchorage in the roads, the Portuguese send their large ships, which cannot run into the river, to Marmagon Roads, four or five miles to the southward of Algoada Fort, where they are sheltered from the S.W. monsoon by mooring close under the N.E. side of that peninsula. The colonial settlement at Goa seems now to be almost abandoned by the mother country, and the inhabitants scarcely retain the national language or manners. The trade has also greatly fallen off, and the people are impoverished, so that the best families are reduced to gain a scanty subsistence by working at lace or muslin. Not more than three ships arrive from Portugal in the course of the year, and these generally proceed to the British settlements to complete their cargoes for Europe. The trade from Goa to China is carried on by one or two ships in the year, which are called China ships. These carry to Surat, and the ports to the northward, Chinese and European goods, and returning with cotton and other articles, call at Goa to complete their cargoes for China. They commence their trade at the most southern settlement, which is Ajengo, and thence they proceed to Cochin, Calicut, Tellicherry, and Mangalore, and then to Goa; at these different places they take in pepper, cardamoms, cassia lignea, and other articles, which they resell at their northern settlements, and complete the voyage within the year. A coasting trade is carried on in small vessels with the different ports on the coast, whence they return to Goa with produce, which forms the home cargoes of their ships. With Macao and the British settlements an inconsiderable trade is carried on; the imports consisting principally of piece goods, raw silk, grain, sugar, woollens, and a few European articles; whilst the exports are piece goods, betel-nut, hemp, and other articles of trifling amount. But Goa "the golden" exists no longer. Goa—where the aged Da Gama closed his glorious life—where the immortal Camoens sung and suffered—is now one vast and grassy tomb. And it seems as if its thin and gloomy population of priests and friars were spared only to chant requiems for its departed souls. During the sixteenth century, when its prosperity was at its highest, the Jesuits introduced themselves and established the Holy Tribunal; the home government became unsettled; the Mahratta power rose rapidly; pestilence broke out in the city; and thus, all these misfortunes conspiring, the downfall of the city was very much accelerated. The Inquisition was abolished in 1812 at the solicitation of the British government. In 1800 it was a city of churches, which the wealth of the province had been exhausted in erecting. At Goa the ancient specimens of architecture far excel anything that has been attempted in modern times in any other part of the East, both in taste and grandeur.

Goa was taken from its Hindu rajahs of Bijanagur by the Bhamenee sovereigns of the Deccan. On the arrival of the Portuguese on the Malabar coast it was an opulent place, well fortified, and subject to Zabaim, a potent prince, from whom it was taken by the Portuguese general Albuquerque. It was retaken by the native prince, after which

Albuquerque, having received reinforcements, again succeeded in 1510 in making himself master of the city after a bloody assault. He improved its defences, and constituted it the capital of all his conquests; and it has ever since remained in possession of the Portuguese, who during the sixteenth century extended their conquests, and obtained possession of numerous places on the sea-coasts of India. In the course of these operations they were involved in hostilities with the Mahrattas; and advancing inland, laid siege to the town of Pondah. Here they were surrounded by a large Mahratta force, and effected their retreat with great difficulty and serious loss. Having formed an alliance with Aurungzebe, they succeeded in repulsing the Mahrattas, with whom they at length concluded a peace. In 1518 the Portuguese power in India was at its height, and from this period it began to decline. The territory of Goa now extends from Lat. 14. 54. to 15. 45., and from Long. 73. 45. to 74. 26.; it is sixty-two miles in length from N. to S., and 40 in its greatest breadth, and contains an area of 1066 square miles. The population has been returned at 313,262. Of this number two-thirds are stated to be Christians of the Roman Catholic persuasion; but these are not under the direct jurisdiction of the Church of Rome, the throne of Portugal claiming the right of appointing its own bishop, and assuming the control and direction of the Catholic Church in its Indian possessions. The military force of the state of Goa consists of 3300 fighting men, of whom about 400 are Europeans. The revenues are estimated at L.71,920, an amount stated to be annually exceeded by the expenditure. The chief products are rice, pepper, cocoanuts, betel-nut, and salt, which latter article is manufactured to a very large extent. Besides Goa the only remaining Portuguese possessions in India consist of the unimportant settlements of Diu and Demaun. Goa is distant S. from Bombay 250 miles.

GOALPARAH, a town of Hindustan, presidency of Bengal, and the chief place of the British district of the same name, is situated on the south shore of the Brahmapootra, near the frontier of Assam. The district of which this town is the capital contains an area of 3506 square miles, with a population of 400,000. The principal crops of the district are cotton, tobacco, and sugar. Mustard also is said to be extensively grown. This district formed a portion of Bengal in 1765, when the British government obtained a grant of the Dewanny from the emperor of Delhi. The town of Goalparah is in E. Long. 90. 32., N. Lat. 26. 8.

GOAT. See index to MAMMALIA.

GOAT ISLAND. See NIAGARA. This is also the name of the smallest of the Bashee Islands in the Eastern Archipelago, and of a small island in the Pacific, 3 miles S.W. of Juan Fernandez.

GOBELIN, the name applied to a very exquisite species of tapestry, in honour of Giles Gobelin, a celebrated French dyer in the reign of Francis I., and the discoverer of a method of dyeing a beautiful scarlet, which was named after him. His house in the suburb of St Marcel at Paris, and the rivulet he made use of, are still called the Gobelins. An academy for drawing, and a manufactory of fine tapestries, were established in this quarter by Colbert in 1666; and hence the tapestries made there received the name of *Gobelin.*

GOBI or SHAMO, an extensive tract of desert country in Central Asia. See ASIA.

GOCH, a walled town of Rhenish Prussia, government of Dusseldorf, and circle of Cleve, on the left bank of the Niers, 8 miles S. of Cleve. It has an old castle; several distilleries; manufactures of woollen, linen, cotton, and silk goods; and 3919 inhabitants.

GOD. See THEOLOGY.

GODALMING, a municipal borough and market-town of England, county of Surrey, in a valley on the right bank of the Wey, 32 miles S.W. of London. It consists principally of one street, nearly a mile in length, on the high road between London and Portsmouth. The chief public buildings are the parish church, an ancient cruciform edifice with a lofty steeple, and the town-hall, a neat modern building. It has manufactures of paper, leather, parchment, hosiery; and some trade in corn, malt, bark, timber, and hoops, by the Wey, which is navigable hence to the Thames. The town is governed by a mayor, four aldermen, and twelve councillors. Pop. (1851) 2218.

GODAVERY, a large river of India, which has its rise in the Western Ghauts, seventy miles to the N.E. of Bombay, and which, with a circuitous curve, flows nearly over the whole breadth of the peninsula in a S.E. direction. After traversing, from W. to E., the British district of Ahmednuggur and the dominions of the Nizam or ruler of Hyderabad, receiving in its course the waters of the Doodna, the Manjara, the Manair, and the Wein Gunga, it crosses the Nizam's frontier into the British district of Rajahmundry through a deep chasm in the Eastern Ghauts, and entering the low tract which appears to have been formed from its alluvial deposits, it separates near the town of Rajahmundry into two principal channels, one of which falls into the Bay of Bengal a few miles south of the town of Coringa, and the other a little below Narsipore, forming between them the island of Nagur, comprehending 500 square miles, and which, being intersected by various ramifications from these rivers, includes several tide-harbours for vessels of moderate burden, and is highly fertile and productive. Ingeram, Coringa, Yanaon, and Narsipore are among the places situated at the mouth of this river, which appears to be the most considerable stream that rises between the Ganges and Cape Comorin. Its whole course may be estimated at nearly 800 miles, having, owing to the peculiar configuration of the Indian peninsula, which rises to its height much nearer the western than the eastern shore, nearly traversed the country from sea to sea. During the rainy season the Godavery rolls a prodigious volume of water towards the ocean, which being economized by means of a dam or annicut thrown across the river at the head of the delta, supplies to the rich alluvial soil the means of constant irrigation during the dry season. The value of this river as an instrument of communication, for commercial and military purposes, has been frequently urged upon the attention of the ruling authorities, and measures for the improvement of its navigation have at length been sanctioned; in many places it is more than a mile in breadth. During the dry season its bed consists in many places of an expanse of sand, the river being divided into numerous shallow streams. Extensive forests of teak trees line the shores of the river until it emerges from the Ghaut Mountains.

GODFATHERS and GODMOTHERS, persons who, at the baptism of infants, answer for their future conduct, and solemnly promise for them that they will renounce the devil and all his works, and follow a life of piety and virtue; and thus bind themselves to see that they be properly instructed in the duties of religion. This custom, which is of great antiquity in the Christian Church, was probably instituted to prevent children being brought up in idolatry in case their parents died before they arrived at years of discretion. The number of godfathers and godmothers is reduced to two in the Church of Rome, and three in the Church of England; but formerly there was no limit to the number.

GODFREY OF BOUILLON, Prince of Lorraine, and first Christian king of Jerusalem, was born in 1061 at Bézy, near Nivelle; died at Jerusalem, June 18, 1100. For the details of his life see CHIVALRY, and CRUSADES. (See also Gibbon, *Decline and Fall*, chap. lviii.; Michaud's *Histoire des Croisades*, &c., &c.)

Godmanchester
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Godwin.

GODMANCHESTER, a municipal borough of England, county of Huntingdon, on the River Ouse. It is included within the parliamentary limits of Huntingdon, of which it forms a suburb, being only three-quarters of a mile S.S.E. It has a handsome church in the later English style, and a free grammar-school. Pop. (1851) 2337.

GODOLPHIN, Sydney, Earl of Godolphin, was a cadet of an ancient Saxon family of Cornwall. It is not known with certainty in what year he was born, but it was probably about 1640. He began his political career at an early age under Charles II., and was one of those who voted for the exclusion of the Duke of York from the throne in 1680. When that prince, however, became king on his brother's death, Godolphin was still continued in office, though in a subordinate situation at the treasury-board, of which during Charles's latter days he had been the head. On the accession of William of Orange, Godolphin took office under his government; and shortly after Queen Anne came to the throne, in 1702, he was made lord-high-treasurer, being the first person who had held that office since the Restoration. In 1706 Godolphin was created Viscount Rialton and Earl of Godolphin, and from this time is considered to have deserted his original party, and attached himself openly to the Whigs. In the struggle between him and Harley for the premiership, Godolphin was at first successful, but not being able to counterwork the intrigues of his rival he was suddenly and rudely expelled from office in 1710. He survived his loss of power for about two years, and died Sept. 15, 1712.

The character of Godolphin has been very variously estimated, and, indeed, presents such strange contradictions as to be scarcely intelligible. In manner he was cold and calm, and, as Tindal says, as modest and silent a man as ever was bred at a court. He had a faculty for despatching business thoroughly and rapidly, and such a command of temper that he had few or no personal enemies. He had also a real pride in his work, and sought always to have it done so that it would not require to be done again. Accordingly he was careful in the choice of his instruments, and was generally happy in searching out able men, who were at the same time men of integrity, to aid him in his undertakings. Of personal vanity he does not seem to have had much; and he was utterly inaccessible to a bribe —a somewhat rare virtue in those days. As a set-off against these good qualities, it must be stated that Godolphin was one of the keenest gamblers and horse-racers of his day, and that his intimates were often persons notable either as gamesters or jockeys. He was never charged, however, with any of the mal-practices which are supposed to be inseparable from a love of the dice-box and the turf. He used to say that he played merely because it delivered him from talking; but the great stain on the character of Godolphin is his treasonable correspondence with James, while he was for several years first lord of the treasury to William, and in the full confidence of his master. (Dalrymple's *Memoirs of Great Britain and Ireland;* Fox's *History of the Early Part of the Reign of James II.;* T. B. Macaulay's *History of England*, &c.)

GODWIN, Francis, son of Dr Godwin, bishop of Bath and Weils, was born at Havington, Northamptonshire, in 1561. After passing through the usual course of grammar-school instruction, he was sent to Christ Church College, Oxford, where he took his degree of bachelor in 1580, and that of master of arts in 1583. About this time he wrote an amusing piece on a philosophical subject, which he never published, but which appeared about five years after his death, under the title of *The Man in the Moon, or a discourse of a Voyage thither*, by Domingo Gonzalez, 1638, in 8vo. This satirical production, which displays considerable fancy and even genius, seems to have afforded to Swift several hints of which he availed himself in his

Godwin.

voyage to Laputa; and, what is still more remarkable, it shows the author to have been acquainted with the Copernican system. He also suppressed another piece, entitled *Nuncius Inanimatus*, or the *Inanimate Messenger*, intended to communicate various methods for conveying intelligence secretly, speedily, and safely; a production which appears to have been the prototype of Bishop Wilkin's *Mercury, or Secret and Swift Messenger*. It was published, however, in 1657, and afterwards translated by Dr Thomas Smith. Some time after he had taken his degree, Godwin entered into holy orders, and soon became rector of Samford-Orcais in Somersetshire, a prebendary in the church of Wilts, and canon-residentiary, also vicar of Weston-in-Zoyland, in the same county. Having turned his attention to the subject of British antiquities, he became acquainted with Camden, whom he accompanied in a journey through Wales in 1590, in search of curiosities; but, although he took great pleasure in these inquiries, he at length confined himself entirely to ecclesiastical history and antiquities. He was created bachelor of divinity in 1593, and doctor in 1595, when, having resigned the vicarage of Weston, he was appointed rector of Bishop's-Lidiard in the same county.

In 1601 he published his *Catalogue of the Bishops of England*, since the first planting of the Christian religion in this island—a work in which he embodied his collections in ecclesiastical biography, and which, through the intercession of Lord Buckhurst, to whom he acted as chaplain, procured him the bishopric of Llandaff. In 1615 he published another edition, with numerous alterations and additions; but this having been very erroneously printed, owing to the author's distance from the press, he recast the whole in an elegant Latin dress, and the year after sent it abroad to be printed. This last edition was dedicated to the king, who, in return, conferred upon him the bishopric of Hereford, to which he was translated in 1617. The work was afterwards reprinted, in the year 1743, with a continuation by Dr Richardson, the whole being in one volume folio, with a portrait of Godwin, and other embellishments. In 1616 he published, in Latin, *Rerum Anglicarum Henrico VIII., etc. regnantibus*, which was translated and published by his son, under the title of *Annals of England*, containing the reigns of Henry VIII., Edward VI., and Queen Mary, in folio. His last publication was a *Computation of the Value of the Roman Sesterce and Attic Talent*, which appeared in the year 1630.

After this he fell into a languishing disorder, which cut him off in April 1633. (J. B—E.)

GODWIN, *William*, an English author of great versatility, original power, and unwearied application, was the son of a dissenting minister, and was born at Wisbeach, Cambridge, March 3, 1756. He was educated for his father's profession, and afterwards officiated for four years as pastor of a congregation at Stowmarket in Suffolk. Many of the English dissenting ministers were at this time zealous political reformers. They felt the Test and Corporation Acts to be badges of persecution, and naturally wished to abate somewhat of the power of the High-church clergy and rural aristocracy, by whom they were regarded with suspicion and dislike. Godwin participated in these sentiments, but went much further than most of his brethren. He aimed at the complete overthrow of all existing institutions, political, social, and religious. An intellectual republic was the dream of his youthful ambition; and to promote its anticipated advent he resigned his clerical charge, repaired to London, and set about the work of regeneration with his pen, which at all times he valued as highly as ever monarch did his sceptre. This was in 1782, and the same year Godwin commenced his career as author by publishing a series of six sermons entitled *Sketches of History*. He wrote largely in the *Annual Register* and other periodicals, and associated with Horne Tooke, Holcroft, Thelwall, and others who, from their political doctrines and activity, were obnoxious to men in power. Godwin, however, was no platform agitator. He was the mildest of enthusiastic philosophers, and had no talent or inclination for public life. In 1793 appeared his greatest work on political science, *The Inquiry concerning Political Justice, and its Influence on*

General Virtue and Happiness. Though now rarely met with, this work was read with great avidity, and exercised no small influence in shaping the opinions and aspirations of many young men of genius, who were captivated with the author's argument for universal benevolence as the immediate motive of our actions, and the true basis on which to found society. The French Revolution had then run to its wildest excesses, and appeared rather as a beacon to warn off political adventurers than a light to steer by; but Godwin conceived that he could build upon the ruins of monarchy a glorious fabric of equal rights and happiness for all mankind. Still further to illustrate his peculiar views, and show the evils of our artificial system, he wrote and published next year his political novel of *Things as they are, or the Adventures of Caleb Williams*, which, with the other tales of Godwin, will be found noticed under the head of ROMANCE. The political object of Caleb Williams was overlooked by the mass of readers in the strong interest of the story, and in the author's vivid description of incidents and character. It is a work of great genius, and was the most popular of all Godwin's productions. His next important effort to propagate his opinions was in the form of a series of essays entitled the *Inquirer*, which appeared in 1796. A more remarkable exemplification of his views on social questions was afforded by his *Memoirs of the Author of the Rights of Woman.* This was the once celebrated Mary Wollstonecraft, whom Godwin had married, though neither approved of the "slavery" of wedlock The details and principles laid bare in this memoir shocked even Godwin's philosophical admirers. He had gone too far for English feeling, however modified by political sentiments; and though his own equanimity was probably never for a moment disturbed by the comments his work provoked, his position, both as a literary man and a citizen, was lowered by the publication. His next appearance was in the field of fiction. His *St Leon*, a tale of the sixteenth century, was published in 1799; and though the subject was avowedly of the miraculous class (his hero being invested with the fabulous powers of alchymy and the *elixir vitæ*, by which he commands all riches, and can renew his youth), the work contains many splendid and pathetic descriptions. The utter desolation of St Leon, who survives all the objects of his affection, and longs for dissolution notwithstanding his supernatural endowments, is one of the most powerful and harrowing pictures in the whole region of romance. The other works of Godwin during his long literary life were, *Antonio*, a tragedy, produced in 1801; a *Life of Chaucer*, in two quarto volumes—filled, of course, by a vast amount of episodical description and illustration—published in 1803; *Fleetwood*, a novel, 1805; *Faulkner*, a tragedy, 1807; an *Essay on Sepulchres*, 1809; *Lives of Edward and John Philips*, the nephews of Milton, 1815; *Mandeville*, a tale of the times of Cromwell, 1817; a *History of the Commonwealth*, in four volumes, published at intervals between 1824 and 1828; *Cloudesley*, a novel, 1830; and *Lives of the Necromancers*, 1834. Many other short and anonymous works proceeded from his ever-busy hand. For some years Godwin carried on business as a bookseller under the name of Edward Baldwin, and ushered into the world a number of small educational works. Into such humble usefulness had subsided the daring and sanguine speculatist, who was to overturn thrones, and regenerate the civilized world! Misfortune seems to have fallen upon him about the year 1816, as at that time we find Byron concurring with Mackintosh and Rogers as to some measures for his relief. In his latter years the government of Earl Grey conferred upon Mr Godwin a small office known as "Yeoman Usher of the Exchequer," to which were attached apartments in Palace Yard; and there the veteran author died, April 7, 1836, having completed his eightieth year. From the glimpses of Godwin's familiar life afforded by Charles Lamb, Hazlitt, and other associates, he appears to have been an easy complacent man, esteeming literature above all pursuits and distinctions, and enjoying his game of whist in the evenings with a few select and congenial friends. His latter works are distinguished by great elegance of style. Details are worked up with brilliancy and effect in his essays and novels; though in the delineation of passion he is often exaggerated and unnatural. His *History of the Commonwealth* disappointed the public. The subject was one that seemed peculiarly suited to his genius and research, but he taxed himself to be rigidly accurate and impartial; and in the process, he had neglected the animation and colouring necessary to give life and interest to his narrative. The work, however, is a valuable repository of facts. The theory of political optimism by which Godwin was first distinguished was successfully answered by Malthus and Dr Parr. It has been fairly refuted on philosophical principles. In excluding the particular affections, he deprives us, as Sydney Smith has remarked, of our most powerful means of promoting his own principle of universal good:—"For it is as much as to say that all the crew ought to have the *general* welfare of the ship so much at heart that no sailor should pull any *particular* rope, or hand any *individual* sail." A theory which runs counter to the natural feelings, habits, and business of mankind, can only be considered as one of the refinements of sophistry, put forth at a time of peculiar excitement and speculation. It is in the regions of fiction that Godwin earned his lasting and most distinctive laurels. As a general writer on so many classes of subjects, he is well entitled to honourable mention, but in romance only is he original and striking. His political theories and elaborate essays are already left behind in the onward progress of society in practical government and knowledge. A work of genius, however, such as *Caleb Williams* or *St Leon*, which appeals to the heart and imagination, and evinces the skill of the master, can never become uninteresting. (R. C—S.)

GODWIN, *Mary Wollstonecraft*, an English authoress of the last century, celebrated for her literary talents, her opinions, and her misfortunes. She was born in 1759, either in the environs of London, or at Loddon in Norfolk, where it is known that her father was in practice as a surgeon and apothecary not long after her birth. In 1768 she accompanied her father to Beverley in Yorkshire, where the only education she got was that afforded by the humble day-schools of the town. This was of itself sufficient to disgust her with the life she was obliged to lead; and her unhappiness was embittered by the cruel treatment of her father, who was a man of ill-regulated mind and ungovernable temper. "Mary Wollstonecraft was not formed," says the author of *Caleb Williams* in the memoir of his wife, "to be the unresisting and contented subject of a despot; but I have heard her remark more than once, that when she felt she had done wrong, the reproof or chastisement of her mother, instead of being a terror to her, she found to be the only thing capable of reconciling her to herself. The blows of her father, on the contrary, which were the mere ebullitions of a passionate temper, instead of humbling her, roused her indignation." She resolved to provide for herself; and on the death of her mother, went to live as a companion with a lady in Bath. In 1783, along with two of her sisters and a friend, she opened a school, first at Islington and afterwards at Newington Green. She was succeeding well in a very congenial sphere, when the news reached her of the serious illness of her attached friend at Lisbon, whom she instantly set off to nurse in her dying moments. On her return she found her school ruined by mismanagement, and was obliged to enter as governess the family of Lord Kingsborough. She had already made herself favourably known as an authoress by a little work *On the Education of*

Daughters, published in 1786. The success of this work tempted her to London to seek a livelihood there by her pen. During three or four years she was able not only to maintain herself but to educate two younger sisters, and prop up the fortunes of the family, which the imprudence of her father now threatened to involve in ruin. She contributed largely to the periodical press, and translated Lavater's *Physiognomy*, Salzman's *Elements of Morality*, and other works. In 1791 she emerged all at once into a publicity that was at once fame and notoriety by publishing an answer to Burke's *Reflections on the French Revolution*, and her still more noted *Vindication of the Rights of Woman*. In the latter work she maintains, as might be inferred from its title, that woman is called by nature to share with man the lofty functions which he has arrogated exclusively to himself; that man has no other superiority over the weaker sex than that of physical strength; and that it is only through the devotedness of her love that woman has fallen into that degradation in which the authoress believes her now to be. In 1792 she passed over into France, with the idea, as she expressed it, "of losing in the bosom of the public happiness the idea of her private misfortunes." Her hopes were cruelly deceived; for she had the misfortune to see nearly all the leading Girondists, among whom she had chosen her personal friends, perish on the scaffold. A still more bitter cup remained for her to drink in the French capital. An American, by name Imlay, had gained her affections, and seducing her under a promise of marriage, had failed to fulfil his vow. She had no sooner given birth to a child than she made two attempts on her life, which were both luckily unsuccessful. But her delicate sensibilities had sustained a shock which it required all her fierce energy of character to endure. In the interval between these two attempts on her life she wrote her *Letters on Norway*, which country she had visited during her stay at Paris. These letters amply attest the unimpaired strength of her intellect. In 1796 she became acquainted with the author of *Caleb Williams*, with whom she cohabited for some months before being formally married to him. Mrs Godwin had only completed her 38th year when she died in childbed, Sept. 10, 1797. Her posthumous works were published by her husband in the following year, with an interesting and touching memoir of her life.

GOES, or TER-GOES, a fortified town of Holland, province of Zealand, on the island of South Beveland. It has a harbour formed by a short canal communicating with the Scheldt, and carries on an active trade in corn, salt, hops, &c. Shipbuilding is also carried on, but the manufactures are unimportant. Pop. (1850) 5296.

GOETHE, JOHN WOLFGANG VON, a man of commanding influence in the literature of modern Germany throughout the latter half of his long life, and possessing two separate claims upon our notice; one in right of his own unquestionable talents; and another much stronger, though less direct, arising out of his position, and the extravagant partisanship put forward on his behalf for the last forty years. The literary body in all countries, and for reasons which rest upon a sounder basis than that of private jealousies, have always been disposed to a republican simplicity in all that regards the assumption of rank and personal pretensions. *Valeat quantum valere potest*, is the form of license to every man's ambition, coupled with its caution: let his influence and authority be commensurate with his attested value: and, because no man in the present infinity of human speculation, and the present multiformity of human power, can hope for more than a very limited superiority, there is an end at once to all *absolute* dictatorship. The dictatorship in any case could be only *relative*, and in relation to a single department of art or knowledge; and this for a reason stronger even than that already noticed, viz. the vast extent of the field on which the intellect is now summoned to employ itself. That objection, as it applies only to the *degree* of the difficulty, might be met by a corresponding degree of mental energy; such a thing may be supposed, at least. But another difficulty there is, of a profounder character, which cannot be so easily parried: those who have reflected at all upon the fine arts, know that power of one kind is often inconsistent, positively incompatible, with power of another kind. For example, the *dramatic* mind is incompatible with the *epic*. And though we should consent to suppose that some intellect might arise endowed upon a scale of such angelic comprehensiveness as to vibrate equally and indifferently towards either pole, still it is next to impossible, in the exercise and culture of the two powers, but some bias must arise which would give that advantage to the one over the other which the right arm has over the left. But the supposition, the very case put, is baseless, and countenanced by no precedent. Yet, under this previous difficulty, and with regard to a literature convulsed, if any ever was, by an almost total anarchy, it is a fact notorious to all who take an interest in Germany and its concerns, that Goethe did in one way or other, through the length and breadth of that vast country, establish a supremacy of influence wholly unexampled; a supremacy indeed perilous in a less honourable man, to those whom he might chance to hate, and with regard to himself thus far unfortunate, that it conferred upon every work proceeding from his pen a sort of papal indulgence, an immunity from criticism, or even from the appeals of good sense, such as it is not wholesome that any man should enjoy. Yet we repeat that German literature was and is in a condition of total anarchy: with this solitary exception, no name, even in the most narrow section of knowledge or of power, has ever been able in that country to challenge unconditional reverence; whereas, with us and in France, name the science, name the art, and we will name the dominant professor; a difference which partly arises out of the fact that England and France are governed in their opinions by two or three capital cities, whilst Germany looks for its leadership to as many cities as there are *residenzen* and universities: for instance, the little territory with which Goethe was connected presented no less than two such public lights; Weimar, the *residenz* or privileged abode of the Grand Duke, and Jena, the university founded by that house. Partly, however, this difference may be due to the greater restlessness, and to the greater energy as respects mere speculation, of the German mind. But no matter whence arising, or how interpreted, the fact is what we have described: absolute confusion, the "anarch old" of Milton, is the one deity whose sceptre is there paramount; and yet *there* it was, in that very realm of chaos, that Goethe built his throne. That he must have looked with trepidation and perplexity upon his wild empire and its "dark foundations," may be supposed. The tenure was uncertain to *him* as regarded its duration; to us it is equally uncertain, and in fact mysterious, as regards its origin. Meantime the mere fact, contrasted with the general tendencies of the German literary world, is sufficient to justify a notice, somewhat circumstantial, of the man in whose favour, whether naturally by force of genius, or by accident concurring with intrigue, so unexampled a result was effected.

Goethe was born at noonday on the 28th of August 1749, in his father's house at Frankfort on the Maine. The circumstances of his birth were thus far remarkable, that, unless Goethe's vanity deceived him, they led to a happy revolution hitherto retarded by female delicacy falsely directed. From some error of the midwife who attended his mother, the infant Goethe appeared to be still born. Sons there were as yet none from this marriage; everybody was therefore interested in the child's life; and the panic which arose in consequence, having survived its immediate occasion, was improved into a public resolution (for which no doubt society stood ready at that moment) to found some course of public instruction from this time forward for those who undertook professionally the critical duties of accoucheur.

We have noticed the house in which Goethe was born, as well as the city. Both were remarkable, and fitted to leave lasting impressions upon a young person of sensibility. As to the city, its antiquity is not merely venerable, but almost mysterious; towers were at that time to be found in the mouldering lines of its earliest defences, which belonged to the age of Charlemagne, or one still earlier; battlements adapted to a mode of warfare anterior even to that of feudalism or romance. The customs, usages, and local privileges of Frankfort, and the rural districts adjacent, were of a corresponding character. Festivals were annually celebrated at a short distance from the walls, which had descended from a dateless antiquity. Every thing which met the eye spoke the language of elder ages; whilst the river on which the place was seated, its great fair, which still held the rank of the greatest in Christendom, and its connection with the throne of Cæsar and his inauguration, by giving to Frankfort an interest and a public character in the eyes of all Germany, had the effect of countersigning, as it were, by state authority, the importance which she otherwise challenged to her ancestral distinctions. Fit house for such a city, and in due keeping with the general scenery, was that of Goethe's father. It had in fact been composed out of two contiguous houses; that accident had made it spacious and rambling in its plan; whilst a further irregularity had grown out of the original difference in point of level between the corresponding stories of the two houses, making it necessary to connect the rooms of the same *suite* by short flights of steps. Some of these features were no doubt removed by the recast of the house under the name of "repairs" (to evade a city bye-law), afterwards executed by his father; but such was the house of Goethe's infancy, and in all other circumstances of style and furnishing equally antique.

The spirit of society in Frankfort, without a court, a university, or a learned body of any extent, or a resident nobility in its neighbourhood, could not be expected to display any very high standard of polish. Yet, on the other hand, as an independent city, governed by its own separate laws and tribunals (that privilege of *autonomy* so dearly valued by ancient Greece) and possessing besides a resident corps of jurisprudents and of agents in various ranks for managing the interests of the German emperor and other princes, Frankfort had the means within herself of giving a liberal tone to the pursuits of her superior citizens, and of co-operating in no inconsiderable degree with the general movement of the times, political or intellectual. The memoirs of Goethe himself, and in particular the picture there given of his own family, as well as other contemporary glimpses of German domestic society in those days, are sufficient to show that much knowledge, much true cultivation of mind, much sound refinement of taste, were then distributed through the middle classes of German society; meaning by that very indeterminate expression those classes which for Frankfort composed the aristocracy, viz. all who had daily leisure, and regular funds for employing it to advantage. It is not necessary to add, because that is a fact applicable to all stages of society, that Frankfort presented many and various specimens of original talent, moving upon all directions of human speculation.

Yet, with this general allowance made for the capacities of the place, it is too evident that, for the most part, they lay inert and undeveloped. In many respects Frankfort resembled an English cathedral city, according to the standard of such places seventy years ago, not, that is to say, like Carlisle in this day, where a considerable manufacture exists, but like Chester as it is yet. The chapter of a cathedral, the resident ecclesiastics attached to the duties of so large an establishment, men always well educated, and generally having families, compose the original *nucleus*, around which soon gathers all that part of the local gentry who, for any purpose, whether of education for their children, or of social enjoyment for themselves, seek the advantages of a town. Hither resort all the timid old ladies who wish for conversation, or other forms of social amusement; hither resort the valetudinarians, male or female, by way of commanding superior medical advice at a cost not absolutely ruinous to themselves; and multitudes besides, with narrow incomes, to whom these quiet retreats are so many cities of refuge.

Such, in one view, they really are; and yet in another they have a vicious constitution. Cathedral cities in England, imperial cities without manufactures in Germany, are all in an improgressive condition. The public employments of every class in such places continue the same from generation to generation. The amount of superior families oscillates rather than changes; that is, it fluctuates within fixed limits: and, for all inferior families, being composed either of shopkeepers or of menial servants, they are determined by the number, or, which, on a large average, is the same, by the pecuniary power, of their employers. Hence it arises, that room is made for one man, in whatever line of dependence, only by the death of another; and the constant increments of the population are carried off into other cities. Not less is the difference of such cities as regards the standard of manners: how striking is the soft and urbane tone of the lower orders in a cathedral city, or in a watering place dependent upon ladies, contrasted with the bold, often insolent, demeanour of a self-dependent artisan or mutinous mechanic of Manchester and Glasgow.

Children, however, are interested in the state of society around them chiefly as it affects their parents. Those of Goethe were respectable, and perhaps tolerably representative of the general condition in their own rank. An English authoress of great talent, in her *Characteristics of Goethe*, has too much countenanced the notion that he owed his intellectual advantages exclusively to his mother. Of this there is no proof. His mother wins more esteem from the reader of this day, because she was a cheerful woman, of serene temper, brought into advantageous comparison with a husband much older than herself, whom circumstances had rendered moody, fitful, sometimes capricious, and confessedly obstinate in that degree which Pope has taught us to think connected with inveterate error:

> Stiff in opinion, always in the wrong,

unhappily presents an association too often actually occurring in nature, to leave much chance for error in presuming either quality from the other. And, in fact, Goethe's father was so uniformly obstinate in pressing his own views upon all who belonged to him, whenever he did come forward in an attitude of activity, that his family had much reason to be thankful for the rarity of such displays. Fortunately for them, his indolence neutralized his obstinacy. And the worst shape in which his troublesome temper showed itself, was in what concerned the religious reading of the family. Once begun, the worst book as well as the best, the longest no less than the shortest, was to be stedfastly read through to the last word of the last volume; no excess of yawning availed to obtain a reprieve, not, adds his son, though he were himself the leader of the yawners. As an illustration, he mentions Bowyer's *History of the Popes;* which awful series of records, the catacombs, as it were, in the palace of history, were actually traversed from one end to the other of the endless *suite* by the unfortunate house of Goethe. Allowing, however, for the father's unamiableness in this one point, upon all intellectual ground both parents seem to have met very much upon a level. Two illustrations may suffice, one of which occurred during the infancy of Goethe. The science of education was at that time making its first rude motions towards an ampler development; and, amongst other reforms then floating in the general mind, was one for eradicating the childish fear of ghosts, &c. The young Goethes, as it happened, slept not in separate beds only, but in separate rooms; and not unfrequently the poor children, under the stinging terrors of their lonely situation, stole away from their "forms," to speak in the hunter's phrase, and sought to rejoin each other. But in these attempts they were liable to surprises from the enemy; papa and mamma were both on the alert, and often intercepted the young deserter by a cross march or an ambuscade; in which cases each had a separate policy for enforcing obedience. The father, upon his general system of "perseverance," compelled the fugitive back to his quarters, and, in effect, exhorted him to persist in being frightened out of his wits. To his wife's gentle heart that course appeared cruel, and she reclaimed the delinquent by bribes; the peaches which her garden walls produced being the fund from which she chiefly drew her supplies for this branch of the secret service. What were her winter bribes, when the long nights would seem to lie heaviest on the exchequer, is not said. Speaking seriously, no man of sense can suppose that a course of suffering from terrors the most awful, under whatever influence supported, whether under the naked force of compulsion, or of *that* connected with bribes, could have any final effect in mitigating the passion of awe, connected, by our very dreams, with the shadowy and the invisible, or in tranquillizing the infantine imagination.

A second illustration involves a great moral event in the history of Goethe, as it was, in fact, the first occasion of his receiving impressions at war with his religious creed. Piety is so beautiful an ornament of the youthful mind, doubt or distrust so unnatural a growth from confiding innocence, that an infant freethinker is heard of not so much with disgust as with perplexity. A sense of the ludicrous is apt to intermingle; and we lose our natural horror of the result in wonder at its origin. Yet in this instance there is no room for doubt; the fact and the occasion are both on record; there can be no question about the date; and, finally, the accuser is no other than the accused. Goethe's own pen it is which proclaims, that already, in the early part of his seventh year, his reliance upon God as a moral governor had suffered a violent shock, was shaken, if not undermined. On the 1st of November 1755 occurred the great earthquake at Lisbon. Upon a double account, this event occupied the thoughts of all Europe for an unusual term of time; both as an expression upon a larger scale than usual of the mysterious physical agency concerned in earthquakes, and also for the awful human tragedy[1] which attended either the earthquake itself, or its immediate sequel in the sudden irruption of the Tagus. Sixty thousand persons, victims to the dark power in its first or its second *avatar*, attested the Titanic scale upon which it worked. Here it was that the shallow piety of the Germans found a stumbling-block. Those who have read any circumstantial history of the physical signs which preceded this earthquake, are aware that in England and Northern Germany many singular phenomena were observed, more or less manifestly connected with the same dark agency which terminated at Lisbon, and running before this final catastrophe at times so accurately varying with the distances, as to furnish something like a scale for measuring the velocity with which it moved. These German phenomena, circulated rapidly over all Germany by the journals of every class, had seemed to give to the Germans a nearer and more domestic interest in the great event, than belonged to them merely in their universal character of humanity. It is also well known to observers of national characteristics, that amongst the Germans the household charities, the *pieties of the hearth*, as they may be called, exist, if not really in greater strength, yet with much less of the usual balances or restraints. A German father, for example, is like the grandfather of other nations; and thus a piety, which in its own nature scarcely seems liable to excess, takes, in its external aspect, too often an air of effeminate imbecility. These two considerations are necessary to explain the intensity with which this Lisbon tragedy laid hold of the German mind, and chiefly under the one single aspect of its *undistinguishing* fury. Women, children, old men—these, doubtless, had been largely involved in the perishing sixty thousand; and that reflection, it would seem from Goethe's account, had so far embittered the sympathy of the Germans with their distant Portuguese brethren, that, in the Frankfort discussions, sullen murmurs had gradually ripened into bold impeachments of Providence. There can be no gloomier form of infidelity than that which questions the moral attributes of the Great Being in whose hands are the final destinies of us all. Such, however, was the form of Goethe's earliest scepticism, such its origin; caught up from the very echoes which rang through the streets of Frankfort when the subject occupied all men's minds: and such, for any thing that appears, continued to be its form thenceforwards to the close of his life, if speculations so crude could be said to have any form at all. Many are the analogies, some close ones, between England aud Germany with regard to the circle of changes they have run through, political or social, for a century back. The challenges are frequent to a comparison; and sometimes the result would be to the advantage of Germany, more often to ours. But in religious philosophy, which in reality is the true *popular* philosophy, how vast is the superiority on the side of this country. Not a shopkeeper or mechanic, we may venture to say, but would have felt this obvious truth, that surely the Lisbon earthquake yielded no fresh lesson, no peculiar moral, beyond what belonged to every man's experience in every age. A passage in the New Testament about the fall of the tower of Siloam, and the just construction of that event, had already anticipated the difficulty, if such it could be thought. Not to mention, that calamities upon the same scale in the earliest age of Christianity, the fall of the amphitheatre at Fidenæ, or the destruction of Pompeii, had presented the same problem as the Lisbon earthquake. Nay, it is presented daily in the humblest individual case, where wrong is triumphant over right, or innocence confounded with guilt in one common disaster. And that the parents of Goethe should have authorized his error, if only by their silence, argues a degree of ignorance in them which could not have co-existed with much superior knowledge in the public mind.

Goethe, in his Memoirs (book vi.), commends his father for the zeal with which he superintended the education of his children. But apparently it was a zeal without knowledge. Many things were taught imperfectly, but all casually, and as chance suggested them. Italian was studied a little, because the elder Goethe had made an Italian tour, and had collected some Italian books, and engravings by Italian masters. Hebrew was studied a little, because Goethe the son had a fancy for it, partly with a view to theology, and partly because there was a Jewish quarter, gloomy and sequestrated, in the city of Frankfort. French offered itself no doubt on many suggestions, but originally on occasion of a French theatre, supported by the staff of the French army when quartered in the same city. Latin was gathered in a random way from a daily sense of its necessity. English upon the temptation of a stranger's advertisement, promising upon moderate terms to teach that language in four weeks; a proof, by the way, that the system of bold innovations in the art of tuition had already commenced. Riding and fencing were also attempted under masters apparently not very highly qualified, and in the same desultory style of application. Dancing was taught to his family, strange as it may seem, by Mr Goethe himself. There is good reason to believe that not one of all these accomplishments was possessed by Goethe, when ready to visit the university, in a degree which made it practically of any use to him. Drawing and music were pursued confessedly as amusements; and it would be difficult to mention any attainment whatsoever which Goethe had carried to a point of excellence in the years which he spent under his father's care, unless it were his mastery over the common artifices of metre and the common topics of rhetoric, which fitted him for writing what are called occasional poems and *impromptus*. This talent he possessed in a remarkable degree, and at an early age; but he owed its cultivation entirely to himself.

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[1] Of this no picture can ever hope to rival that hasty one sketched in the letter of the chaplain to the Lisbon factory. The plague of Athens as painted by Thucydides or Lucretius, nay even the fabulous plague of London by De Foe, contain no scenes or situations equal in effect to some in this plain historic statement. Nay, it would perhaps be difficult to produce a passage from Ezekiel, from Æschylus, or from Shakspeare, which would so profoundly startle the sense of sublimity as one or two of his incidents.

In a city so orderly as Frankfort, and in a station privileged from all the common hardships of poverty, it can hardly be expected that many incidents should arise, of much separate importance in themselves, to break the monotony of life; and the mind of Goethe was not contemplative enough to create a value for common occurrences through any peculiar impressions which he had derived from them. In the years 1763 and 1764, when he must have been from fourteen to fifteen years old, Goethe witnessed the inauguration and coronation of a king of the Romans, a solemn spectacle connected by prescription with the city of Frankfort. He describes it circumstantially, but with very little feeling, in his Memoirs. Probably the prevailing sentiment, on looking back at least to this transitory splendour of dress, processions, and ceremonial forms, was one of cynical contempt. But this he could not express, as a person closely connected with a German court, without giving much and various offence. It is with some timidity even that he hazards a criticism upon single parts of the costume adopted by some of the actors in that gorgeous scene. White silk stockings, and pumps of the common form, he objects to as out of harmony with the antique and heraldic aspects of the general costume, and ventures to suggest either boots or sandals as an improvement. Had Goethe felt himself at liberty from all restraints of private consideration in composing these Memoirs, can it be doubted that he would have taken his retrospect of this Frankfort inauguration from a different station; from the station of that stern revolution which, within his own time, and partly under his own eyes, had shattered the whole imperial system of thrones, in whose equipage this gay pageant made so principal a figure, had humbled Cæsar himself to the dust, and left him an emperor without an empire. We at least, for our parts, could not read without some emotion one little incident of these gorgeous scenes recorded by Goethe, namely, that when the emperor, on rejoining his wife for a few moments, held up to her notice his own hands and arms arrayed in the antique habiliments of Charlemagne, Maria Theresa—she whose children were summoned to so sad a share in the coming changes—gave way to sudden bursts of loud laughter, audible to the whole populace below her. That laugh on surveying the departing pomps of Charlemagne, must, in any contemplative ear, have rung with a sound of deep significance, and with something of the same effect which belongs to a figure of death introduced by a painter, as mixing in the festal dances of a bridal assembly.

These pageants of 1763–64 occupy a considerable space in Goethe's Memoirs, and with some *logical* propriety at least, in consideration of their being exclusively attached to Frankfort, and connected by manifold links of person and office with the privileged character of the city. Perhaps he might feel a sort of narrow local patriotism in recalling these scenes to public notice by description, at a time when they had been irretrievably extinguished as realities. But, after making every allowance for their local value to a Frankfort family, and for their memorable splendour, we may venture to suppose that by far the most impressive remembrances which had gathered about the boyhood of Goethe, were those which pointed to Frederick of Prussia. This singular man, so imbecile as a pretender to philosophy and new lights, so truly heroic under misfortunes, was the first German who created a German interest, and gave a transient unity to the German name, under all its multiplied divisions. Were it only for this conquest of difficulties so peculiar, he would deserve his German designation of Fred. the Unique (*Fritz der einzige*). He had been partially tried and known previously; but it was the Seven Years' War which made him the popular idol. This began in 1756; and to Frankfort, in a very peculiar way, that war brought dissensions and heart-burnings in its train. The imperial connections of the city with many public and private interests, pledged it to the anti-Prussian cause. It happened also that the truly German character of the reigning imperial family, the domestic habits of the empress and her young daughters, and other circumstances, were of a nature to endear the ties of policy: self-interest and affection pointed in the same direction. And yet were all these considerations allowed to melt away before the brilliant qualities of one man, and the romantic enthusiasm kindled by his victories. Frankfort was divided within herself; the young and the generous were all dedicated to Frederick: a smaller party, more cautious and prudent, were for the imperialists. Families were divided upon this question against families, and often against themselves; feuds, begun in private, issued often into public violence; and, according to Goethe's own illustration, the streets were vexed by daily brawls, as hot and as personal as of old between the Capulets and Montagues.

These dissensions, however, were pursued with not much personal risk to any of the Goethes, until a French army passed the Rhine as allies of the imperialists. One corps of this force took up their quarters in Frankfort; and the Comte Thorane, who held a high appointment on the staff, settled himself for a long period of time in the spacious mansion of Goethe's father. This officer, whom his place made responsible for the discipline of the army in relation to the citizens, was naturally by temper disposed to moderation and forbearance. He was indeed a favourable specimen of French military officers under the old system; well bred, not arrogant, well informed, and a friend of the fine arts. For painting, in particular, he professed great regard and some knowledge. The Goethes were able to forward his views amongst German artists; whilst, on the other hand, they were pleased to have thus an opportunity of directing his patronage towards some of their own needy connections. In this exchange of good offices, the two parties were for some time able to maintain a fair appearance of reciprocal good will. This on the comte's side, if not particularly warm, was probably sincere; but in Goethe the father it was a masque for inveterate dislike. A natural ground of this existed in the original relations between them. Under whatever disguise or pretext, the Frenchman was in fact a military intruder: he occupied the best suit of rooms in the house, used the furniture as his own; and, though upon private motives he abstained from doing all the injury which his situation authorized (so as in particular to have spread his fine military maps upon the floor rather than disfigure the decorated walls by nails), still he claimed credit, if not services of requital, for all such instances of forbearance. Here were grievances enough; but, in addition to these, the comte's official appointments drew upon him a weight of daily business, which kept the house in a continual uproar. Farewell to the quiet of a literary amateur, and the orderliness of a German household. Finally, the comte was a Frenchman. These were too many assaults upon one man's patience. It will be readily understood, therefore, how it happened, that, whilst Goethe's gentle-minded mother, with her flock of children, continued to be on the best terms with Comte Thorane, the master of the house kept moodily aloof, and retreated from all intercourse.

Goethe, in his own Memoir, enters into large details upon this subject; and from him we shall borrow the *denouement* of the tale. A crisis had for some time been lowering over the French affairs in Frankfort; things seemed ripening for a battle; and at last it came. Flight, siege, bombardment, possibly a storm, all danced before the eyes of the terrified citizens. Fortunately, however, the battle took place at the distance of four or five miles from Frankfort. Monsieur le Comte was absent, of course, on the field of battle. His unwilling host thought that on such an occasion he also might go out in quality of spectator; and with this purpose he connected another, worthy of a Parson Adams. It is his son who tells the story, whose filial duty was not proof against his sense of the ludicrous. The old gentleman's hatred of the French had by this time brought him over to his son's admiration of the Prussian hero. Not doubting for an instant that victory would follow that standard, he resolved on this day to offer in person his congratulations to the Prussian army, whom he already viewed as his liberator from a domestic nuisance. So purposing, he made his way cautiously to the suburbs; from the suburbs, still listening at each advance, he went forward to the country; totally forgetting, as his son insists, that, however completely beaten, the French army must still occupy some situation or other between himself and his German deliverer. Coming, however, at length to a heath, he found some of those marauders usually to be met with in the rear of armies, prowling about, and at intervals amusing themselves with shooting at a mark. For want of a better, it seemed not improbable that a large German head might answer their purpose: certain signs admonished him of this, and the old gentleman crept back to Frankfort. Not many hours after came back also the comte, by no means creeping, however; on the contrary, crowing with all his might for a victory which he averred himself to have won. There had in fact been an affair, but on no very great scale, and with no distinguished results. Some prisoners, however, he brought, together with some wounded; and naturally he expected all well disposed persons to make their compliments of congratulation upon his triumph. Of this duty poor Mrs Goethe and her children cheerfully acquitted themselves that same night; and Monsieur le Comte was so well pleased with the sound opinions of the little Goethes, that he sent them in return a collection of sweetmeats and fruits. All promised to go well; intentions, after all, are not acts; and there certainly is not, nor ever was, any treason in taking a morning's walk. But, as ill luck would have it, just as Mr Goethe was passing the comte's door, out came the comte in person, purely by accident, as we are told; but we suspect that the surly old German, either under his morning hopes or his evening disappointments, had talked with more frankness than prudence. "Good evening to you, Herr Goethe," said the comte; "you are come, I see, to pay your tribute of congratulation. Somewhat of the latest, to be sure; but no matter." "By no means," replied the German; "by no means; *mit nichten*. Heartily I wished, the whole day long, that you and your cursed gang might all go to the devil together." Here was plain speaking, at least. The Comte Thorane could no longer complain of dissimulation. His first movement was to order an arrest; and the official interpreter of the French army took to himself the whole credit that he did not carry it into effect. Goethe takes the trouble to report a dialogue, of length and dulness absolutely incredible, between this interpreter and the comte. No such dialogue, we may be assured, ever took place. Goethe may, however, be right in supposing that, amongst a foreign soldiery, irritated by the pointed contrasts between the Frankfort treatment of their own wounded, and of their prisoners who happened to be in the same circumstances, and under a military council not held to any rigorous responsibility, his father might have found no very favourable consideration of his case. It is well, therefore, that after some struggle the comte's better nature triumphed. He suffered Mrs Goethe's merits to outweigh her husband's delinquency; countermanded the order for arrest, and, during the remainder of their connection, kept at such a distance from his moody host as was equally desirable for both. Fortunately that remainder was not very long. Comte Thorane was soon displaced; and the whole army was soon afterwards withdrawn from Frankfort.

In his fifteenth year Goethe was entangled in some connection with young people of inferior rank, amongst whom was Margaret, a young girl about two years older than himself, and the object of his first love. The whole affair, as told by Goethe, is somewhat mysterious. What might be the final views of the elder parties it is difficult to say; but Goethe assures us that they used his services only in writing an occasional epithalamium, the pecuniary acknowledgment for which was spent jovially in a general banquet. The magistrates, however, interfered, and endeavoured to extort a confession from Goethe: he, as the son of a respectable family, was to be pardoned; the others to be punished. No confession, however, could be extorted; and for his own part he declares that, beyond the offence of forming a clandestine connection, he had nothing to confess. The affair terminated, as regarded himself, in a severe illness. Of the others we hear no more.

The next event of importance in Goethe's life was his removal to college. His own wishes pointed to Göttingen, but his father preferred Leipsic. Thither accordingly he went, but he carried his obedience no farther. Declining the study of jurisprudence, he attached himself to general literature. Subsequently he removed to the university of Strasburg; but in neither place could it be said that he pursued any regular course of study. His health suffered at times during this period of his life; at first from an affection of the chest, caused by an accident on his first journey to Leipsic; the carriage had stuck fast in the muddy roads, and Goethe exerted himself too much in assisting to extricate the wheels. A second illness connected with the digestive organs brought him into considerable danger.

After his return to Frankfort, Goethe commenced his career as an author. In 1773, and the following year, he made his maiden essay in *Goetz of Berlichingen*, a drama (the translation of which, remarkably enough, was destined to be the literary *coup d'essai* of Sir Walter Scott), and in the far-famed *Werther*. The first of these was pirated; and in consequence the author found some difficulty in paying for the paper of the genuine edition, which part of the expense, by his contract with the publisher, fell upon himself. The general and early popularity of the second work is well known. Yet, except in so far as it might spread his name abroad, it cannot be supposed to have had much influence in attracting that potent patronage which now began to determine the course of his future life. So much we collect from the account which Goethe himself has left us of this affair in its earliest stages.

"I was sitting alone in my room," says he, "at my father's house in Frankfort, when a gentleman entered, whom at first I took for Frederick Jacobi, but soon discovered by the dubious light to be a stranger. He had a military air; and announcing himself by the name of Von Knebel, gave me to understand in a short explanation, that being in the Prussian service, he had connected himself, during a long residence at Berlin and Potsdam, with the literati of those places; but that at present he held the appointment from the court of Weimar of travelling tutor to the Prince Constantine. This I heard with pleasure; for many of our friends had brought us the most interesting accounts from Weimar, in particular that the Duchess Amelia, mother of the young grand duke and his brother, summoned to her assistance in educating her sons the most distinguished men in Germany; and that the university of Jena co-operated powerfully in all her liberal plans. I was aware also that Wieland was in high favour; and that the German Mercury (a literary journal of eminence) was itself highly creditable to the city of Jena, from which it issued. A beautiful and well-conducted theatre had besides, as I knew, been lately established at Weimar. This, it was true, had been destroyed; but that event, under common circumstances so likely to be fatal as respected the present, had served only to call forth the general expression of confidence in the young prince as a restorer and upholder of all great interests, and true to his purposes under any calamity." Thinking thus, and thus prepossessed in favour of Weimar, it was natural that Goethe should be eager to see the prince. Nothing was easier. It happened that he and his brother Constantine were at this moment in Frankfort, and Von Knebel willingly offered to present Goethe. No sooner said than done; they repaired to the hotel, where they found the illustrious travellers, with Count Goertz, the tutor of the elder.

Upon this occasion an accident, rather than any previous reputation of Goethe, was probably the determining occasion which led to his favour with the future sovereign of Weimar. A new book lay upon the table; that none of the strangers had read it, Goethe inferred from observing that the leaves were as yet uncut. It was a work of Moser (*Patriotische Phantasien*); and, being political rather than literary in its topics, it presented to Goethe, previously acquainted with its outline, an opportunity for conversing with the prince upon subjects nearest to his heart, and of showing that he was not himself a mere studious recluse. The opportunity was not lost; the prince and his tutor were much interested, and perhaps a little surprised. Such subjects have the further advantage, according to Goethe's own illustration, that, like the Arabian thousand and one nights, as conducted by the Sultana Scheherezade, "never ending, still beginning," they rarely come to any absolute close, but so interweave one into another, as still to leave behind a large arrear of interest. In order to pursue the conversation, Goethe was invited to meet them soon after at Mentz. He kept the appointment punctually; made himself even more agreeable; and finally received a formal invitation to enter the service of this excellent prince, who was now beginning to collect around him all those persons who have since made Weimar so distinguished a name in connection with the German literature. With some opposition from his father, who held up the rupture between Voltaire and Frederick of Prussia as a precedent applying to all possible connections of princes and literati, Goethe accepted the invitation; and henceforwards, for upwards of fifty-five years, his fortunes were bound up with those of the ducal house of Weimar.

The noble part which that house played in the great modern drama of German politics is well known, and would have been better known had its power been greater. But the moral value of its sacrifices and its risks is not the less. Had greater potentates shown equal firmness, Germany would not have been laid at the feet of Napoleon. In 1806 the grand duke was aware of the peril which awaited the allies of Prussia; but neither his heart nor his conscience would allow of his deserting a friend in whose army he held a principal command. The decisive battle took place in his own territory, and not far from his own palace and city of Weimar. Personally he was with the Prussian army; but his excellent consort stayed in the palace to encourage her subjects, and as far as possible to conciliate the enemy by her presence. The fortune of that great day, the 14th of October 1806, was decided early; and the awful event was announced by a hot retreat and a murderous pursuit through the streets of the town. In the evening Napoleon arrived in person; and now came the trying moment. "The duchess," says an Englishman well acquainted with Weimar and its court, "placed herself on the top of the staircase to greet him with the formality of a courtly reception. Napoleon started when he beheld her, *Qui êtes vous?* he exclaimed with characteristic abruptness. *Je suis la Duchesse de Weimar. Je vous plains*, he retorted fiercely, *J'écraserai votre mari;* he then added, 'I shall dine in my apartment,' and rushed by her. The night was spent on the part of the soldiery in all the horrid excesses of rapine. In the morning the duchess sent to inquire concerning the health of his majesty the emperor, and to solicit an audience. He, who had now benefited by his dreams, or by his reflections, returned a gracious answer, and invited himself to breakfast with her in her apartment." In the conversation which ensued, Napoleon asked her if her husband were mad, upon which she justified the duke by appealing to his own magnanimity, asking in her turn if his majesty would have approved of his deserting the king of Prussia at the moment when he was attacked by so potent a monarch as himself. The rest of the conversation was in the same spirit, uniting with a sufficient concession to the circumstances of the moment a dignified vindication of a high-minded policy. Napoleon was deeply impressed with respect for her, and loudly expressed it. For her sake, indeed, he even affected to pardon her husband, thus making a merit with her of the necessity which he felt, from other motives, for showing forbearance towards a family so nearly allied to that of St Petersburg. In 1813 the grand duke was found at his post in that great gathering of the nations which took place on the stupendous fields of Leipsic, and was complimented by the allied sovereigns as one of the most faithful amongst the faithful to the great cause, yet undecided, of national independence.

With respect to Goethe, as a councillor so near the duke's person, it may be supposed that his presence was never wanting where it promised to be useful. In the earlier campaigns of the duke, Goethe was his companion; but in the final contest with Napoleon he was unequal to the fatigues of such a post. In all the functions of peace, however, he continued to be a useful servant to the last, though long released from all official duties. Each had indeed most honourably earned the gratitude of the other. Goethe had surrendered the flower of his years and the best energies of his mind to the service of his serene master. On the other hand, that master had to him been at once his Augustus and his Mæcenas; such is his own expression. Under him he had founded a family, raised an estate, obtained titles and decorations from various courts; and in the very vigour of his life he had been allowed to retire, with all the honours of long service, to the sanctuary of his own study, and to the cultivation of his leisure, as the very highest mode in which he could further the public interest.

The life of Goethe was so quiet and so uniform after the year 1775, when he may first be said to have entered into active life, by taking service with the Duke of Weimar, that a biographer will find hardly any event to notice, except two journeys to Italy, and one campaign in 1792, until he draws near the close of his long career. It cannot interest an English reader to see the dates of his successive appointments. It is enough to know that they soon raised him to as high a station as was consistent with literary leisure; and that he had from the beginning enjoyed the unlimited confidence of his sovereign. Nothing remained, in fact, for the subject to desire which the prince had not previously volunteered. In 1825, they were able to look back upon a course of uninterrupted friendship, maintained through good and evil fortunes unexampled in their agitation and interest for fifty years. The duke commemorated this remarkable event by a jubilee, and by a medal in honour of Goethe. Full of years and honour, this eminent man might now begin to think of his departure. However, his serenity continued unbroken nearly for two years more, when his illustrious patron died. That shock was the first which put his fortitude to trial. In 1830 others followed; the duchess, who had won so much admiration from Napoleon, died; then followed his own son; and there remained little now to connect his wishes with the earth. The family of his patron he had lived to see flourishing in his descendants to the fourth generation. His own grandchildren were prosperous and happy. His intellectual labours were now accomplished. All that remained to wish for was a gentle dismission. This he found in the spring of 1832. After a six days' illness, which caused him no apparent suffering, on the morning of the 22d of March he breathed away as if into a gentle sleep, surrounded by his daughter-in-law and her children. Never was a death more in harmony with the life it closed; both had the same character of deep and absolute serenity.

Such is the outline of Goethe's life, traced through its principal events. But as these events, after all, borrow their interest mainly from the consideration allowed to Goethe as an author, and as a model in the German literature, —*that* being the centre about which all secondary feelings of interest in the man must finally revolve,—it thus becomes a duty to throw a glance over his principal works. Dismissing his songs, to which has been ascribed by some critics a very high value for their variety and their lyrical enthusiasm; dismissing also a large body of short miscellaneous poems, suited to the occasional circumstances in which they arose; we may throw the capital works of Goethe into two classes, philosophic novels, and dramas. The novels, which we call *philosophic* by way of expressing their main characteristic in being written to serve a preconceived purpose, or to embody some peculiar views of life, or some aspects of philosophic truth, are three, viz. the *Werther's Leiden;* secondly, the *Wilhelm Meister;* and, lastly, the *Wahlver-wandschaften.* The first two exist in English translations; and though the *Werther* had the disadvantage of coming to us through a French version, already, perhaps, somewhat coloured and distorted to meet the Parisian standards of sentiment, yet, as respects Goethe and his reputation amongst us, this wrong has been redressed, or compensated at least, by the good fortune of his *Wilhelm Meister,* in falling into the hands of a translator whose original genius qualified him for sympathizing even to excess with any real merits in that work. This novel is in its own nature and purpose sufficiently obscure; and the commentaries which have been written upon it by the Humboldts, Schlegels, &c. make the enigma still more enigmatical. We shall not venture abroad upon an ocean of discussion so truly dark, and at the same time so illimitable. Whether it be qualified to excite any deep and *sincere* feeling of one kind or another in the German mind,—in a mind trained under German discipline,—this we will consent to waive as a question not immediately interesting to ourselves. Enough that it has not gained, and will not gain, any attention in this country; and this not only because it is thoroughly deficient in all points of attraction to readers formed upon our English literature, but because in some capital circumstances it is absolutely repulsive. We do not wish to offend the admirers of Goethe; but the simplicity of truth will not allow us to conceal, that in various points of description or illustration, and sometimes in the very outline of the story, the *Wilhelm Meister* is at open war, not with decorum and good taste merely, but with moral purity and the dignity of human nature. As a novelist, Goethe and his reputation are problems, and likely to continue such, to the countrymen of Mrs Inchbald, Miss Harriet Lee, Miss Edgeworth, and Sir Walter Scott. To the dramatic works of Goethe we are disposed to pay more homage; but neither in the absolute amount of our homage at all professing to approach his public admirers, nor to distribute the proportions of this homage amongst his several performances according to the graduations of *their* scale. The *Iphigenie* is built upon the old subject of Iphigenia in Tauris, as treated by Euripides and other Grecian dramatists; and, if we are to believe a Schlegel, it is in beauty and effect a mere echo or reverberation from the finest strains of the old Grecian music. That it is somewhat nearer to the Greek model than a play after the fashion of Racine, we grant. Setting aside such faithful transcripts from the antique as the Samson Agonistes, we might consent to view Goethe as that one amongst the moderns who had made the closest approximation to the Greek stage: *Proximus,* we might say, with Quintilian, but with him we must add, “*sed longo intervallo;* and if in the second rank, yet nearer to the third than to the first. Two other dramas, the *Clavigo* and the *Egmont,* fall below the *Iphigenie* by the very character of their pretensions; the first as too openly renouncing the grandeurs of the ideal; the second as confessedly violating the historic truth of character, without temptation to do so, and without any consequent indemnification. The *Tasso* has been supposed to realize an Italian beauty of genial warmth and of sunny repose; but from the common defect of German criticism—the absence of all sufficient illustrations—it is as difficult to understand the true nature and constituents of the supposed Italian standard set up for the regulation of our judgments, as it is to measure the degree of approach made to that standard in this particular work. *Eugenie* is celebrated for the artificial burnish of the style, but otherwise has been little relished. It has the beauty of marble sculpture, say the critics of Goethe, but also the coldness. We are not often disposed to quarrel with these critics as *below* the truth in their praises; in this instance we are. The *Eugenie* is a fragment, or (as Goethe himself called it in conversation) a *torso,* being only the first drama in a trilogy or series of three dramas, each having a separate plot, whilst all are parts of a more general and comprehensive plan. It may be charged with languor in the movement of the action, and with excess of illustration. Thus, *e. g.* the grief of the prince for the supposed death of his daughter, is the monotonous topic which occupies one entire act. But the situations, though not those of *scenical* distress, are so far from being unexciting, that, on the contrary, they are too powerfully afflicting.

The lustre of all these performances, however, is eclipsed by the unrivalled celebrity amongst German critics of the *Faust.* Upon this it is better to say nothing than too little. How trifling an advance has been made towards clearing the ground for any sane criticism, may be understood from this fact, that as yet no two people have agreed about the meaning of any separate scene, or about the drift of the whole. Neither is this explained by saying, that until towards the close of Goethe's life the *Faust* was a fragment; for no additional light was thrown upon the main question by the publication of the second part.

One work there is of Goethe's which falls into neither of the classes here noticed; we mean the *Hermann and Dorothea,* a narrative poem, in hexameter verse. This appears to have given more pleasure to readers not critical, than any other work of its author; and it is remarkable that it traverses humbler ground, as respects both its subject, its characters, and its scenery. From this, and other indications of the same kind, we are disposed to infer that Goethe mistook his destination; that his aspiring nature misled him; and that his success would have been greater had he confined himself to the *real* in domestic life, without raising his eyes to the *ideal.*

We must also mention, that Goethe threw out some novel speculations in physical science, and particularly in physiology, in the doctrine of colours, and in comparative anatomy, which have divided the opinions of critics even more than any of those questions which have arisen upon points more directly connected with his avowed character of poet.

It now remains to say a few words by way of summing up his pretensions as a man, and his intellectual power in the age to which he belonged. His rank and value as a moral being are so plain as to be legible to him who runs. Everybody must feel that his temperament and constitutional tendency was of that happy quality, the animal so nicely balanced with the intellectual, that with any ordinary measure of prosperity he could not be otherwise than a good man. He speaks himself of his own "virtue," *sans phrase;* and we tax him with no vanity in doing so. As a young man even at the universities, which at that time were barbarously sensual in Germany, he was (for so much we collect from his own Memoirs) eminently capable of self-restraint. He preserves a tone of gravity, of sincerity, of respect for female dignity, which we never find associated with the levity and recklessness of vice. We feel throughout, the presence of one who, in respecting others, respects himself; and the cheerfulness of the presiding tone persuades us at once that the narrator is in a healthy moral condition, fears no ill, and is conscious of having meditated none. Yet at the same time we cannot disguise from ourselves that the moral temperament of Goethe was one which demanded prosperity: had he been called to face great afflictions, singular temptations, or a billowy and agitated course of life, our belief is that his nature would have been found unequal to the strife; he would have repeated the mixed and moody character of his father. Sunny prosperity was essential to his nature; his virtues were adapted to that condition. And happily that was his fate. He had no personal misfortunes; his path was joyous in this life; and even the reflex sorrow from the calamities of his friends did not press too heavily on his sympathies; none of these were in excess either as to degree or duration.

In this estimate of Goethe as a moral being, few people will differ with us, unless it were the religious bigot. And to him we must concede thus much, that Goethe was not that religious creature which by nature he was intended to become. This is to be regretted: Goethe was naturally pious, and reverential towards higher natures; and it was in the mere levity or wantonness of youthful power, partly also through that early false bias growing out of the Lisbon earthquake, that he falsified his original destination. Do we mean, then, that a childish error could permanently master his understanding? Not so; *that* would have been corrected with his growing strength. But having once arisen, it must for a long time have moulded his feelings; *until* corrected, it must have impressed a corresponding false bias upon his practical way of viewing things; and that sort of false bias, once established, might long survive a mere error of the understanding. One thing is undeniable. Goethe had so far corrupted and clouded his natural mind, that he did not look up to God, or the system of things beyond the grave, with the interest of reverence and awe, but with the interest of curiosity.

Goethe, however, in a moral estimate, will be viewed pretty uniformly. But Goethe intellectually, Goethe as a power acting upon the age in which he lived, that is another question. Let us put a case; suppose that Goethe's death had occurred many years ago, say in the year 1785, what would have been the general impression? Would Europe have felt a shock? Would Europe have been sensible even of the event? Not at all: it would have been obscurely noticed in the newspapers of Germany, as the death of a novelist who had produced some effect about ten years before. In 1832, it was announced by the post-horns of all Europe as the death of him who had written the *Wilhelm Meister,* the *Iphigenie,* and the *Faust,* and who had been enthroned by some of his admirers on the same seat with Homer and Shakspeare, as composing what they termed the *trinity of men of genius.* And yet it is a fact, that, in the opinion of some amongst the acknowledged leaders of our own literature for the last twenty-five years, the *Werther* was superior to all which followed it, and for mere power was the paramount work of Goethe. For ourselves, we must acknowledge our assent upon the whole to this verdict; and at the same time we will avow our belief that the reputation of Goethe must decline for the next generation or two, until it reaches its just level. Three causes, we are persuaded, have concurred to push it so far beyond the proportion of real and genuine interest attached to his works. *First,* his extraordinary age; for the last twenty years Goethe had been the patriarch of the German literature: *secondly,* the splendour of his official rank at the court of Weimar; he was the minister and private friend of the patriot sovereign among the princes of Germany: *thirdly,* the quantity of enigmatical and unintelligible writing which he has designedly thrown into his latter works, by way of keeping up a system of discussion and strife upon his own meaning amongst the critics of his country. These disputes, had his meaning been of any value in his own eyes, he would naturally have settled by a few authoritative words from himself; but it was his policy to keep alive the feud in a case where it was of importance that his name should continue to agitate the world, but of none at all that he should be rightly interpreted. (T. DE Q.)

(Consult especially the original and profound views of Goethe's life and writings in Carlyle's *Miscellanies.* An admirable paper on Goethe in *Passing Thoughts,* by James Douglas, Esq. of Cavers, is one of the most eloquent and appreciative dissertations on his religious and philosophical opinions that has yet appeared. In Germany have recently appeared *Goethe's Leben,* von Heinrich Viehoff, 4 vols. 1847–1853; and *Goethe's Leben,* von J. W. Schäfer, 1851, Consult also *Goethe and his contemporaries,* by Mrs Austin; and Mr Oxenford's translation of *Eckermann's Conversations.* A complete and valuable biography of Goethe, with sketches of his age and contemporaries, has just (1855) appeared, by G. H. Lewes, in 2 vols. 8vo.)

GOG (גּוֹג) occurs in Ezek. xxxviii. 3, 14, and xxxix. 11, as a proper name.

Interpreters have given very different explanations of the terms Gog and Magog; but they have generally understood them as symbolical expressions for the heathen nations of Asia, or more particularly for the Scythians, a vague knowledge of whom seems to have reached the Jews in Palestine. Thus Josephus[1] has dropped the Hebrew word *Magog*, and rendered it by Σκύθαι: and so does Jerome; while Suidas renders it by Πέρσαι—a difference which matters but little in the main question, since Σκύθαι, in the ancient authors, is but a collective name for the northern but partially-known tribes;[2] and, indeed, as such a collective name, *Magog* seems also to indicate in the Hebrew the tribes about the Caucasian mountains.[3] Bochart[4] supports the opinion of Josephus, though by but very precarious etymologies. According to Reinegge some of the Caucasian people call their mountains *Gog*, and the highest northern points *Magog*.

GOGGRAH, a large river of Hindustan, the remotest feeder of which is the Eastern Kalee, having its source on the south-western declivity of the Himalayan range forming the northern boundary of the British district of Kumayon. The elevation above the sea of the source is between 17,000 and 18,000 feet. The Kalee takes a southerly direction, receiving in its course the Dhouli, the Gori or Gorigunga, the Chumulea, and the western Surjoo. The last-named stream is the most important of its feeders, and below the confluence the united stream is no longer called the Kalee, but variously the Sarda, the Sarjoo, and the Goggrah. By subsequent accessions it becomes a considerable river; and at Birimdeo, distant 148 miles from its source, it leaves the mountains and enters the plains of Bengal. From this point the Goggrah takes a south-easterly direction, and after a total course of about 600 miles falls into the Ganges in Lat. 25. 46., Long. 84. 40.

GOGO, a sea-port of Hindustan, in the peninsula of Kattywar and district of Ahmedabad, situated on the west side of the Gulf of Cambay. It is considered as a safe roadstead during the south-west monsoon, where ships may be supplied with stores and provisions, and repair any damage they may have sustained. The inhabitants, who are principally Mohammedans, build vessels of from 50 to 300 tons burden; and carry on a considerable trade with Bombay and other places, the chief export being cotton. The Lascars of this place are named Siddhees: they are descendants of the Abyssinians, and are held in much estimation for their nautical skill and bravery. It is an ancient town, and has fallen greatly into decay; but since it came into the possession of the British it has been gradually increasing in commerce and population. E. Long. 72. 21., N. Lat. 21. 39.

GOGUET, ANTOINE-YVES, a distinguished French writer, born at Paris Jan. 18, 1716. From his infancy he was connected by ties of friendship with Alexander Conrad Fugère, the learned editor of the *Journal des Savans;* they studied philosophy together at the college of Harcourt; and when Goguet undertook the work which distinguishes his name, Fugère assisted him with criticisms and materials. In the midst of these labours Goguet was cut off by an attack of small-pox, May 1, 1758, and his friend was so deeply affected by his bereavement that he only survived the shock three days. Goguet's work is entitled *De l'Origine des Lois, des Arts, et des Sciences, et des leur Progrès chez les anciens peuples*, Paris 1758, 3 vols. 4to. Of this valuable work there have been several editions; but the first is the best. An excellent translation of it was published at Edinburgh in 1761, in 3 vols. 8vo, by Dr Henry, the historian of Great Britain. The period embraced in the work extends from the establishment of civil society to the reign of Cyrus. It is divided into three parts, and each part into six books, which treat separately of government, the arts and manufactures, the sciences, commerce and navigation, the military art, and, lastly, manners and usages. The style is agreeable, though occasionally marred by traces of bad taste. At the end of each volume are discussed, in learned dissertations, those points the detailed examination of which could not easily enter into the body of the work. An *Eloge* of Goguet was printed in the *Année Littéraire*, 1758, tome iv., and in the supplement to the *Journal des Savans* for the month of July in the same year.

GOHUD, a fortified town of Hindustan, in the territory of Gwalior, or possessions of the Scindia family, situated on the route from Etawa to Gwalior, 28 miles N.E. of the latter. About the middle of the last century Gohud was a small village attached to the district of Gwalior, and the rannah's ancestors were zemindars of this village. Bheem Singh, the rannah, prior to the battle of Paniput, in 1761 acquired possession of Gwalior, but it was taken from him by the Mahrattas. When this nation lost the battle of Paniput, the rannah of Gohud attempted to shake off their yoke, but was conquered by Ragoonauth Row in 1766, and compelled to continue tributary. On a subsequent rupture Gohud was taken by Scindia, in 1784. A treaty was concluded by the British government, 17th Jan. 1804, with the rannah of Gohud, by which he was to be established in the sovereignty of Gohud, Gwalior, and a considerable number of adjacent districts. This treaty however was never carried into effect, and a new treaty was concluded, by which the rajah agreed to relinquish the country and fort of Gohud and the adjoining districts to Scindia, receiving in exchange from the British government the territory of Dholpoor, which is still ruled by his descendants. Gohud is in E. Long. 78. 26., N. Lat. 26. 25.

GOITRE, the name given to an encysted tumour seated in the thyroid gland; a disease of frequent occurrence among the Swiss Alps and in South America. See CRETINS.

GOIZUETA, a town of Spain, 27 miles N.W. of Pampeluna, and in the province of Navarra. It stands in a valley traversed by the river Urumea, a tributary of the San Sebastian, teeming with trout, salmon, and other excellent fish. In the vicinity of Goizneta there are iron and copper mines, but very inefficiently worked. Pop. about 3200.

GOLCONDA, a strong fortress of Hindustan, on a hill about six miles W.N.W. from Hyderabad, strongly defended both by nature and art, but being situated on a rock, it is excessively hot and unhealthy. The principal inhabitants and bankers of Hyderabad are permitted to reside in this fort, which is also the depository of the treasures of the Nizam. The wealth of Golconda is proverbial; but the diamond mines so often referred to by old writers have ceased to be remunerative. Golconda was once the capital of an extensive kingdom of native Hindu princes, which arose on the dissolution of the Bhamenee dynasty; but being taken by Aurungzebe by treachery in 1687, after a siege of seven months, the whole territory became incorporated with the empire of Delhi. In its vicinity are numerous handsome tombs. The fort is in Lat. 17.22., Long. 78.29.

GOLD is, next to iron, the most widely diffused metal on the face of the earth. It occurs in granite, the oldest rock known to us, and in all the rocks derived from it; it is also found in the vein-stones which traverse other geological formations. From other metals it is readily distinguished by its reddish-yellow colour, and from metallic compounds of a similar tint by its high specific gravity, which varies from 19·2 when it is fused, to 19·4 or 19·5 when it is hammered. Its chemical equivalent on the hydrogen scale is generally taken as 98·5, but some prefer to double this and make its

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[1] *Antiq.* i., 6, 3.

[2] Cellar, *Notit.* ii., 753, *sq.*

[3] Comp. Jerome on Ezek., *ibid.*

[4] *Phal.* iii., 13.

Gold.

atomic weight 197. Its symbol is *Au*, from the Latin *Aurum*.

Unlike the great majority of the metals, it does not rust, *i.e.*, oxidize in the air, neither does it, if pure, tarnish by exposure. In this respect, it contrasts strikingly with silver, which, though indifferent to the rusting action of oxygen, is rapidly blackened by the sulphuretted hydrogen of the atmosphere. Exposed gilding tarnishes, but only because it is alloyed with silver and copper, on which this prejudicial gas can act.

Gold is readily crystallizable, and always assumes one or other of the symmetrical shapes, such as the cube, or regular octahedron, which characterize the simplest crystallographic system. It is softer than silver, and nearly as soft as lead, so that in tenacity it is inferior to copper, silver, iron, and platinum, and a wire $\frac{1}{10}$th of an inch in diameter will support without breaking only 191 lb. On the other hand, it is the most ductile and malleable of the metals. One grain can be hammered into leaves sufficient to cover $56\frac{1}{4}$ square inches, and the thickness of the gold-leaf will not then exceed $\frac{1}{282,000}$ of an inch. When of this tenuity it is transparent, and transmits a faint but beautiful bluish-green light.

Gold melts at a high white heat, and remains unchanged in the hottest furnaces. In the focus of a lens, however, it is vaporized by the sun's rays; and the oxyhydrogen blowpipe or a large voltaic battery can also develop heat sufficient to volatilize it. It contracts in the act of solidifying from a state of fusion, and cannot, in consequence, be made to receive sharp impressions by casting it in moulds. Coins, accordingly, and plate are stamped or embossed, and afterwards chased and carved, if necessary, by cutting tools.

Gold does not dissolve in any of the ordinary acids, such as the nitric, sulphuric, hydrochloric, or acetic, but a rare acid, the selenic, can dissolve it. Its best solvent is a mixture of hydrochloric acid, with some oxidizing agent like nitric acid or oxide of manganese, which causes the hydrochloric acid to part with its chlorine. If the gold be in leaf, chlorine at once unites with it, and the resulting chloride is readily soluble in water. Bromine acts in the same way on the metal; and it may also be dissolved by boiling it with sulphur, potash, and water. The older chemists speculated on the possibility of Moses having dissolved the golden calf of the Israelites in this way.

Gold is also soluble in mercury, and advantage is largely taken of this property of quicksilver to dissolve the precious metal from its ores. The gold-amalgam resulting from the union of the metals is also extensively employed in gilding.

The most important chemical compounds of gold are the following, in referring to which the equivalent of gold is taken as 98·5.

The chlorides are two in number. The sesquichloride, Au_2Cl_3, is prepared in the mode above mentioned. It forms orange-red crystals, but in aqueous solution appears yellow. It is very easily decomposed by heat, light, organic substances, and all deoxidizing or reducing agents. A solution of this salt in sulphuric ether is sometimes used for gilding steel. The aqueous solution is employed in photography, and from it nearly all the other useful preparations of gold are made. When this salt is heated cautiously to about 392° Fahr., it loses two-thirds of its chlorine, and becomes the sub-chloride Au_2Cl.

The oxides correspond to the chlorides, and are obtained from them. The only important one is the sesquioxide Au_2O_3, prepared by precipitating the corresponding chloride by magnesia, and washing the precipitate with nitric acid and water. This oxide is of a yellow or brown colour, and by solution in potass, in cyanide of potassium, or sulphite of soda, forms a liquid which is used in gilding. A solution of the oxide in hyposulphite of soda is employed to protect and make more visible daguerreotype portraits on silver. The sulphurets of gold are not important.

Gold || Gold-beating.

Gold is readily identified by chemical tests. When its colour and specific gravity cannot be appealed to as means of identification, its behaviour with the stronger liquid reagents is had recourse to. It resists the solvent action of the most powerful acids or alkalies taken singly, but at once dissolves in *aqua regia* (a mixture of nitric and hydrochloric acid), or in any similar liquid containing free chlorine. The resulting solution is tested,—1. By adding to it a solution of protosulphate of iron. This causes the gold to separate in the condition of a very fine powder, which remains for hours suspended in the liquid, although it is more than nineteen times heavier than water. The finely divided metal appears brown by reflected, and bluish-green by transmitted light, and if dried and rubbed by any smooth solid, acquires the characteristic colour and lustre of the metal in mass. 2. By neutralizing the solution with carbonate of potass or soda, and boiling with excess of oxalic acid, when the gold separates in highly characteristic splendent flakes. 3. By adding to the solution diluted, a few drops of solution of protochloride of tin, when a rich purple precipitate falls. Very minute traces of gold may be discovered in this way. The precipitate, which has gone for centuries by the name of Purple of Cassius, appears to be a compound of oxide of gold and oxide of tin (Au_2O, Sn_3O_4). It is used to stain glass ruby-red, and to give to porcelain and enamel a rose-pink, crimson, and purple colour. (See Precious Metals.)

GOLDBEATING. The art of goldbeating is of great antiquity, being referred to by Homer; and Pliny states that one ounce of gold was extended to 750 leaves, each leaf being four fingers square, which is three times the thickness of the ordinary leaf gold of the present time. The ancient Peruvians made very thin sheets of gold, and nailed them together on the walls of their temples of worship; on the coffins of the Theban mummies specimens of original leaf-gilding are met with where the gold is in so thin a state that it resembles modern gilding. The art seems to have been practised in India, judging from the rude specimens of gilding at Tippo Saib's palace at Bangalore.

In modern times it has been practised in the capitals of the principal commercial countries of Europe. In England it was confined to London until within the present century. It has been introduced into Scotland and the United States of America within that period. It is now practised in several towns in England, and to a small extent in Ireland, at Dublin only.

The manufacture being attendant upon an advanced state of the arts, it is only found in old established countries, and is not yet practised in any of the British colonies.

From the existence here of some now obsolete-fashioned tools, similar to those at present in use at Paris, it would appear to have travelled to England from that quarter. The art has nowhere been so perfected as in London; but of late years, from intercourse with English goldbeaters, efforts have been made on the Continent, with the aid of English goldbeaters' skin, to rival the extreme fineness of the English product.

The ordinary size of a leaf of gold is 3 inches and 3-8ths, for the production of 2000 leaves of which from 18 to 19 dwts. of gold were allowed to the workman fifty years since in London, but now, owing to the improvement in the quality of the skin and superior skill on the part of the workmen, not more than an average of 16 dwts. are required, and with very skilful workmen it is sometimes accomplished with 14 dwts. This, however, is not to be taken as any test of the extreme malleability of gold; it is only the point to which it is desirable to attain for commercial purposes.

Experiments have been made to ascertain to what degree of thinness gold and silver could be reduced: it was found that one grain of gold was spread to the extent of 75 square inches, and the same weight of silver to the still more extraordinary dimension of 98 square inches. Taking one

Gold-beating.

cubic inch of gold at 4900 grains, it will be found that the gold was the 367,650th part of an inch in thickness, or about 1200 times thinner than ordinary printing paper. Thus, if this number of leaves of gold were placed on one another, they would constitute a pile an inch high; the same number of leaves of paper would form a pile half the height of the Monument of London. The silver, though spread over a much larger surface, was thickest, owing to the difference in its specific gravity; but, calculated by weight, silver is the most malleable metal with which we are acquainted, considerably exceeding that of gold. This experiment does not, however, determine the extent of the malleability of either metal, as the means employed to test it were found to fail before there was any appearance of the malleability of the metals being exhausted.

The gold used by the goldbeater is variously alloyed according to the variety of colour required. Fine gold is commonly supposed to be incapable of being reduced to thin leaves. This is an error. It is objectionable for commercial purposes on account of its greater cost. It also adheres on one part of a leaf touching another, thus causing a waste of labour by the leaves being spoiled; but for work exposed to the weather it is much preferable, as it is more durable, and does not tarnish or change colour.

The specimens of gold leaf exhibited by Mr E. S. Marshall, goldbeater of London, at the Great Exhibition of 1851, and for which the prize medal was awarded to him, were twelve in number, and embraced a regular gradation in colour from red down to nearly white, viz.,—red, pale red, extra deep, deep, orange, lemon, deep pale, pale, pale pale, deep party, party, and fine gold. The deeper colours were alloyed with from 12 to 16 grs. of copper per oz., but without any silver, as any alloy of silver with this quantity of copper would considerably impair the malleability. The middle colours contained from 12 to 20 grs. of silver, and from 6 to 8 grs. of copper to the ounce; the paler golds contained from 2 to 20 dwts. of silver to the ounce, but no copper, for the same reason that the silver was omitted in the red-golds.

The process of goldbeating is thus conducted. The gold having been alloyed according to the colour desired, it is melted in a crucible, at a higher temperature than is simply necessary to fuse it, as its malleability is improved by exposure to a greater heat; sudden cooling does not interfere with its malleable properties, differing in this property from some other metals. It is then cast into an ingot, and flattened into a ribbon of 1½ inch wide and 10 feet in length to the ounce. After being flattened it is annealed and cut into small pieces of about 6 grs. each, and placed between the leaves of a cutch, which is about half an inch thick and 3½ inches square, containing about 160 leaves of a tough paper manufactured in France. Formerly fine vellum was used for this purpose. The cutch is beaten on for about 20 minutes with a 17-pound hammer, which rebounds by the elasticity of the skin, and saves the labour of lifting, by which the gold is spread to the size of the cutch; each leaf is then taken out, and cut into four pieces, and put between the skins of a shoder 4½ inches square and ¾ths of an inch thick, containing about 700 skins, which have been worn out in the finishing process. The shoder requires about two hours' beating upon with a 9-pound hammer. As the gold will spread unequally, the shoder is beaten upon after the larger leaves have reached the edges. The effect of this is, that the larger leaves come out of the edges in a state of dust. This allows time for the smaller leaves to reach the full size of the shoder, thus producing a general evenness of size in the leaves.

Each leaf is again cut into four pieces, and placed between the leaves of a mould composed of about 900 of the finest skins, five inches square and three-quarters of an inch thick; this is the last and most difficult stage of the process; and on the fineness of the skin and judgment of the workman the perfection and thinness of the leaf of gold depend. During the first hour the hammer is allowed to fall principally upon the centre of the mould. This causes gaping cracks upon the edges of the leaves, the sides of which readily coalesce and unite without leaving any trace of the union after being beaten upon. At the second hour, when the gold is about the 150,000 of an inch in thickness, it for the first time permits the transmission of the rays of light. In pure gold, or gold but slightly alloyed, the green rays are transmitted; and in gold highly alloyed with silver the pale violet rays pass. The mould requires in all about four hours' beating with a 7 lb. hammer, when the gold will have arrived at the ordinary thinness for the gold leaf of commerce. It is then taken out of the mould, and the rough edges are cut off by slips of the rattan fixed in parallel grooves of an instrument called a waggon, the leaf being laid upon a leathern cushion for that purpose. The leaves thus prepared are placed into a book capable of holding twenty-five leaves each, which have been rubbed over with red ochre to prevent the gold clinging to the paper, and is used for gilding picture-frames, books, and for numerous other ornamental purposes.

The dryness of the cutch, shoder, and mould is a matter of extreme delicacy. They require to be hot-pressed every time they are used, although they may be used daily, to remove the moisture which they acquire from the atmosphere, except in extremely frosty weather, when they acquire so little moisture that then a difficulty arises from their over-dryness; the brilliancy of the gold is diminished, and it spreads very slowly under the hammer. On the contrary, if the cutch or shoder be damp, the gold will become that which is technically termed hollow or sieve-like; that is, it is pierced with innumerable small microscopical holes; and in the moulds in its more attenuated state it will become reduced to a pulverulent state. This condition is more easily produced in alloyed golds than in fine gold.

It is necessary that each skin of the mould should be rubbed over with calcined gypsum (the fibrinated variety) each time the mould may be used, in order to prevent the adhesion of the gold to the surface of the skin in the process of beating.

Dentist gold is gold leaf carried no farther in the process than that of the cutch, and should be perfectly pure gold.

By the above process silver is beaten, but not so thin, the inferior value of the metal not rendering it commercially desirable to bestow so much labour upon it. Copper, tin, zinc, palladium, lead, cadmium, platinum, and aluminium can be beaten into thin leaves, but not to the extent of gold or silver.

Shell Gold ‖ Gold Wire.

Shell Gold, used in painting and illuminating, is made by grinding gold leaves with honey, and afterwards separating the honey from the powdered gold by means of water When the honey is washed away, the gold may be put on paper or kept in shells. When used, it is commonly diluted with gum-water. The German gold powder, prepared in this manner from the Dutch gold leaf, is generally used; and when it is well secured with varnish, it answers the end in japanners' gilding tolerably well.

Gold Size, for burnished gilding, is prepared of one pound and a half of pipe clay, half an ounce of red chalk, a quarter of an ounce of black lead, forty drops of sweet oil, and three drams of pure tallow. The clay, chalk, and black lead are to be ground very fine, separately, in water, then mixed together; the oil and tallow are next added, and the mixture is ground to a due consistence.

Gold Thread is formed of flattened gold wire wrapped closely over a thread of yellow silk, by means of a wheel and iron bobbins.

Gold Wire is made by taking a cylindrical ingot of silver which has been superficially coated with gold, and drawing it successively through a series of holes in a hardened steel plate, each of which is a degree smaller than the preceding hole, and proceeding thus until the requisite degree of fineness is attained. It may be observed that in this process, however fine be the wire, its gilded surface exhibits no flaw even when viewed by the microscope. *Flattened gold wire* is the same wire after it has been passed between rollers of polished steel.

GOLD COAST. See Guinea.

GOLDAPP, a town, capital of a cognominal circle, in the province of East Prussia and government of Gumbinnen. It stands on a small river of the same name, 20 miles S. of Gumbinnen; and has several tanneries and breweries, and some trade in cattle. Pop. (1849) 3754.

GOLDAU, a village of Switzerland, canton of Schwytz, in a valley between the Rigi and the Rossberg. The former village of this name was entirely destroyed by a landslip of the Rossberg on 2d Sept. 1806, together with those of Bussingen, Rother, and part of Lowerz.

GOLDBERG, a town, capital of a cognominal circle, in the Prussian province of Silesia, government of and 14 miles S.W. of Liegnitz, on the Katzbach, an affluent of the Oder. It received its name from a gold mine in the neighbourhood, formerly productive, but now abandoned. Wallenstein was educated at the gymnasium of this town. The chief manufactures are woollen cloth, flannel, stockings, &c. At the hamlet of Wahlstadt, six miles E. of the town, the French were defeated by the Prussians on the 26th August 1813. Pop. (1849) 7119.

GOLDEN FLEECE, in *Mythology*, the fleece of the ram upon which Phrixus and Helle crossed the sea to Colchis, and which, being sacrificed to Jupiter, was hung upon a tree in the grove of Mars, guarded by two brazen-hoofed bulls, and a monstrous dragon that never slept. The fleece was carried off by Jason and the Argonauts. See Argonauts.

Many authors have endeavoured to show that this fable is an allegorical representation of some real history; while others explain it by the profit of the wool trade to Colchis, or the gold which was gathered in the rivers of that country by means of fleeces.

Golden Fleece, *Order of The*. See Fleece.

GOLDEN NUMBER, in *Chronology*, a number showing what year of the moon's cycle any given year is. See Calendar, vol. vi., p. 81.

GOLDONI, Carlo, a celebrated comic poet of Italy, whom his countrymen delight to call the Italian Molière, was born at Venice in 1707. His life falls naturally into three distinct parts; the strange career of his youth, the more sober era of his toils and struggles in middle age, and his old age of moderate independence and well-earned fame. Goldoni was brought up in the midst of fêtes and theatrical performances by his grandfather, a man of pleasure, whose chief amusement was in the society of players and musicians. In this company his mind received a bent which afterwards decided his course. He went through the usual studies of the young Italians of those days; but he gained little at the various schools and colleges to which he was sent, except a knowledge of life in all its varieties. This knowledge he enlarged by often exchanging the dull routine of work for the rambling life and reckless gaiety of a strolling player. His friends, little dreaming that he was in this way educating himself for his future calling, besought him to reform, to study law or medicine, and to bring no discredit on the family name. He chose the profession of medicine, and had no sooner made his choice than he abandoned it. He next tried the law, graduated after various mishaps at Padua, and began to practise at Pisa as an advocate with every prospect of success. In an evil hour he wrote a comedy, which was played by a strolling company at Venice amidst overwhelming applause. From that time he became a stage-poet; and though the companies for which he wrote were all itinerant and held in no high respect, yet Goldoni was too much of a Gil Blas to exchange a life so congenial to his temper for the tame monotony of burgher respectability. Being now in a sphere in all respects suited to him, he resolved to turn its capabilities to account. He found the stage occupied either by the opera, or by that species of comedy called the "commedia dell' arte," or "à soggetto,"—a kind of comic acting peculiar to Italy, and long the only pretender to the title of national. These plays were not written out in full. The plot was sketched, and the actors filled in the dialogue as they went along. The chief characters in these plays wore masks, thence called maschere, and caricatured the local humours and salient weaknesses of the various states of Italy. The success of such plays depended of course on the cleverness of the individual actors; and in the hands of good performers they became amusing enough. The majority of strolling players, however, had to conceal their lack of genuine wit and humour under personal scurrility or obscene inuendoes. Goldoni determined to reform the stage,—and as there was no drama at that time in Italy suited to the modern manners of the people, he wrote a vast number of plays descriptive of the life and habits of his countrymen. His reform he was obliged to effect by degrees. He began by writing only the more serious parts of his plays; then he wrote parts for the masks, which he strove to raise out of the region of the mere burlesque; then he discarded the masks almost entirely, aimed at a higher style, and besides criticising the manners, lashed the follies and vices of his countrymen. He was a keen observer of men, and wrote with much ease and variety. The best of his works are those written in the Venetian dialect, which are therefore not very readily appreciable by foreigners. To most Englishmen, indeed, the fine aroma of Goldini's diction is as much lost as the peculiar zest of broad Scotch or the local dialects of Yorkshire are thrown away upon an Italian. But all native critics agree in pronouncing them remarkable for raciness of humour and felicity of diction. He revels especially in descriptions of low life in Venice, where the national manners have longest preserved their most striking peculiarities; and these descriptions are sometimes so broad as to be quite inadmissible even on a French stage. As he wrote for bread, he often wrote in great haste, a fact which accounts for the inequality of his works and the mistakes into which he often falls, especially when he trenches upon foreign manners and customs. Despite these faults, however, it is hardly too much to call Goldoni the father, or at least the restorer, of the Italian comedy. His works are still highly popular among his countrymen; and though a reaction in favour of the "commedia dell' arte" was effected by his rival Gozzi, it ended with the life of that powerful but ill-regulated genius; and such comic writers as have since attained distinction in Italy profess themselves followers of Goldoni. The rivalry between Gozzi and Goldoni made a great noise in its day, and as a fact of considerable importance in the literary history of Italy is still interesting to us. It is pretty fully discussed by Ugoni in his *Letteratura Italiana*, and by Baretti in his *Manners and Customs of Italy*. The third and happiest portion of Goldoni's life was that spent in Paris. In 1761 he was invited to that city by the Italian company playing there, and wrote a number of plays, some of which were eminently successful. Among these may be numbered *Le Bourru Bienfaisant*, in French, which still maintains its ground as a standard play on the French stage. This play made him known at court (1771), where he was appointed teacher of Italian to the three daughters of Louis XV., and finally rewarded with a pension of 4000 francs. When the revolution broke out he was deprived of it. On the motion of Chénier, however, a decree was passed restoring it and paying up the arrears. But Goldoni died the very day after this decree was passed, January 8, 1793. The arrears and a small additional pension were paid to his widow. There have been countless editions of Goldoni's works, among which may be specified that of Venice in 44 vols. 8vo, 1794–5; and that of Lucca in 26 vols. 1809. Selections from his best plays still appear from time to time in Italy. He wrote in French, besides his play of *Le Bourru Bienfaisant*, a number of minor pieces, and a very interesting biography of himself under the title of *Mémoires pour servir à l'Histoire de sa vie, et à celle de son Théatre*, which appeared in 1787, when the author was in his 81st year.

GOLDSMITH or SILVERSMITH, one who makes vessels and ornaments of gold or silver. The goldsmith's work is either performed in the mould, or beat out with the hammer or other instrument. Works which have raised figures are cast in a mould, and afterwards polished and finished; plates or dishes of silver or gold are beaten out from flat plates; and tankards and other vessels of the kind are formed of plates soldered together, their mouldings being beaten out, not cast. The business of the goldsmith formerly involved the hammering of the metal from the ingot to the degree of thinness required; but the necessity for this laborious process is now entirely obviated by the flatting mill.

GOLDSMITH, OLIVER, one of the most pleasing English writers of the eighteenth century. He was of a Protestant and Saxon family which had been long settled in Ireland, and which had, like most other Protestant and Saxon families, been, in troubled times, harassed and put in fear by the native population. His father, Charles Goldsmith, studied in the reign of Queen Anne at the diocesan school of Elphin, became attached to the daughter of the schoolmaster, married her, took orders, and settled at a place called Pallas in the county of Longford. There he with difficulty supported his wife and children on what he could earn, partly as a curate and partly as a farmer.

At Pallas Oliver Goldsmith was born in November 1728. That spot was then, for all practical purposes, almost as remote from the busy and splendid capital in which his later years were passed, as any clearing in Upper Canada or any sheep-walk in Australasia now is. Even at this day those enthusiasts who venture to make a pilgrimage to the birthplace of the poet are forced to perform the latter part of their journey on foot. The hamlet lies far from any high road, on a dreary plain which, in wet weather, is often a lake. The lanes would break any jaunting car to pieces; and there are ruts and sloughs through which the most strongly built wheels cannot be dragged.

While Oliver was still a child his father was presented to a living worth about L.200 a-year, in the county of Westmeath. The family accordingly quitted their cottage in the wilderness for a spacious house on a frequented road, near the village of Lissoy. Here the boy was taught his letters by a maid-servant, and was sent in his seventh year to a village school kept by an old quartermaster on half-pay, who professed to teach nothing but reading, writing and arithmetic, but who had an inexhaustible fund of stories about ghosts, banshees and fairies, about the great Rapparee chiefs, Baldearg O'Donnell and galloping Hogan, and about the exploits of Peterborough and Stanhope, the surprise of Monjuich, and the glorious disaster of Brihuega. This man must have been of the Protestant religion; but he was of the aboriginal race, and not only spoke the Irish language, but could pour forth unpremeditated Irish verses. Oliver early became, and through life continued to be, a passionate admirer of the Irish music, and especially of the compositions of Carolan, some of the last notes of whose harp he heard. It ought to be added that Oliver, though by birth one of the Englishry, and though connected by numerous ties with the Established Church, never showed the least sign of that contemptuous antipathy with which, in his days, the ruling minority in Ireland too generally regarded the subject majority. So far indeed was he from sharing in the opinions and feelings of the caste to which he belonged that he conceived an aversion to the Glorious and Immortal Memory, and, even when George the Third was on the throne, maintained that nothing but the restoration of the banished dynasty could save the country.

From the humble academy kept by the old soldier Goldsmith was removed in his ninth year. He went to several grammar-schools and acquired some knowledge of the ancient languages. His life at this time seems to have been far from happy. He had, as appears from the admirable portrait of him at Knowle, features harsh even to ugliness. The small-pox had set its mark on him with more than usual severity. His stature was small, and his limbs ill put together. Among boys little tenderness is shown to personal defects; and the ridicule excited by poor Oliver's appearance was heightened by a peculiar simplicity and a disposition to blunder which he retained to the last. He became the common butt of boys and masters, was pointed at as a fright in the play-ground, and flogged as a dunce in the school-room. When he had risen to eminence, those who had once derided him ransacked their memory for the events of his early years, and recited repartees and couplets which had dropped from him, and which, though little noticed at the time, were supposed, a quarter of a century later, to indicate the powers which produced the *Vicar of Wakefield* and the *Deserted Village*.

In his seventeenth year Oliver went up to Trinity College, Dublin, as a sizar. The sizars paid nothing for food and tuition, and very little for lodging; but they had to perform some menial services from which they have long been relieved. They swept the court: they carried up the dinner to the fellows' table, and changed the plates and poured out the ale of the rulers of the society. Goldsmith was quartered, not alone, in a garret, on the window of which his name, scrawled by himself, is still read with interest. From such garrets many men of less parts than his have made their way to the woolsack or to the episcopal bench. But Goldsmith, while he suffered all the humiliations, threw away all the advantages of his situation. He neglected the studies of the place, stood low at the examinations, was turned down to the bottom of his class for playing the buffoon in the lecture room, was severely reprimanded for pumping on a constable, and was caned by a brutal tutor for giving a ball in the attic story of the college to some gay youths and damsels from the city.

While Oliver was leading at Dublin a life divided between squalid distress and squalid dissipation, his father died, leaving a mere pittance. The youth obtained his bachelor's degree, and left the university. During some time the humble dwelling to which his widowed mother had retired was his home. He was now in his twenty-first year; it was necessary that he should do something; and his education seemed to have fitted him to do nothing but to dress himself in gaudy colours, of which he was as fond as a magpie, to take a hand at cards, to sing Irish airs, to play the flute, to angle in summer, and to tell ghost stories by the fire in winter. He tried five or six professions in turn without success. He applied for ordination; but, as he applied in scarlet clothes, he was speedily turned out of the episcopal palace. He then became tutor in an opulent family, but soon quitted his situation in consequence of a dispute about play. Then he determined to emigrate to America. His relations, with much satisfaction, saw him set out for Cork on a good horse, with thirty pounds in his pocket. But in six weeks he came back on a miserable hack, without a penny, and informed his mother that the ship in which he had taken his passage, having got a fair wind while he was at a party of pleasure, had sailed without him. Then he resolved to study the law. A generous kinsman advanced fifty pounds. With this sum Goldsmith went to Dublin, was enticed into a gaming house, and lost every shilling. He then thought of medicine. A small purse was made up; and in his twenty-fourth year he was sent to Edinburgh. At

Edinburgh he passed eighteen months in nominal attendance on lectures, and picked up some superficial information about chemistry and natural history. Thence he went to Leyden, still pretending to study physic. He left that celebrated university, the third university at which he had resided, in his twenty-seventh year, without a degree, with the merest smattering of medical knowledge, and with no property but his clothes and his flute. His flute, however, proved a useful friend. He rambled on foot through Flanders, France, and Switzerland, playing tunes which everywhere set the peasantry dancing, and which often procured for him a supper and a bed. He wandered as far as Italy. His musical performances, indeed, were not to the taste of the Italians; but he contrived to live on the alms which he obtained at the gates of convents. It should, however, be observed, that the stories which he told about this part of his life ought to be received with great caution; for strict veracity was never one of his virtues; and a man who is ordinarily inaccurate in narration is likely to be more than ordinarily inaccurate when he talks about his own travels. Goldsmith, indeed, was so regardless of truth as to assert in print that he was present at a most interesting conversation between Voltaire and Fontenelle, and that this conversation took place at Paris. Now it is certain that Voltaire never was within a hundred leagues of Paris during the whole time which Goldsmith passed on the continent.

In 1756 the wanderer landed at Dover, without a shilling, without a friend, and without a calling. He had, indeed, if his own unsupported evidence may be trusted, obtained from the University of Padua a doctor's degree; but this dignity proved utterly useless to him. In England his flute was not in request: there were no convents; and he was forced to have recourse to a series of desperate expedients. He turned strolling player; but his face and figure were ill suited to the boards even of the humblest theatre. He pounded drugs and ran about London with phials for charitable chemists. He joined a swarm of beggars, which made its nest in Axe Yard. He was for a time usher of a school, and felt the miseries and humiliations of this situation so keenly, that he thought it a promotion to be permitted to earn his bread as a bookseller's hack; but he soon found the new yoke more galling than the old one, and was glad to become an usher again. He obtained a medical appointment in the service of the East India Company; but the appointment was speedily revoked. Why it was revoked we are not told. The subject was one on which he never liked to talk. It is probable that he was incompetent to perform the duties of the place. Then he presented himself at Surgeons' Hall for examination, as mate to a naval hospital. Even to so humble a post he was found unequal. By this time the schoolmaster whom he had served for a morsel of food and the third part of a bed was no more. Nothing remained but to return to the lowest drudgery of literature. Goldsmith took a garret in a miserable court, to which he had to climb from the brink of Fleet Ditch by a dizzy ladder of flagstones called Breakneck Steps. The court and the ascent have long disappeared; but old Londoners well remember both. Here, at thirty, the unlucky adventurer sat down to toil like a galley slave.

In the succeeding six years he sent to the press some things which have survived, and many which have perished. He produced articles for reviews, magazines, and newspapers; children's books, which, bound in gilt paper and adorned with hideous woodcuts, appeared in the window of the once far-famed shop at the corner of Saint Paul's Churchyard; *An Inquiry into the State of Polite Learning in Europe*, which, though of little or no value, is still reprinted among his works; a *Life of Beau Nash*, which is not reprinted, though it well deserves to be so; a superficial and incorrect, but very readable, *History of England*, in a series of letters purporting to be addressed by a nobleman to his son; and some very lively and amusing *Sketches of London Society*, in a series of letters purporting to be addressed by a Chinese traveller to his friends. All these works were anonymous; but some of them were well known to be Goldsmith's; and he gradually rose in the estimation of the booksellers for whom he drudged. He was, indeed, emphatically a popular writer. For accurate research or grave disquisition he was not well qualified by nature or by education. He knew nothing accurately: his reading had been desultory; nor had he meditated deeply on what he had read. He had seen much of the world; but he had noticed and retained little more of what he had seen than some grotesque incidents and characters which had happened to strike his fancy. But, though his mind was very scantily stored with materials, he used what materials he had in such a way as to produce a wonderful effect. There have been many greater writers; but perhaps no writer was ever more uniformly agreeable. His style was always pure and easy, and, on proper occasions, pointed and energetic. His narratives were always amusing, his descriptions always picturesque, his humour rich and joyous, yet not without an occasional tinge of amiable sadness. About everything that he wrote, serious or sportive, there was a certain natural grace and decorum, hardly to be expected from a man a great part of whose life had been passed among thieves and beggars, street-walkers and merryandrews, in those squalid dens which are the reproach of great capitals.

As his name gradually became known, the circle of his acquaintance widened. He was introduced to Johnson, who was then considered as the first of living English writers; to Reynolds, the first of English painters; and to Burke, who had not yet entered parliament, but had distinguished himself greatly by his writings and by the eloquence of his conversation. With these eminent men Goldsmith became intimate. In 1763 he was one of the nine original members of that celebrated fraternity which has sometimes been called the Literary Club, but which has always disclaimed that epithet, and still glories in the simple name of The Club.

By this time Goldsmith had quitted his miserable dwelling at the top of Breakneck Steps, and had taken chambers in the more civilised region of the Inns of Court. But he was still often reduced to pitiable shifts. Towards the close of 1764 his rent was so long in arrear that his landlady one morning called in the help of a sheriff's officer. The debtor, in great perplexity, despatched a messenger to Johnson; and Johnson, always friendly, though often surly, sent back the messenger with a guinea, and promised to follow speedily. He came, and found that Goldsmith had changed the guinea, and was railing at the landlady over a bottle of Madeira. Johnson put the cork into the bottle, and entreated his friend to consider calmly how money was to be procured. Goldsmith said that he had a novel ready for the press. Johnson glanced at the manuscript, saw that there were good things in it, took it to a bookseller, sold it for L.60, and soon returned with the money. The rent was paid; and the sheriff's officer withdrew. According to one story, Goldsmith gave his landlady a sharp reprimand for her treatment of him; according to another, he insisted on her joining him in a bowl of punch. Both stories are probably true. The novel which was thus ushered into the world was the *Vicar of Wakefield.*

But before the *Vicar of Wakefield* appeared in print, came the great crisis of Goldsmith's literary life. In Christmas week 1764, he published a poem, entitled the *Traveller.* It was the first work to which he had put his name; and it at once raised him to the rank of a legitimate English classic. The opinion of the most skilful critics was, that nothing finer had appeared in verse since the fourth book of the *Dunciad.* In one respect the *Traveller* differs from all Goldsmith's other writings. In general his designs were bad, and his execution good. In the *Traveller*, the execution, though deserving of much praise, is far inferior to the design. No philosophical poem, ancient or modern, has a plan so noble, and at the same time so simple. An English wanderer, seated on a crag among the Alps, near the point where three great countries meet, looks down on the boundless prospect, reviews his long pilgrimage, recalls the varieties of scenery, of climate, of government, of religion, of national character, which he has observed, and comes to the conclusion, just or unjust, that our happiness depends little on political institutions, and much on the temper and regulation of our own minds.

While the fourth edition of the *Traveller* was on the counters of the booksellers, the *Vicar of Wakefield* appeared, and rapidly obtained a popularity which has lasted down to our own time, and which is likely to last as long as our language. The fable is indeed one of the worst that ever was constructed. It wants, not merely that probability which ought to be found in a tale of common English life, but that consistency which ought to be found even in the wildest fiction about witches, giants, and fairies. But the earlier chapters have all the sweetness of pastoral poetry, together with all the vivacity of comedy. Moses and his spectacles, the vicar and his monogamy, the sharper and his cosmogony, the squire proving from Aristotle that relatives are related, Olivia preparing herself for the arduous task of converting a rakish lover by studying the controversy between Robinson Crusoe and Friday, the great ladies with their scandal about Sir Tomkyn's amours and Dr Burdock's verses, and Mr Burchell with his "Fudge," have caused as much harmless mirth as has ever been caused by matter packed into so small a number of pages. The latter part of the tale is unworthy of the beginning. As we approach the catastrophe, the absurdities lie thicker and thicker; and the gleams of pleasantry become rarer and rarer.

The success which had attended Goldsmith as a novelist emboldened him to try his fortune as a dramatist. He wrote the *Goodnatured Man*, a piece which had a worse fate than it deserved. Garrick refused to produce it at Drury Lane. It was acted at Covent Garden in 1768, but was coldly received. The author, however, cleared by his benefit nights, and by the sale of the copyright, no less than L.500, five times as much as he had made by the *Traveller* and the *Vicar of Wakefield* together. The plot of the *Goodnatured Man* is, like almost all Goldsmith's plots, very ill constructed. But some passages are exquisitely ludicrous; much more ludicrous, indeed, than suited the taste of the town at that time. A canting, mawkish play, entitled *False Delicacy*, had just had an immense run. Sentimentality was all the mode. During some years, more tears were shed at comedies than at tragedies; and a pleasantry which moved the audience to anything more than a grave smile was reprobated as low. It is not strange, therefore, that the very best scene in the *Goodnatured Man*, that in which Miss Richland finds her lover attended by the bailiff and the bailiff's follower in full court dresses, should have been mercilessly hissed, and should have been omitted after the first night.

In 1770 appeared the *Deserted Village*. In mere diction and versification this celebrated poem is fully equal, perhaps superior to the *Traveller;* and it is generally preferred to the *Traveller* by that large class of readers who think, with Bayes in the *Rehearsal*, that the only use of a plan is to bring in fine things. More discerning judges, however, while they admire the beauty of the details, are shocked by one unpardonable fault which pervades the whole. The fault which we mean is not that theory about wealth and luxury which has so often been censured by political economists. The theory is indeed false: but the poem, considered merely as a poem, is not necessarily the worse on that account. The finest poem in the Latin language, indeed the finest didactic poem in any language, was written in defence of the silliest and meanest of all systems of natural and moral philosophy. A poet may easily be pardoned for reasoning ill; but he cannot be pardoned for describing ill, for observing the world in which he lives so carelessly that his portraits bear no resemblance to the originals, for exhibiting as copies from real life monstrous combinations of things which never were and never could be found together. What would be thought of a painter who should mix August and January in one landscape, who should introduce a frozen river into a harvest scene? Would it be a sufficient defence of such a picture to say that every part was exquisitely coloured, that the green hedges, the apple-trees loaded with fruit, the waggons reeling under the yellow sheaves, and the sun-burned reapers wiping their foreheads were very fine, and that the ice and the boys sliding were also very fine? To such a picture the *Deserted Village* bears a great resemblance. It is made up of incongruous parts. The village in its happy days is a true English village. The village in its decay is an Irish village. The felicity and the misery which Goldsmith has brought close together belong to two different countries, and to two different stages in the progress of society. He had assuredly never seen in his native island such a rural paradise, such a seat of plenty, content, and tranquillity, as his *Auburn*. He had assuredly never seen in England all the inhabitants of such a paradise turned out of their homes in one day and forced to emigrate in a body to America. The hamlet he had probably seen in Kent: the ejectment he had probably seen in Munster; but by joining the two, he has produced something which never was and never will be seen in any part of the world.

In 1773 Goldsmith tried his chance at Covent Garden with a second play, *She Stoops to Conquer*. The manager was not without great difficulty induced to bring this piece out. The sentimental comedy still reigned, and Goldsmith's comedies were not sentimental. The *Goodnatured Man* had been too funny to succeed; yet the mirth of the *Goodnatured Man* was sober when compared with the rich drollery of *She Stoops to Conquer*, which is, in truth, an incomparable farce in five acts. On this occasion, however, genius triumphed. Pit, boxes, and galleries, were in a constant roar of laughter. If any bigoted admirer of Kelly and Cumberland ventured to hiss or groan, he was speedily silenced by a general cry of "turn him out," or "throw him over." Two generations have since confirmed the verdict which was pronounced on that night.

While Goldsmith was writing the *Deserted Village* and *She Stoops to Conquer*, he was employed on works of a very different kind, works from which he derived little reputation but much profit. He compiled for the use of schools a *History of Rome* by which he made L.300, a *History of England* by which he made L.600, a *History of Greece* for which he received L.250, a *Natural History*, for which the booksellers covenanted to pay him 800 guineas. These works he produced without any elaborate research, by merely selecting, abridging, and translating into his own clear, pure, and flowing language, what he found in books well known to the world, but too bulky or too dry for boys and girls. He committed some strange blunders: for he knew nothing with accuracy. Thus in his *History of England* he tells us that Naseby is in Yorkshire; nor did he correct this mistake when the book was reprinted. He was very nearly hoaxed into putting into the *History of Greece* an account of a battle between Alexander the Great and Montezuma. In his *Animated Nature* he relates, with faith and with perfect gravity, all the most absurd lies which he could find in books of travels about gigantic Patagonians, monkeys that preach sermons, nightingales that repeat long conversations. "If he can tell a horse from a cow," said Johnson, "that is the extent of his knowledge of zoology." How little Goldsmith was qualified to write about the physical sciences is sufficiently proved by two anecdotes. He on one occasion denied that the sun is longer in the northern than in the southern signs. It was vain to cite the authority of Maupertuis. "Maupertuis!" he cried, "I understand those matters better than Maupertuis." On another occasion he, in defiance of the evidence of his own senses, maintained obstinately, and even angrily, that he chewed his dinner by moving his upper jaw.

Yet, ignorant as Goldsmith was, few writers have done more to make the first steps in the laborious road to knowledge easy and pleasant. His compilations are widely distinguished from the compilations of ordinary bookmakers. He was a great, perhaps an unequalled, master of the arts of selection and condensation. In these respects his histories of Rome and of England, and still more his own abridgments of these histories, well deserved to be studied. In general nothing is less attractive than an epitome: but the epitomes of Goldsmith, even when most concise, are always amusing; and to read them is considered by intelligent children, not as a task but as a pleasure.

Goldsmith might now be considered as a prosperous man. He had the means of living in comfort, and even in what to one who had so often slept in barns and on bulks must have been luxury. His fame was great and was constantly rising. He lived in what was intellectually far the best society of the kingdom, in a society in which no talent or accomplishment was wanting, and in which the art of conversation was cultivated with splendid success. There probably were never four talkers more admirable in four different ways than Johnson, Burke, Beauclerk, and Garrick; and Goldsmith was on terms of intimacy with all the four. He aspired to share in their colloquial renown; but never was ambition more unfortunate. It may seem strange that a man who wrote with so much perspicuity, vivacity, and grace, should have been, whenever he took a part in conversation, an empty, noisy, blundering, rattle. But on this point the evidence is overwhelming. So extraordinary was the contrast between Goldsmith's published works and the silly things which he said, that Horace Walpole described him as an inspired idiot. "Noll," said Garrick, "wrote like an angel, and talked like poor Pol." Chamier declared that it was a hard exercise of faith to believe that so foolish a chatterer could have really written the *Traveller*. Even Boswell could say, with contemptuous compassion, that he liked very well to hear honest Goldsmith run on. "Yes, sir," said Johnson, "but he should not like to hear himself." Minds differ as rivers differ. There are transparent and sparkling rivers from which it is delightful to drink as they flow; to such rivers the minds of such men as Burke and Johnson may be compared. But there are rivers of which the water when first drawn is turbid and noisome, but becomes pellucid as crystal and delicious to the taste if it be suffered to stand till it has deposited a sediment; and such a river is a type of the mind of Goldsmith. His first thoughts on every subject were confused even to absurdity, but they required only a little time to work themselves clear. When he wrote they had that time; and therefore his readers pronounced him a man of genius: but when he talked he talked nonsense, and made himself the laughing-stock of his hearers. He was painfully sensible of his inferiority in conversation; he felt every failure keenly; yet he had not sufficient judgment and self-command to hold his tongue. His animal spirits and vanity were always impelling him to try to do the one thing which he could not do. After every attempt he felt that he had exposed himself, and writhed with shame and vexation; yet the next moment he began again.

His associates seem to have regarded him with kindness, which, in spite of their admiration of his writings, was not unmixed with contempt. In truth, there was in his character much to love, but very little to respect. His heart was soft even to weakness: he was so generous, that he quite forgot to be just; he forgave injuries so readily, that he might be said to invite them, and was so liberal to beggars, that he had nothing left for his tailor and his butcher. He was vain, sensual, frivolous, profuse, improvident. One vice of a darker shade was imputed to him, envy. But there is not the least reason to believe that this bad passion, though it sometimes made him wince and utter fretful exclamations, ever impelled him to injure by wicked arts the reputation of any of his rivals. The truth probably is, that he was not more envious, but merely less prudent than his neighbours. His heart was on his lips. All those small jealousies, which are but too common among men of letters, but which a man of letters who is also a man of the world does his best to conceal, Goldsmith avowed with the simplicity of a child. When he was envious, instead of affecting indifference, instead of damning with faint praise, instead of doing injuries slily and in the dark, he told everybody that he was envious. "Do not, pray, do not, talk of Johnson in such terms," he said to Boswell; "you harrow up my very soul." George Steevens and Cumberland were men far too cunning to say such a thing. They would have echoed the praises of the man whom they envied, and then have sent to the newspapers anonymous libels upon him. Both what was good and what was bad in Goldsmith's character was to his associates a perfect security that he would never commit such villany. He was neither ill-natured enough, nor long-headed enough, to be guilty of any malicious act which required contrivance and disguise.

Goldsmith has sometimes been represented as a man of genius, cruelly treated by the world, and doomed to struggle with difficulties, which at last broke his heart. But no representation can be more remote from the truth. He did, indeed, go through much sharp misery before he had done anything considerable in literature. But after his name had appeared on the title-page of the *Traveller*, he had none but himself to blame for his distresses. His average income, during the last seven years of his life, certainly exceeded L.400 a-year, and L.400 a-year ranked, among the incomes of that day, at least as high as L.800 a-year would rank at present. A single man living in the Temple, with L.400 a-year, might then be called opulent. Not one in ten of the young gentlemen of good families who were studying the law there had so much. But all the wealth which Lord Clive had brought from Bengal, and Sir Lawrence Dundas from Germany, joined together, would not have sufficed for Goldsmith. He spent twice as much as he had. He wore fine clothes, gave dinners of several courses, paid court to venal beauties. He had also, it should be remembered, to the honour of his heart, though not of his head, a guinea, or five, or ten, according to the state of his purse, ready for any tale of distress, true or false. But it was not in dress or feasting, in promiscuous amours or promiscuous charities, that his chief expense lay. He had been from boyhood a gambler, and at once the most sanguine and the most unskilful of gamblers. For a time he put off the day of inevitable ruin by temporary expedients. He obtained advances from booksellers, by promising to execute works which he never began. But at length this source of supply failed. He owed more than L.2000; and he saw no hope of extrication from his embarrassments. His spirits and health gave way. He was attacked by a nervous fever, which he thought himself competent to treat. It would have been happy for him if his medical skill had been appreciated as justly by himself as by others. Notwithstanding the degree which he pretended to have received at Padua, he could procure no patients. "I do not practise," he once said; "I make it a rule to prescribe only for my friends." "Pray, dear Doctor," said Beauclerk, "alter your rule; and prescribe only for your enemies." Goldsmith now, in spite of this excellent advice, prescribed for himself. The remedy aggravated the malady. The sick man was induced to call in real physicians; and they at one time imagined that they had cured the disease. Still his weakness and restlessness continued. He could not get no sleep. He could take no food. "You are worse," said one of his medical attendants, "than you should be from the degree of fever which you have. Is your mind at ease?" "No; it is not," were the last recorded words of Oliver Goldsmith. He died on the 3d of April 1774, in his forty-sixth year. He was laid in the churchyard of the Temple; but the spot was not marked by any inscription, and is now forgotten. The coffin was followed by Burke and Reynolds. Both these great men were sincere mourners. Burke, when he heard of Goldsmith's death, had burst into a flood of tears. Reynolds had been so much moved by the news, that he had flung aside his brush and palette for the day.

A short time after Goldsmith's death, a little poem appeared, which will, as long as our language lasts, associate the names of his two illustrious friends with his own. It has already been mentioned that he sometimes felt keenly the sarcasm which his wild blundering talk brought upon him. He was, not long before his last illness, provoked into retaliating. He wisely betook himself to his pen; and at that weapon he proved himself a match for all his assailants together. Within a small compass he drew with a singularly easy and vigorous pencil the characters of nine or ten of his intimate associates. Though this little work did not receive his last touches, it must always be regarded as a masterpiece. It is impossible, however, not to wish that four or five likenesses which have no interest for posterity were wanting to that noble gallery, and that their places were supplied by sketches of Johnson and Gibbon, as happy and vivid as the sketches of Burke and Garrick.

Some of Goldsmith's friends and admirers honoured him with a cenotaph in Westminster Abbey. Nollekens was the sculptor; and Johnson wrote the inscription. It is much to be lamented that Johnson did not leave to posterity a more durable and a more valuable memorial of his friend. A life of Goldsmith would have been an inestimable addition to the Lives of the Poets. No man appreciated Goldsmith's writings more justly than Johnson: no man was better acquainted with Goldsmith's character and habits; and no man was more competent to delineate with truth and spirit the peculiarities of a mind in which great powers were found in company with great weaknesses. But the list of poets to whose works Johnson was requested by the booksellers to furnish prefaces ended with Lyttelton, who died in 1773. The line seems to have been drawn expressly for the purpose of excluding the person whose portrait would have most fitly closed the series. Goldsmith, however, has been fortunate in his biographers. Within a few years his life has been written by Mr Prior, by Mr Washington Irving, and by Mr Forster. The diligence of Mr Prior deserves great praise; the style of Mr Washington Irving is always pleasing; but the highest place must, in justice, be assigned to the eminently interesting work of Mr Forster. (T. B. M.)

GOLEGA, a town of Portugal, province of Estremadura, 12 miles S.S.W. of Thomar on the Tagus, and 16 miles S.W. of Santarem. It is situated in a beautiful rich plain planted with olives, and producing abundance of cereal crops, as well as wine, oil, and sheep. Golega is especially celebrated for its annual fair, which is held on Nov. 11, and the two following days. Merchants from all parts of the kingdom, as well as from Old Castile, meet here for the purchase and interchange of numerous kinds of merchandise, especially woollen manufactures. Pop. (1855) 3742.

GOLF (Dutch *kolf*, a club), a well-known game, played with ball and club. It is said to be of Scottish origin; and it is certainly of very ancient date in Scotland, since there exist statutes prohibiting the game as early as the year 1457, lest it should interfere with the practice of archery. It is commonly played over *links* or commons with smooth grass and broken surfaces, by parties of one or more on each side, each party playing a separate ball; and the skill of a player consists in landing the ball in a given series of holes with the fewest strokes of the club. The balls were formerly made of thick leather, filled with feathers, but those generally in present use are of solid gutta percha. The clubs are of various shapes and materials to suit the position of the ball on the green, and its distance from the hole. To place the ball in a fit position for striking off is called *teeing*, and the green in the neighbourhood of each hole is called the *putting* ground.

GOLGOTHA, the name of the "mount" on which our Lord was crucified. See JERUSALEM.

GOLIUS, JAMES, an eminent Dutch orientalist, was born at the Hague in 1596. He studied at Leyden, and made such progress in his studies that at the age of twenty-one he was chosen professor of Greek at Rochelle. After a short time, however, he resigned that appointment and returned to Leyden to apply himself to the eastern tongues under Erpenius. To perfect his knowledge of Arabic, he went with the Dutch embassy to the emperor of Morocco, and was able while there to present to that potentate a petition written in Arabic. On returning home, he was chosen to succeed Erpenius in the chair of Arabic at Leyden in 1624. In the following year he set out on a tour through the east, visiting Arabia and Mesopotamia, and returning to Holland *viâ* Constantinople in 1626. The remainder of his life was spent at Leyden, where he died in 1667. He wrote many works, of which by far the greatest is his *Lexicon Arabico-Latinum*, fol., Leyd. 1653. It is based on the *Al-Sihah* of Djehéri, and was reckoned a wonderful monument of learning for that age. Indeed it has only recently been superseded by Freitag's Lexicon. Of Golius' other works may be mentioned his *Chadzrataladab min kelon Alarab, i.e., Proverbia quædam Alis imperatoris Muslemici, et Carmen Tograi poetæ*, Leyd. 1629; *Ahmedis Arabsiadæ vitæ et rerum gestarum Timuri historia*, Leyd. 1636. After his death, a Persian dictionary was found among his MSS., which was published, with additions by Castell, in his *Lexicon Heptaglotton*. (See Schnurrer's *Bibliotheca Arabica; Biog. Univers.*, &c.)

GOLLNOW, a town in the Prussian province of Pomerania, government of Stettin, and 14 miles N.N.E. of the town of that name, on the right bank of the Ihna. This was at one time a Hanse town. It has manufactures of linen and woollen goods, and copper wares. Pop. (1849) 5458.

GOLNITZ, a market-town of Hungary, county of Zips, 20 miles S.W. of Eperies. In the vicinity are iron and copper mines, which, with the iron forges, afford employment to most of the inhabitants. It is the seat of a mining board. Pop. 5100.

GOMBROON or BUNDER ABBAS, a seaport-town of Persia, province of Kerman, at the entrance of the Persian Gulf, nearly opposite the island of Ormuz, in 27. 18. N. Lat., 56. 12. E. Long. This was at one time the first seaport of Persia, and was then strongly fortified; but it is now a paltry town of about 4000 inhabitants, with no traces of its former condition but ruins of European buildings. The English were permitted to establish a factory here in 1613, and about 1620 the Dutch obtained the same privilege. When the island of Ormuz was taken by the English and Persians in 1622, merchants resorted thither in great numbers, and its commerce greatly increased. The English remained here till 1759, when the factory was taken by the French; and though afterwards re-established, it has long since been withdrawn on account of the unhealthiness of the climate. The town is surrounded by a mud wall about three-quarters of a mile in circumference, and the houses are rather commodiously built, but the streets are narrow and dirty. A considerable trade is still carried on. Though situated in Persia, it is a dependency of the Imâm of Muscat.

GOMERA, one of the Canaries. See CANARY ISLANDS.

GOMOR, a town of Hungary, capital of a cognominal county, on the Sajo, 90 miles N.E. of Pesth. It has a gymnasium, with a good library, and museum; and some trade in wine and tobacco. Pop. 1050. The county of Gomor has an area of 1694 square miles, and contained in 1850 160,674 inhabitants.

GOMORRAH, one of the cities of the plain or of the vale of Siddim, destroyed with Sodom by fire from heaven, on account of the wickedness of the inhabitants. Gen. xix.

GONDAR, a large town of Abyssinia, the residence of the *Negus* or nominal monarch of that country, is situated about 30 miles N. by E. of the lake of Dembea, on a lofty insulated hill, between two rivers which unite below the town. It is about 11 miles in circuit, but is built in a very straggling manner, and the houses are only of one story, and thatched. The only building of importance in the town is the palace, a square stone building flanked with towers, but a great part of it is now in ruins. There are no shops or bazaars, and all goods for sale are exposed on mats in the open market-place. It has some manufactures of sword-blades, knives, razors, fire-arms, &c.; and also some trade in elephants' tusks, coffee, honey, wax, slaves, &c. Pop. estimated as above 50,000.

GONDOLA, a kind of barge used chiefly on the canals of Venice, where gondolas supply the place of carriages. The gondola is flat-bottomed, very long and narrow (averaging about 30 feet by 4), and its two sharply-pointed extremities are curved upwards to the full height of a man. It is also provided with a small chamber placed near its centre, and elevated to a convenient height above the line of the gunwale. It is propelled by oars or a pole, by the gondolier, who stands at the stern. The word gondola is derived by Du Cange from the modern Greek κουντελας, a *bark* or *little ship;* Lancelot again deduces it from γονδυ, a term in Athenæus for a sort of vase.

The gondoliers of Venice were formerly an interesting part of the population, and were noted for the practice of whiling away time by singing alternately stanzas of poems, particularly of Tasso's *Jerusalem Delivered,* though with great changes from the original; but this custom has become almost entirely obsolete.

GONG, a Chinese musical instrument of percussion, formed entirely of metal, which yields a very loud and peculiarly harsh sound when struck with force. It is made of an alloy of tin and copper, and in form it nearly resembles the common tambourine. Gongs are much used in China for making loud sonorous signals, particularly on the canals, as well as for adding to the clangour of martial instruments.

GONGORA Y ARGOTE, LUIS DE, a gentleman of Córdova, was born Jan. 11, 1561, and educated at Salamanca, where it was intended by his father, himself an eminent lawyer, that he should qualify himself for the legal profession. It was too late; his taste for poetry was already developed; and the only permanent result of his university studies may be found in numerous ballads and other light compositions, often written in a bitter satirical vein, yet with simplicity and spirit. In fact, the greater part of his satirical, jocose, and amatory pieces, were written during his stay at the university, and are justly considered the best of his compositions as to style, language, and versification. Góngora's sarcastic muse was unfortunately but evidently embittered by his frequent struggles with poverty. At last, however, he took holy orders in his forty-fifth year, and received a scanty prebend in the cathedral of his native city. To improve his inadequate means, he went to Madrid, where, after eleven years of weary expectation, he was appointed one of the chaplains of Philip III., in whose court his peculiar talents found ample scope and appreciation. But suddenly a severe illness deprived him of memory, and he retired to Córdova, where he died, May 24, 1627.

The disciples of the Spanish classic school were already tainted with the extravagant ideas of the Italian Marinists, when Góngora arose, and brought them into full fashion. His mind was shrewd and powerful; yet it was perverted by pursuing the most absurd critical reveries. His early satirical sonnets, romances, and songs, have seldom been exceeded in bitterness. In language and versification they are elegant and correct; and from the piquant simplicity of the style it could never have been anticipated that the ambition of introducing something new in literature would have betrayed the author into the affectation which afterwards distinguished him. It was, no doubt, in some of his fits of vexation that Góngora conceived the idea of distinguishing himself by the invention of a peculiar poetic phraseology which he called *estilo culto,* "polished style." In order to accomplish this, he formed with great labour and research an affected, obscure, and ridiculously allegorical language, totally at variance with all the ordinary modes of speaking or writing. Not only did he seek the most uncommon words, but attached to common ones a new signification, and laid mythology under contribution for fresh ornaments. He used in Spanish the boldest inversions of Greek and Latin, and invented a new system of punctuation to determine the sense. The most obvious feature of his style, however, is, that it consists almost entirely of metaphors heaped upon each other in so grotesque a mass that it is often difficult to discover the real meaning. In this manner Góngora wrote his *Soledades,* his *Polyphemus,* and several other pieces. In the former he speaks of a maiden so beautiful that she might parch up Norway with her two suns, and bleach Ethiopia with her two hands. In translation, it is impossible to do justice to this style, for we cannot display in our own language those labyrinths of phrases which make the original so obscure. None of the imitators of Góngora had his native talent; and soon they divided into the two sects—the "Cultoristos," retaining only the pedantry of their founder; and the "Conceptistos," aspiring to his genius by revelling in the wildest regions of fancy, and searching after strange ideas as well as eccentric language.

There are various compositions of Góngora still unpublished, but a *romancero,* under the title of *Delicias del Parnaso,* contains all his *romances* and *letrillas.* The Cultoristo Alonso Castillo Solorzano extended Gongorism even to America, where he published his own works in Mexico in 1625; and the earliest German romances were imitations of Góngora by Gleim.

GONIOMETER, an instrument principally used for measuring solid angles, such as those presented by the faces of crystals. The goniometer in general use is one invented by Dr Wollaston on optical principles.

GONONG APEE, one of the Banda Islands, which see.

GOOD FRIDAY, the name given in England to the Friday of passion week, which is observed as a fast day, as being the anniversary of our Saviour's crucifixion. Among the Saxons it was called Long Friday, probably from the length of the religious services observed. In Germany it is called *Stiller Freitag,* from the reverential silence maintained in the churches, but more commonly *Char Freitag,* from an obsolete word signifying penitence. In the Greek and Latin Churches many of the ceremonies still practised on this day remount in antiquity to the days of Constantine the Great.

CAPE OF GOOD HOPE,

Strictly speaking, a small promontory, nearly the most southern point of Africa, but it gives its name to the large tract of country which forms the most southern part of that continent, and is now a colony of Great Britain. It lies for the most part between S. Lat. 29 and 34½., and E. Long. 18. and 28. It is bounded on the N. by the Orange and the Gariep rivers, on the E. by the river Keiskamma and Kafraria, on the S. by the Southern Ocean, and on the W. by the Atlantic. Its extreme breadth is from N. to S. about 450 miles, and its length from E. to W. about 600 miles, its area containing about 250,000 square miles. The country rises from the sea by a series of terraces, of which the supporting walls are nearly parallel chains of rugged and barren mountains intersected by deep ravines, the beds of streams, feeble or dry in the summer, but rushing down in torrents in the winter. The first of these mountain ranges of which Drackenstein, Hottentots' Holland, and Lange Kloof form a part, runs from the N.W. round the colony towards the E., where it terminates in the promontory of Cape St Francis. Between it and the sea, on the W. coast, the country is sandy and sterile, but on the S. and E. coast it possesses some good soil, and is clothed with vegetation. The second great chain, containing the Karroo Berg, Oliphant's River, Cold Bokkeveld, and Zuurbergen mountains, runs parallel to the first and terminates near the mouth of the Great Fish River. Its average height is about 4000 feet, and its greatest about 6500. Between this chain and the first the surface is varied, some parts consisting of arid plains and hills, others of good arable soil with a large portion of excellent grazing land. The third great range also runs nearly parallel to the others, and includes the Kammies Bergen, Roggeveld Bergen, Nieuwveld, and Sneeuw-Bergen mountains. This is the highest part of the colony, and from it the land gradually descends to the Orange River. Between this range and the second is the vast desolate plain called the Great Karroo, nearly 300 miles in length E. and W., and about 90 in breadth N. and S. Its soil is a sand mixed with clay, and particles of iron: all soil of a similar character in other parts of the colony is called karroo ground. These mountain chains are mostly composed of sandstone resting upon a base of granite, which are the prevailing rocks, the next in abundance being clay slate, grauwacke, quartz rock, and dolerite. In some parts the ironstone is traversed by veins of red iron ore. Deposits of coal are said to have been discovered in Kafirland and Victoria division, and copper ore has been found in some abundance in Namaqualand.

The Rivers, with exception of the Orange River, are small; they all more or less partake of the character of mountain streams, having numerous falls, and being low and feeble in the dry season, but swollen and rapid in the rainy weather. They are of course not navigable, and their mouths are mostly barred with sand. The Knysna, the Cowie, and the Briede are however accessible for a short distance from their entrance to small vessels.

The chief rivers are, on the W. coast, the Orange, the Elephant, and Great Berg rivers; on the S. coast, the Briede Knysna, Sunday, Cantoos, Great Fish, and Keiskamma. The only one of them deserving special notice is the Orange River, which rises in Kathlamba or Drackenberg Mountains, flows for nearly 1200 miles generally in a westerly direction, and discharges itself into the Atlantic, forming the northern boundary of the colony. It is on the whole a noble stream, and in some parts its banks are shaded by huge willows.

The Soil.—It is considered that about two-fifths of the colony consist of arid mountain ridges and sandy plains, unfit either for agriculture or pasture. The remainder is not generally fit for agricultural purposes, although it contains some very fertile spots; a large portion of it, however, especially in the eastern part, affords excellent pasture for cattle and sheep.

The coast is indented by various bays and inlets; few of them, however, afford convenient harbours. Saldanha Bay, on the west coast, is one of the most extensive and secure havens in this part of the world, but it is rendered comparatively useless by the want of a sufficient quantity of fresh water near it for the supply of shipping. Simon's Bay, near the bottom of False Bay, is a good harbour, and is used as a station for the royal navy. Table Bay, though somewhat protected by Robben Island, is little better than an open roadstead. It affords shelter, however, to ships during the summer months, but in the winter from May to September it is very unsafe. Algoa Bay is an open roadstead, but it is the chief port of the eastern province, and is much frequented by ships, which in certain winds can lie in it safely. Mossel Bay and the Cowie are also resorted to by small vessels, but they are little better than open roadsteads.

The climate is generally milder and drier than that of England. December, January, and February are the summer months; June, July, and August the winter. In the western part the summer is dry and clear, but in the east it is wet and stormy. In the vicinity of Cape Town, the highest temperature is about 84°, the lowest about 40°, and the mean of the year about 65°. In the mountainous districts and elevated plains, the heat of summer and the cold of winter are greater.

The vegetation of the colony is remarkably rich and varied. Some of the finest botanical specimens that now adorn the gardens of Europe have been derived from this region. In no other place do bulbous plants and heaths exhibit so many beautiful varieties. Besides a number of other ornamental tribes, there are some plants which might be used in medicine and dyeing. The aloe, however, is the only one which has been made an article of export. The most remarkable trees are, the silver tree, which only grows in the vicinity of Table Mountain; the Protea; and in the eastern province, the Euphorbia. There is on the whole a scarcity of indigenous timber, though there are in some parts extensive forests. Some of the native woods furnish materials for furniture and the wood-work of houses. The oak, fir, and other European forest trees, have, however, been long since introduced, and thriven very well; some of them have attained a great size, and their wood is extensively used. There are few indigenous fruits, but most of the fruits both of the north and south of Europe, such as grapes, figs, oranges, mulberries, apples, pears, peaches, nectarines, and others, are grown in abundance; but strawberries rarely come to perfection, and the gooseberry cannot be raised.

In regard to the zoology of the Cape, there is little to distinguish it from the rest of Africa, under the head of which will be found sufficient information on this subject; we may, however, notice the domestic animals of the colony. Sheep, cattle, and dogs, of an inferior breed, were all possessed by the natives on the discovery of the country. Horses, asses, mules, goats, and inferior breeds of cattle and sheep, have been introduced, and thrive well. The Merino sheep, in particular, has proved a valuable acquisition to the colony. Among the game birds are the bustard, called by the Dutch the pouw, and a smaller kind called the coran, wild duck, teal, snipe, and partridge.

History.—This Cape was discovered by Bartholomew Diaz, the Portuguese navigator, in 1493, who first landed at Algoa Bay, having, after exploring the west coast, been driven out to sea by a storm, and thus accidentally doubling the Cape which he saw on his way back, giving it the name of the Cape of Storms (Cabo Tormentoso).

The king of Portugal, however, gave it the more auspicious name it still bears, as its discovery afforded a hope of a new and easier way of reaching India, the great object of all the maritime expeditions of that age.

The great navigator Vasco de Gama doubled the Cape in 1497, and carried the Portuguese flag into the Indian seas. His countrymen, however, attracted by the riches of the East, made no permanent settlement at the Cape, although they frequently touched there on the voyage to India. But the Dutch, who, on the decline of the Portuguese power, established themselves in the East, early saw the importance of the place as a station where their vessels might take in water and provisions. They did not, however, colonize it till 1650, when the Dutch East India Company directed Jan Van Riebeeck, with a small party of colonists, to form a settlement there. The country was at that time inhabited by a people called Quaiquæ, but to whom the Dutch seem to have given the name of Hottentots. The Riebeeck settlers had at first great difficulties and hardship to endure, and their territory did not extend beyond a few miles round the site of the present Cape Town, where they first fixed their abode. They gradually, however, extended their limits, by driving the natives back or reducing them to serfdom. These colonists, although under Dutch authority, were not wholly of that nation, but consisted partly of persons of various nations, especially Germans and Flemings, with a few Poles and Portuguese. They were for the most part people of low station or indifferent character; there was, however, a small number of a higher class, from whom was selected a council to assist the governor. About the year 1686 the European population was increased by a number of the French refugees who left their country on the revocation of the edict of Nantes. Our limits forbid our attempting to trace the history of the Cape Colony during the lengthened period it remained under the Dutch government. We may, however, mention some of its prominent incidents, the effects of which are visible in the colony to this hour.

1*st.* The Dutch, partly by so-called contracts, partly by force, gradually deprived the Hottentots of their country. 2*d.* They reduced to slavery a large part of that unfortunate people whom they did not destroy. 3*d.* They introduced a number of Malays and negroes as slaves. 4*th.* They established that narrow and tyrannical system of policy which they have adopted in other colonies, prescribing to the farmers the nature of the crops they were to grow, demanding from them a large part of their produce, and harassing them with other exactions tending to discourage industry and enterprise. We are of opinion that to this mischievous policy is due the origin of those unsettled habits, that dislike to orderly government, and that desire to escape from its control, which characterize a considerable part of the so-called Dutch boers of the present day, qualities so utterly at variance with the character of the Dutch in their native country, but which were strongly manifested at the Cape long before they came under British rule, and under those influences to which some exclusively attribute the insubordination of those men. The attempts of the boers to escape from the Dutch power, and so form an independent government beyond the borders of the colony, especially in the district since called Graaff-Reinet, are strikingly similar to their proceedings at a later date under the British government. 5*th.* The Gamtoos River formed the boundary between the Hottentot and Kafir races, and was early adopted by the Dutch as their eastern limit; but about the year 1740 they began to pass this river, and came into collision with the Kafirs, and in 1780 extended their frontier to the Great Fish River.

In 1795 the colonists, having imbibed the revolutionary principles then prevailing in Europe, attempted to throw off the yoke of the Dutch, upon which the British sent a fleet to support the authority of the Prince of Orange, and took possession of the country in his name. As, however, it was evident that Holland would not be able to hold it, and that at a general peace it would be made over to England, it was ruled by British governors till the year 1802, when, at the peace of Amiens, it was again restored to Holland. In 1806, on renewal of the war, it was again taken by the British under Sir David Baird, and has since remained in their possession, having been finally ceded by the king of the Netherlands at the peace of 1815.

A summary of the chief events which have taken place since 1806 may be given under the following heads:—

1*st. The Kafir Wars.*—The first of these wars took place in 1811–12; the second in 1819, when the boundary of the colony was extended to the Keiskamma. The third occurred in 1835, under Sir Benjamin D'Urban, when the boundary was advanced to the Kei; but on the recall of that officer, the country between the Kei and Keiskamma rivers was restored to the Kafirs. The fourth Kafir war took place in 1846, and, after being conducted by governors Maitland and Pottinger, it was terminated by Sir Harry Smith in 1848. The fifth war broke out at the end of 1850, and after being for some time carried on by Governor Sir H. Smith, it was conducted in 1852 by Governor Cathcart. A somewhat more detailed account of these wars will be found under the head of KAFRARIA.

2*d.* In 1820, Scottish emigrants, to the number of 5000, arrived at Algoa Bay, and laid the foundation of the settlements on the eastern frontier which have since become the most thriving part of the colony, and includes the important town of Graham's Town and Port Elizabeth.

3*d.* In 1834 the great measure of slave emancipation took effect in the Cape Colony, and has been of immense service in raising the character and condition of the Hottentots and other races before held in bondage. These people keep the anniversary of this great event as a holiday, which they enjoy in pleasure parties and innocent amusements. We have more than once been present on these occasions, and have had pleasure to observe, by their sober and orderly conduct, that they knew how to enjoy without abusing the blessings of freedom.

4*th.* The disaffection of the Dutch boers. In 1835-6 a large number of these people resolved to free themselves from the British government by removing with their families beyond the limits of the colony. With this object they sold their farms, mostly at a great sacrifice, and crossed the Orange River into the territories chiefly inhabited by tribes of the Kafir race. After meeting with great hardships and varied success in their contests with the natives, a part of their number, under one Peter Retief, crossed the Drackenberg Mountains and took possession of the district of Natal, where they established a republican government, and maintained their ground against powerful nations of Zulu Kafirs till 1842, when they were forced to yield to the authority of the British government, which took possession of Natal.

The boers beyond the Orange River and west of the Drackenbergs still, however, retained a sort of independence till 1848, when, in consequence of the lawless state of the country, and the solicitation of part of the inhabitants, the governor, Sir Harry Smith, declared the supremacy of the crown over the territory, which was thenceforth called the Orange River Sovereignty. Shortly after this, in consesequence, as it is alleged, of certain acts of the British government in Natal, Andrew Pretorius, an intelligent boer of that district, crossed the Drackensberg Mountains with his followers, and after being joined on the western side by large numbers of disaffected boers, he raised the standard of rebellion. Upon this the governor, Sir H. Smith, crossed the Orange River at the head of a detachment of troops, and encountered and defeated the rebels in a short but brilliant skirmish at Boem Plaats. After this Pretorius and the most disaffected part of the boers retreated to beyond the Vaal River (the northern limit of the sovereignty), where they established a government of their own. They were subsequently, in 1852, absolved from their allegiance to the British crown by treaty with the governors and her Majesty's commissioners for settling frontier affairs.

In 1853–54, in consequence of the troubled state of the Orange River Sovereignty, and the difficulty of maintaining with becoming dignity the authority of her Majesty there, it was resolved to abandon the country to the settlers, mostly Dutch boers. This was carried into effect by a special commissioner, Sir George Clerk, K.C.B., sent from England for the purpose; and the country, under the name of the Orange Free State, is constituted a republic, with a president at its head, assisted or controlled by an assembly called the Volksraad (people's councils), elected by nearly universal suffrage.

The chief causes of the disaffection of the boers, and their emigration from the colony, are supposed to have been, 1*st*, the emancipation of their slaves in 1834; 2*d*, the supposed too lenient policy adopted by the British government towards the Kafirs, and more especially the reversal of Sir Benjamin D'Urban's policy by Lord Glenelg in 1837. Without at all denying that these and other measures of the government were the immediate moving causes of the migration, there is little doubt that the germ of the disposition to remove out of the colonial boundary, and shake off government control, was engendered in the boers by the policy of the government of our predecessors the Dutch.

5*th*. *The Convict Agitation.*—After the government had felt itself compelled to discontinue the sending of convicts to New South Wales and Van Diemen's Land, the subject of transportation became one of great difficulty, more especially at a time when an unusually large number of prisoners was on its hands in consequence of the prosecution arising out of the disturbed state of Ireland. Under these circumstances an order in council was passed in 1848, under authority of the Act 5th Geo. IV., authorizing the secretary of state to send certain convicts to such colonies as he might think proper. A circular was sent by Earl Grey, then colonial secretary, to the governor of the Cape (among other colonial governors), requesting him to ascertain the feelings of the colonists regarding the reception of a certain class of convicts. It should be borne in mind, 1*st*, that the proposal to send convicts to the Cape did not originate with Lord Grey—the same project had been entertained by several of his predecessors in office; 2*d*, that some of the most influential popular leaders at the Cape had, some years before, suggested the employment of British convicts in the building of a breakwater at Table Bay; 3*d*, that it is shown, by the correspondence which has been published, that Lord Grey was influenced in this proceeding by a desire to benefit both the convicts and the colony to which they were to be sent. For he informed the governor that the wives and children of the convicts, and also free emigrants, in proportion to the number of convicts, would be sent out at the expense of the mother country; and further, that to guard the convicts, military pensioners would be sent out, who, with their families, would settle in the colony, whereby the supply of labour and the security of the country would be increased. It should further be remembered, that the convicts proposed to be sent were not of the worst class, but men convicted of crimes to which they had been incited by famine or wrong-headed political opinion, or men who had undergone some probationary imprisonment, and were supposed to be in some degree reformed. Unfortunately, owing to some misunderstanding, a vessel, the Neptune, was despatched to the Cape before the opinion of the colonists had been received, having on board 289 convicts, among whom were John Mitchell, the Irish rebel, and his colleagues. When the news reached the Cape that this vessel was on her way, the people of the colony became violently excited; and, goaded to fury by the inflammatory articles in the local newspapers, and guided by a few demagogues, they established what was called the *Anti-Convict Association*, by which they bound themselves by a pledge to cease from all intercourse of every kind with persons in any way connected "with the landing, supplying, or employing convicts." People who refused to take this pledge were also subjected to great annoyance and petty persecution. The banks, the government contractors, and a large number of the farmers and dealers about Cape Town were thus pledged. On the 19th of September 1849, the Neptune arrived in Simon's Bay; and when the intelligence reached Cape Town, the people assembled in vast masses, and their behaviour was violent and outrageous in the extreme. The governor, after adopting several resolutions, and again abandoning them under the pressure of popular agitation, agreed not to land the convicts, but to keep them on board ship in Simon's Bay till he received orders to send them elsewhere. Even this concession did not satisfy any but a small number of more moderate men. The mass of the population, under the guidance or domination of a few agitators, continued to do all in their power to prevent the convicts and all the officers of the government from obtaining supplies. Tradesmen and others were prohibited from selling to the proscribed class even the commonest necessaries of life. When the home government became aware of the state of affairs it immediately sent orders directing the Neptune to proceed to Van Diemen's Land, and the agitation ceased.

Upon an impartial review of these proceedings, the conduct of the people of the Cape appears utterly indefensible. Granting, what, however, may be open to discussion, that the project of sending convicts to the Cape was wrong, it was evidently formed with no disregard to the interests of that colony; and it is also clear that a temperate statement of their views on the part of the colonists would have secured its instant abandonment.

This agitation did not, however, pass away without important results, since it led to another agitation, the object of which was to obtain a free representative government for the colony. This concession, which had been previously promised by Lord Grey, has been granted by her Majesty's government; and, in 1853, a constitution was established of almost unexampled liberality. Whether this constitution, in its present form, is suited to the colony, time alone can determine; but the free expression of the opinions of the colonists through their representatives will, it is to be hoped, prevent the repetition of such disgraceful proceedings as marked the convict agitation.

Divisions, Towns, and Villages.—The colony is divided at present into two provinces, which are further divided into divisions. The western province comprises the divisions of Cape Malmesbury, Stellenbosch, Paarl, Worcester, Swellendam, Caledon, Clanwilliam, George Beaufort. The eastern province includes the divisions of Albany, Fort Beaufort, Graaff-Reinet, Somerset, Colesberg, Cradock, Witenhage, Port Elizabeth, Albert and Victoria. We have not space for description of each of these divisions. We shall therefore give a brief account of such of them as merit particular attention.

The Cape division, the oldest and most important, includes Cape Town, Wynberg, Constantia, and Simon's Town. It is remarkable for the beauty of its scenery. Its most prominent features are the Cape Peninsula and Table Mountain. The former is a narrow neck of land about 32 miles long by 6 to 8 broad, formed by a series of rugged, broken mountains. Its extreme point is the celebrated Cape of Good Hope. The Table Mountain, with its branches, the Devil's Mountain and the Lion's Rump, rises immediately at the back of Cape Town. Its greatest height is 3582 feet. During the prevalence of certain winds it is covered by a dense whitish cloud, partially overlapping its sides like a table-cloth. Along the base of this mountain, where lie the villages of Rondebosch, Wynberg, and Constantia, the land is covered with luxuriant vegetation, including oaks and firs of great size, and is studded with villas, the abodes of official persons and others engaged in business in Cape Town. The neighbourhood is remarkable for the abundance and variety of its flowers and shrubs, especially of heaths, of which there is great variety. The division produces corn of good quality, and a considerable quantity of wine, including the famous Constantia, made at the village of that name.

Cape Town lies at the bottom of Table Bay, and at the foot of Table Mountain, and about 32 miles N. of the Cape of Good Hope. The streets are laid out at right angles; some of them are adorned with trees. The houses are generally built of brick, faced with stucco. Some of them in the older parts of the town are decorated with cornices and architectural devices, and have in front raised platforms of stone or brick called stoeps, about six to eight feet wide, and two or three feet above the level of the street. Here the inhabitants used to sit and enjoy the air and converse with their friends. The interior of the house is generally spacious and commodious. There is a castle and several batteries for the defence of the town and harbour, and jetties are erected for landing goods. There are various public buildings, the chief of which are the Government House, the Colonial Office, the Post-office, the Barracks, the Commercial Exchange, and the Public Library. There is a broad public walk, shaded by large oak trees, on one side of which are the gardens of Government House, and on the other the botanical garden, stocked with a great variety of valuable plants. There are churches and chapels belonging to the Church of England, the Dutch Reformed, the Scotch, Roman Catholic, Lutheran, Wesleyan churches, and other denominations. The Dutch Reformed church is capable of holding 2000 persons, and the English cathedral upwards of 1000. The Roman Catholic church is also a handsome and spacious building. The population is about 25,000.

The division of Stellenbosch contains a very pretty village of the same name, a favourite resort of strangers and invalids. It is only a few hours' drive from Cape Town, with which it is connected by an excellent road. The division of Caledon has some warm mineral springs containing muriate of soda and iron. Their heat is 98° and 117° of Fahrenheit, and their waters are used both internally and as baths. They are very beneficial for rheumatism, and diseases of the skin. In the division of Swellendam is Cape Agulhas, the most southern point of Africa. In this division there are two warm mineral springs.

The Eastern Province.—The greater part of this district of country was, at the beginning of this century, in the possession of the Kafirs, and it can hardly be said to have been settled before 1820, when a large number of emigrants arrived chiefly from Scotland. It is now the most prosperous part of the colony. The most important places in it are Graham's Town and Port Elizabeth.

The former is situated on a plain surrounded by low sandstone hills covered with grass, but bare of trees except in the ravines or foldings of the hills. The town is large and straggling; its streets are laid out at right angles. In some of them are rows of oak trees. There are many handsome shops, numerous churches and chapels, but no public buildings worthy of special notice. The town is the head-quarters of the military stationed in the colony. It is now also the see of a bishop, whose authority extends over the Eastern Province and Kafirland.

The town of Port Elizabeth on Algoa Bay is built along the base and up the sides of the low hills which overlook the bay. Viewed from the sea, owing to the newness and uniformity of its houses, it reminds one of the mimic towns built by children with toy houses. The houses, however, are substantially built in the English style, and the streets contain good shops. There are Church of England, Roman Catholic, Wesleyan, and Independent churches, some of them handsome edifices. The town possesses banks and three newspapers. Its population is about 6000.

Population.—The total population of the colony is stated in the returns as 217,921, of which 118,088 are persons of colour. The latter consist of Hottentots (so called), Malays, Negroes, and Kafirs. The white population is chiefly composed of colonial Dutch and British.

The aborigines of the country had originally the generic name of Quæquæ, and received the name of Hottentots from the Dutch. Owing to intermarriages with Malays, negroes, and others, and illicit intercourse with whites, the race has lost much of its distinctive character. Indeed, a pure Hottentot is scarcely to be found in the colony, although the people, in whom the blood of that race preponderates, are still known by that name. There is no return of their number, but we do not think it can exceed 25,000.

The Malays were introduced by the Dutch as slaves; their descendants still retain the Mohammedan religion, and most of the distinctive habits and customs of their race. We have no means of ascertaining their number, but it cannot be large. They reside for the most part in the Cape division. The negroes are mostly from the eastern coasts of Africa.

The Kafirs residing within the colony are chiefly composed of the section of them called Fingoes, who originally came from Natal and its vicinity, whence they were driven by Chaka, king of the Zulus, and took refuge with Kafirs on the frontier of the Cape Colony, by whom they were reduced to serfdom, from which they were liberated by Sir Benjamin D'Urban, and have, up to this time, remained faithful allies of the British. Their number may be about 25,000.

The exact proportion which the white population of Dutch descent bears to the British is not known; but there is no doubt that it still greatly preponderates. We have called these people Dutch for sake of convenience, as they speak that language, but many of them are descended from Europeans of other countries—a considerable number from the French refugees. The latter have lost the language, but still retain the names of their forefathers, such as Du Plessis, De Villiers, Marais, and others. The British and their descendants require no special remark.

Government, local and general.—Prior to 1827, there existed in the several districts or divisions of the colony, an institution established by the Dutch, called the Board of Landrost and Heemraaden. The former was the chief magistrate of the district, appointed and paid by the government. The latter was a council to assist him, composed of respectable inhabitants appointed by the governor, on the recommendation of the Landrost. These boards not only had the administration of the local affairs usually entrusted to municipal bodies, but they also possessed extensive judicial authority. In consequence of abuses, more especially in the exercise of the latter functions, these institutions were in 1827 abolished, and the present system established. By this, every division is presided over by a civil commissioner, whose duties as such are chiefly of a financial nature, such as collecting the inland revenue, paying salaries, and other disbursements of the government in the division. For judicial purposes many of the divisions are subdivided into two or more districts, each with an officer called the resident magistrate, possessing a limited civil and criminal jurisdiction. The civil commissioner is always the resident magistrate of the division; or, if that be divided into districts, of the district in which he resides. The districts are again subdivided into a number of smaller divisions called Feld cornetcies, over each of which is an officer called Feld cornet, whose duties nearly resemble that of a high bailiff or chief constable.

Prior to 1835 the whole authority of the general government was vested in the governor, assisted by a small council of officials. In that year a legislative council was established, consisting of certain government officials, and six persons nominated by the crown. An executive council was also established to assist the governor in executive matters, consisting of certain high officers of government,—such was the form of government till 1853, when the legislative council as thus established was abolished, and a new constitution introduced. Under this, the legislature consists of the governor and two chambers, called the legislative council and the house of assembly, both elected by the people. The former body is composed of eight members for the western, and seven for the eastern province, chosen by the whole body of electors of those provinces. To qualify a man to be elected for this chamber, he must possess property in land worth L.1000 clear of charges, or L.2000 in landed and personal property together; he must be thirty years of age, and must have been invited to become a candidate by written requisition, signed by not less than twenty-five electors. Another peculiarity in this election is, that any elector may give all his votes (that is, as many as there are members to be chosen) to one candidate, or he may distribute them among two or more candidates as he pleases. The object of this provision is believed to be to permit the minority to be represented. The council is elected for ten years, but so that half its number, as near as may be, go out every five years.

The legislative assembly is chosen by the electors of the town, and electoral districts into which the colony is divided. The candidates have to be proposed and seconded at the hustings as in England. There is no property qualification required of the candidates. The assembly consists of forty-six members, and is elected for five years.

The qualification of electors of both houses is the same, namely, the occupation of fixed property worth L.25.

The colonial secretary, the attorney-general, the treasurer, and the auditor, may sit and take part in the discussions in both houses, but they are not entitled to vote in either.

The governor may dissolve both houses, or he may dissolve the house of assembly without dissolving the council. He may give or refuse his assent to bills in the Queen's name, or he may reserve them for the decision of her Majesty. The Queen may disallow any bill assented to by the governor at any time within two years of its receipt.

It is further provided, that all bills appropriating any part of the revenues must be recommended to the house of assembly by the governor.

Religion.—The chief religious bodies in the colony are, —1*st*, The Dutch Reformed Church, which comprises the entire Dutch population, including a large number of Hottentots and other persons of colour, has about 60,000 adherents. In form of church government and in devotion it closely resembles the Church of Scotland, to which country a considerable number of its ministers belong. 2*d*, The Church of England. In 1847 a bishop of Cape Town was appointed to preside over the church, whose diocese extended not only over the Cape Colony and Natal, but also over the Island of St Helena. Recently, however, separate bishops have been appointed for Eastern Province and Natal. The members of this church in the colony are stated to be about 12,000. 3*d*, The Scotch Presbyterians are a comparatively small body, and in the rural districts especially, its members are absorbed in the Dutch Reformed Church. 4*th*, The Wesleyans are a large and very respectable body, especially in the Eastern Province. Their number is stated to be about 10,000. 5*th*, The Roman Catholics number about 3500 adherents. Their church is ruled by two bishops; one living at Cape Town, the other at Graham's Town. 6*th*, The Independents number about 7000; and the Lutherans about 1500.

Besides these bodies there are several foreign missions in the colony having numerous followers: the most important are the Moravians, who have been established there since 1732, and have laboured hard to convert the coloured races. The government recognizes no particular body as the established church, but it contributes to the support of the clergy of most of the denominations of Christians.

Education.—A good system of education has been established by the government, and there is a free school in every district. Two colleges have also been established, one called the South African College, the other, an excellent institution, called the Bishop's College, was founded by Bishop Gray.

Trade.—The following table, giving the amount of imports and exports in several years, taken at intervals, exhibits the progress of the commerce of the colony:—

Year.	Imports.	Exports.	Shipping.
			Tons.
1836	L.541,038	L.362,280	134,875
1840	732,494	775,060	184,442
1849	944,535	594,920	204,049
1850	1,277,101	637,252	224,126
1853	1,651,597	1,064,884	323,884
1854	985,266	691,352	

These exports do not entirely consist of colonial produce, but partly of goods re-exported. The value of colonial produce alone exported during 1853 was L.732,245, of which L.297,346 was from Cape Town, and L.435,899 from Port Elizabeth. The amount of tonnage, however, of vessels entering Table Bay is much greater than that entering Port Elizabeth, on account of the large number of Indiamen and other vessels calling at the former for provisions; but the actual trade of the latter is much greater, as shown by the exports.

The following is a table of the chief articles of colonial produce and manufactures exported during 1853, from Cape Town and Port Elizabeth respectively:—

	Port Elizabeth.	Cape Town.		Port Elizabeth.	Cape Town.
Aloes	L.1,250	L.1,546	Hides	L.9,136	L.7,304
Argol	—	1,161	Horns	1,022	1,383
Beef and pork	2,309	3,709	Horses	—	8,414
Butter	1,360	642	Ivory	12,143	75
Copper ore	—	3,463	Mules	—	894
Corn and meal	—		Oil	—	566
Barley	—	1,061	Goat skins	8,426	12,626
Beans & pease	79	1,577	Seal skins	—	69
Bran.	—	2,865	Sheep skins	2,327	11,959
Flour	—	29,783	Spirits, Brandy	—	3,352
Oats	5	18,709	Tallow	1,387	494
Wheat	—	250			
Feathers	1,519	3,309	Wine, Constantia	—	66
Fish (cured)	398	9,876	Ordinary	—	26,799
Fruits (dried)	—	20,274	Wool	390,637	110,498

The most important export is wool, and the following table shows the progress of the export of this article:—

	Port Elizabeth.	Cape Town.
1833	39,753 lbs.	73,324 lbs.
1843	1,220,380	534,377
1853	6,160,916	1,703,692

There were imported into London from the Cape territories 22,706 bales of wool in 1853; 22,602 in 1854; and 28,087 in 1855.

By the summary of an official table in the *Cape Government Gazette*, the Custom-house returns of goods imported for the first six months of 1854 and 1855 give the following results:—For the first six months of 1854, goods imported, L.879,788; for the same months of 1855, L.622,218—making for those twelve months, L.1,502,006. Goods entered for consumption for the first six months of 1854, L.827,702; for the same months of 1855, L.643,485—for those twelve months, L.1,471,187. The exports of articles the produce of the colony for the first six months of 1854 were valued at L.315,579; for the same months of 1855, at L.440,816—for those twelve months, L.756,395. The excess of imports for consumption over the estimated value of colonial produce exported during the twelve months referred to is thus shown to be L.714,792.

In these returns we have the amount of customs-duties collected only for the first six months of 1855. They amount to L.31,770 for the first quarter; and to L.35,106 for the second—total for six months, L.66,876. The two chief articles of export are wool and wine. On both the increase has been very great. The wool exported during the first six months of 1854 was valued at L.221,865. In the same months in 1855, at L.297,885. The wine for the same months respectively was valued at L.13,425 and L.33,169. Wine was once the staple export, amounting in seven years to between L.80,000 and L.100,000. The quantity produced is supposed to be as great as ever it was, but it has found a more profitable market within the colony. The wool of the eastern and middle districts is indirectly exchanged for the wines, dried fruits, and flour of the western division.

Copper ore is a new article of export. For the first six months of 1854 this export was valued at L.4720; in 1855, at L.14,179.

The revenue of the colony is derived chiefly from customs-duties, stamp and auction duties, and a direct tax called transfer dues, at the rate of 4 per cent. on the purchase money of all landed property sold, whether by auction or privately. The expenditure is for payment of salaries of the officials and other disbursements incidental to the support of the civil government. The military expenditure is at present borne by the imperial treasury. The subjoined table shows the progress of the revenue and expenditure :—

	Revenue.	Expenditure.
1832	L.130,808	L.126,889
1842	226,261	226,025
1852	289,482	252,495
1853	308,472	268,111

The construction of good roads of late years, by the judicious employment of the convicts, the establishment of road boards, and other measures for the same object by the late able colonial secretary, Mr Montagu, have tended greatly to develop the resources of the colony, and to increase its commerce and revenue. (B. C. P.)

GOODWIN SANDS, a range of sandbanks lying about 4 or 5 miles off the east coast of Kent, between the North and South Forelands. They are about 10 miles in length from N. to S. and vary in breadth from 1½ to 3 miles. They are divided into two portions by a narrow channel, navigable by small boats. They are in many places dry at low water, and from their shifting and loose nature are very dangerous for shipping. Between them and the mainland is the roadstead termed the Downs. These sands are said to have at one time formed part of the Kentish land, and to have been submerged about the end of the reign of William Rufus, or the beginning of that of Henry I. Several light-vessels are fixed here as beacons; and during foggy weather gongs are sounded every ten minutes.

GOOLE, a market-town and river-port of England, west-riding of Yorkshire, on the right bank of the Ouse, 22 miles W. of Hull. Not many years ago, Goole was an obscure hamlet. Its situation on a navigable river, the opening of the Aire and Calder Canal to Ferrybridge, its being made a bonding port in 1829, the erection of its docks, and the completion of the Goole, Pontefract, and Wakefield Railway, have all contributed to its rapid rise. The docks of Goole constitute its most important feature. The ship-dock is 600 feet long and 200 wide, with a depth of 18 feet water; the barge-dock is 900 feet long by 150 wide, and could contain 200 vessels, averaging 50 or 60 tons each. There is a commodious dock for large steam-vessels, a large dry dock, and a patent slip for repairing vessels. The basin or entrance harbour is 250 feet long by 200 wide, with a depth of 9 feet water. There are extensive bonding warehouses for grain and other goods. The town itself is well built; a handsome church with a lofty tower, and a neat custom-house, are its chief public buildings. Market-day, Wednesday. On 31st December 1853, 512 sailing vessels of 33,865 tons, and 9 steamers of 707 tons, were registered at the port; and during that year, 2091 sailing vessels of 129,006 tons, and 115 steam-vessels of 20,316 tons entered, and 1993 sailing vessels of 111,428 tons, and 165 steam-vessels of 27,386 tons, cleared at the port. Pop. (1851) 4722.

GOOMSUR, a town of Hindustan, at the N.W. extremity of the Northern Circars, 43 miles N.W. from Ganjam. The town and neighbouring country formerly belonged to a native chief tributary to the British, who, failing in his feudal obligations, and rising in rebellion, was deprived of his possessions by the paramount power. This event occurred in 1835. The place had acquired an infamous celebrity from the encouragement afforded by its native rulers to the perpetration of human sacrifices; and upon its transfer to its new masters, measures were adopted for the suppression of the horrible practice. Several chiefs of the adjacent frontier tracts have entered into formal engagements to abandon the inhuman practice on condition of British protection; and the barbarous rite may now be regarded as effectually suppressed. The town of Goomsur is in N. Lat. 19. 50., E. Long. 84. 40.

GOOMTY, a river of Hindustan, so named from its winding course, having its source in the British district of Shahjehanpore, whence it flows in a S.E. direction through the province of Oude, and passes by the city of Lucknow, where it is navigable, and crossed by a bridge of stone. From Lucknow the river continues in a south-easterly direction, passing the towns of Sultanpore and Jounpore, and after a total course of 480 miles, during which it receives the waters of several tributary streams, it falls into the Ganges in N. Lat. 25. 29., E. Long. 83. 15.

GOORGAON, a town of Hindustan, giving name to one of the districts subject to the jurisdiction of the lieutenant-governor of the N.W. provinces. The district is bounded on the N. by the Jaghire or feudal possession of Jujhur, and the British district of Delhi, on the E. by the River Jumna, on the S. by the native state of Bhurtpore, and on the W. by the territory of Tijarra. It lies between N. Lat. 27. 40. to 28. 30., E. Long. 76. 21. to 77. 35., and contains an area of 1939 sq. miles. The population, according to the census of 1853, amounts to 662,486, of whom 460,774 are Hindus, and 201,712 Mohammedans. The greater part of the district of Goorgaon passed to the British by the treaty of Serjee Anjengum, dated 30th December 1803, by which Doulut Rao Scindia ceded to the East India Company his territories northward of those of the rajahs of Jeypore and Joudpore, and of the Ranah of Gohud. Part of it, containing about 180 square miles, was held in Jaghire by the Kashmirian adventurer, Zebal Nissa, more generally known under the name of the Beegum Sumroo, and lapsed to the British on her death in 1836. Another portion of about 200 square miles, termed the Jaghire of Ferozepore, from its principal place, was held with Loharoo, by Shumsuddeen Khan, who took it by descent from Ahmad Buksh Khan, to whom it had been granted by the British government early in the present century, on account of services rendered against the Mahrattas. Shumsuddeen Khan having, with the view of defeating certain contemplated measures, which would have affected his Jaghire, caused the murder of Mr William Fraser, the British political agent at Delhi, he was hanged at that city in October 1835, and his Jaghire forfeited. Loharoo was, by the British government, bestowed on the offender's half-brothers, but the territory of Ferozepore was incorporated with the district of Goorgaon. The town of Goorgaon is in N. Lat. 28. 28., E. Long. 77. 5.

GOOSE. See index to ORNITHOLOGY.

GOOSEBERRY. See HORTICULTURE.

GOPPINGEN, a town of Würtemberg, circle of the Danube, on the right bank of the Fils, 22 miles E.S.E. of Stuttgart. It has an old castle, a town-hall, a handsome church, and mineral baths; also manufactures of woollen and linen cloth, and an active trade in wool. Pop. 5035.

GORCAH, or Ghoorcah. See Nepaul.

GORCUM, or Gorkum (Dutch, *Gorinchem*), a town of Holland, province of South Holland, on the right bank of the Meuse, at the influx of the Linge, by which it is intersected, 22 miles E.S.E. of Rotterdam. It is surrounded by walls, and has an old town-house, prison, custom-house, barrack, arsenal, and military hospital. The charitable and benevolent institutions are numerous. There is also a library and several learned associations. Gorcum possesses a good harbour, and carries on a considerable trade in grain, hemp, cheese, potatoes, and other agricultural produce. Pop. (1850) 8780.

GORDIAN KNOT See Gordium.

GORDIANUS, Marcus Antonius Africanus, was a member of one of the noblest and wealthiest families of Rome, and gained unbounded popularity by the magnificence, games, and shows, with which he amused the people during his quæstorship. He was proconsul of Africa in A.D. 237, when that province rebelled against Maximin; and so popular had been his rule, that he was then saluted emperor. After much reluctance, he accepted the proffered dignity, though upwards of eighty years old, insisting only that his son should be conjoined with him in office. The two had barely been installed as emperors at Carthage, when Capellianus, a general of Maximin, hastily collecting troops, marched against them, defeating and slaying the younger in battle. His father, hearing the news of his death, strangled himself. They had scarcely enjoyed their imperial honours two months. Both the Gordians were fond of literature, and were themselves the authors of several books. They were both men of considerable accomplishments; but rather intellectual voluptuaries than able statesmen or powerful rulers.

Gordianus, M. Antonius, surnamed Pius, was grandson of the elder Gordian, and raised to the empire at thirteen years of age; and when Maximus and Balbinus fell in an insurrection of the soldiers, he was left sole emperor. Having married Fabia Sabina Tranquillina, the daughter of his master of rhetoric, he appointed his father-in-law, Misitheus, prefect of the prætorian guards, and through his assistance emancipated himself from the hands of his mother's eunuchs. Misitheus proved himself an able minister, and discharged the military duties of his office with vigour and ability. He induced the young emperor to proceed against the Persians, who had invaded Mesopotamia; and during the whole of the expedition Misitheus watched over the safety and discipline of the army. He was suddenly cut off, however, and the suspicion was general that he had been poisoned by Philip, his successor in the prefecture. A short time afterwards a sedition broke out among the soldiers, which was fomented by this same Philip, and Gordian was killed, A.D. 244, near the conflux of the Euphrates with the little river Aboras. (See *L'Histoire des quatre Gordiens*, par Abbé Dubois; also Caspar, *Historia trium Gordianorum*, Deventer, 1697.)

GORDIUM, in *Ancient Geography*, a once large and important city of Asia Minor, on the confines of Bithynia and Galatia, a few miles north from the right bank of the Sangarius. It was at one time the residence of the old kings of Phrygia, and a place of considerable note, but it dwindled down into a mere village, and was at length rebuilt by Augustus, who called it Juliopolis. Its name has been preserved by the story of the Gordian knot, which it was foretold that he who should first untie should receive the empire of Asia. Alexander the Great, in the course of his eastern conquests, arriving at Gordium, cut the knot with his sword, and applied the oracle to himself.

GORDON, Robert (1786–1853), an eminent Scottish preacher and theologian, was a native of Glencairn in Dumfriesshire. At the early age of sixteen he succeeded his father as schoolmaster of the parish, and held this office till he removed to Edinburgh, to carry out his plan of studying for the church. Difficulties and hardships almost incredible impeded and embittered the years of his student life; but he overcame them all, and after being ordained was appointed one of the masters in the Perth Academy. He now devoted peculiar attention to the exact sciences, and contributed largely to many of the scientific periodicals of the day. In 1816 he became minister of Kinfauns in Perthshire, whence he removed in 1820 to Edinburgh, in which city he held some minor charges, till he was translated in 1830 to the High Church. He joined the Free Church at the time of the Disruption, and, indeed, contributed not a little to accelerate that movement. He died in 1853. As a preacher Dr Gordon was surpassed by few pulpit orators of his day in Scotland. His chief contribution to theology is a posthumous collection of discourses, entitled, *Christ as made known to the Ancient Church*.

Gordon, *Thomas*, a political and miscellaneous writer of democratic principles, was born in 1684, at Kirkcudbright in Galloway. At an early age he removed to London, where he maintained himself by teaching languages. Some of his political writings attracted the notice of the Earl of Oxford, who is said to have employed his pen. His death took place in 1750. It was almost simultaneous with that of Conyers Middleton; and when both were announced together to Lord Bolingbroke, he is said to have observed, "Well, then, we have lost the best and the worst writers in England." Gordon's political writings, it is true, were often coarse and needlessly violent; but his name bids fair to be kept alive by his translation of Tacitus in two vols. fol., 1728–31.

GORE, in *Heraldry*, one of the abatements, which, according to Guillim, denotes a coward. See Heraldry.

GOREE, a small island on the W. coast of Africa, belonging to the French, immediately S. of Cape-de-Verd, in N. Lat. 14. 39., W. Long. 17. 26. It is about three miles in circumference, and has a small sandy bay on the N.E. side. On an elevated plateau in the centre is Fort St Michael, which commands the town. The town occupies more than two-thirds of the island. The island is deficient in water, but is said to be healthy. It is an entrepôt for Senegal gum, ivory, gold dust, and other productions of the coast. Pop. nearly 5000, comprising a few Europeans.

GORGE, in *Architecture*, the narrowest part of the Tuscan and Doric capitals, between the astragal, above the shaft of the pillar and the annulets.

Gorge, in *Fortification*, the entrance into any piece of fortification, consisting of the distance or space between the extremities of the two faces; as between the faces of a half-moon, redoubt, or bastion.

GORGED, in *Heraldry*, bearing a crown, coronet, or the like, about the neck.

GORGET, a piece of armour for defending the neck. Also a small ornament shaped somewhat like a half-moon, formerly worn by officers on the breast.

Gorget, in *Surgery*, a cutting instrument used in lithotomy. Also a cannulated conductor, called a *blunt-gorget*.

GORGONS, in *Grecian Mythology*, three sisters of terrible aspect and fierce disposition, but who do not seem to have had any special function. Homer makes mention of only one, who is described as dwelling in Hades. Hesiod, however, extends the list to three, calling them daughters of Phorcys and Ceto, and naming them Stheino, or Stheno, Euryale, and Medusa. Of these the last alone was mortal. They dwelt in the Western Ocean, according to Hesiod, but most writers place them in Libya. They are described as monsters with immense claws and teeth, sometimes with wings, and coiled round with snakes, hissing and quivering their forky tongues. Medusa is generally represented as a woman with snakes wreathed round her temples instead of hair, and presenting so fearful an appearance, that the sight of her turned into stone every living being that looked upon her. After Perseus had slain her, he cut off her head, which Minerva fastened in the centre of her ægis. The origin of the idea of the Gorgons has never been satisfactorily explained.

GORITZ (German *Görz*, Italian *Gorizia*), a town of Illyria, capital of a cognominal circle in the government of Triest, on the Isonzo, 22 miles N.N.W. of Triest. It consists of an upper and a lower town; the upper town is the more ancient, is surrounded by walls, and contains the old castle of the counts of Görz, now partly in ruins and partly used as a prison. The lower town is generally neat and well built. Goritz is the seat of an archbishop, and has a fine cathedral, several churches and monasteries, episcopal palace, court-house, town-house, and an elegant theatre. An old Jesuit college has been converted into a barrack. There are several literary and benevolent institutions, and an episcopal seminary for the government of Triest. The chief manufactures are leather, sugar, and silk. Pop. (1851) 10,851.

GORLITZ, a walled town in the Prussian province of Silesia, government of Liegnitz, capital of a cognominal circle on the left bank of the Neisse, 52 miles W. of Liegnitz, and 56 miles E. of Dresden, on the railway between these two towns. It is pleasantly situated, and is generally well and regularly built, and has three suburbs. It has eight churches, that of St Peter being a very fine edifice, a town-house, a house of correction, orphan asylum, three hospitals, a public library of 9000 volumes, a gymnasium, Moravian training institution, and several literary and scientific associations. It has also manufactures of linen and woollen cloths, and a considerable trade in grain and other agricultural produce. Pop. (1849) including the military and the suburbs, 19,032.

GORT (literally *garden*), a market-town of Ireland, county of Galway, 18 miles S.E. of the town of that name. The town is generally neat and regular, and the three principal streets diverge from a square which forms the market-place. The chief public buildings are the parish church, a Roman Catholic chapel, a district bridewell, and an infantry barrack. Market-day, Saturday. Pop. (1851) 5145, including 2637 in workhouse.

GORTHO, the modern name of the ancient city of Corinth, of which word it is a corruption. See Corinth.

GORTYNA or Gortyn, in *Ancient Geography*, a large and important city on the southern side of the island of Crete. It stood on the banks of the small river Lethæus at a short distance from the sea, with which it communicated by means of its two harbours, Metallum and Lebena. Near the town was the famous fountain of Sauros, inclosed by fruit-bearing poplars; not far from which was another spring, overhung by an evergreen plane-tree which marked the scene of the amours of Jupiter and Europa. Gortyna was, after Cnossus, the largest and most powerful city of Crete. The two cities combined to subdue the rest of the island; but when they had gained their object they quarrelled with each other; and the history of both towns is from this time little more than a record of their feuds. Neither plays a conspicuous part in the history of Greece.

GORUCKPORE, a town of Hindustan, and chief place of the British district of the same name, lying within the limits of the lieutenant-governorship of the north-western provinces. It is situated on the eastern bank of the Raptee River, which is navigable for boats at all seasons of the year. A few of the houses are of brick, but the larger portion, though tiled, have mud walls. On the east side of the town, and on the highest ground that could be appropriated for the purpose, is the cantonment of the British troops. Pop. (by census of 1853) 54,529. The district, of which this place is the principal town, is bounded on the N. by the kingdom of Nepaul, on the E. and S.E. by the British district of Sarun, on the S. by that of Azimghur; and on the W. by the native state of Oude. It lies between N. Lat. 26. 7., 27. 30., E. Long. 82. 12., 84. 30., and includes an area of 7340 square miles. The population amounts to 3,087,874; of these, 2,716,775 are Hindus, and 371,099 Mohammedans. The tract constituting this district was formerly part of the territory of Oude, and was transferred by the vizier to the East India Company in 1801 in commutation of subsidy. The town of Goruckpore is in Lat. 26. 42., Long. 83. 23.

GOSHEN, a province or district of Egypt, in which Jacob and his family settled through the instrumentality of his son Joseph, and in which they and their descendants remained for a period of 430 years. That Goshen lay on the eastern side of the Nile may be justifiably inferred from the fact that Jacob is not reported to have crossed that river; nor does it appear that the Israelites did so in their flight out of Egypt. By comparing Exod. xiii. 17, and 1 Chron. vii. 21, it appears that Goshen bordered on Arabia as well as on Palestine; and the passage of the Israelites out of Egypt shows that the land was not far from the Red Sea. The locality of Goshen was probably in Lower Egypt, on the east side of the Pelusiac branch of the Nile, in the district around Heroöpolis.

GOSLAR, a walled town of Hanover, district of Hildesheim on the Gose, an affluent of the Ocker, at the N.E. foot of the Harz, 24 miles S.E. of Hildesheim. It is said to have been founded by Henry, surnamed the Fowler, in A.D. 922; and was frequently the seat of the German diets and the residence of the emperor. Previous to 1803 it was an imperial city, but it then lost its independence and became subject to Hanover. In 1807 it was annexed to the kingdom of Westphalia, and included in the department of Ocker; but in 1813 it again reverted to Hanover. The town has a very antique appearance, and contains some interesting fragments of ancient buildings. The streets are generally narrow, crooked, and dirty. Goslar is the seat of a mining board; and most of the ore extracted from the mines in the neighbourhood is here purified, and much of it converted into various utensils. It is also celebrated for its beer, of which it brews a large quantity. Pop. (1849) 7741.

GOSPEL (Sax. *God*, and *spel*, "good news"), equivalent to the Greek *ευαγγελιον*. See Bible. For the spurious gospels, see Apocrypha.

GOSPORT, a fortified seaport and market town of England, county of Hants, on the western side of Portsmouth harbour, near its mouth, directly opposite and about a mile from Portsmouth, with which it is connected by a floating bridge moved by a steam-engine working on two fixed chains. It forms no part of the borough of Portsmouth, but is governed by trustees under an old act of parliament. It is fortified on the land side by a line of bastions extending from Weovil to Alverstoke, and having the appearance of being a segment of the fortifications of Portsmouth. Within the fortifications is the royal St Clarence victualling yard, with brewery, cooperage, powder-magazines, biscuit-baking establishment, and storehouses for various kinds of provisions for the royal navy. To the south is the magnificent Haslar naval hospital, capable of containing 2000 patients. Gosport has also an extensive establishment for the manufacture of anchors and chain cables. It communicates with London by the South-Western Railway. The coasting trade is considerable. Pop. (1851) 7414.

GOSSAMER, a fine filmy substance like a cobweb, observed floating in the air, especially in autumn. It is often seen in stubble-fields, and upon furze and other low bushes, and is probably produced by a species of spider.

GOSSIP (Sax. *God*, and *syb*, kindred), a term originally applied to sponsors at baptism on account of their relationship to the child. It is now only used in a secondary sense to denote a tattler or busybody.

Gotama Buddha.

GOTAMA BUDDHA. In our article Buddha we have given the opinions that have been most generally current among orientalists on the Buddhistical system; and we now propose under this biographical notice of Gotama to give, from other sources of information more recently opened up, some further details, and a more complete analysis of that system, as far as it can be gathered from the most authoritative or the most popular of its own writers.

No religious teacher, apart from the sages who have had access to the revelations of Israel, has left more important traces of an existence in the world than the Hindu Gotama. It is supposed that at the present moment there are upwards of 300,000,000 who regard him as the Supreme Intelligence, "wiser than the wisest, and higher than the highest," though acknowledging at the same time that he was "of man conceived, of woman born." With the single exception of the most lofty of the pyramids, there is no structure upon earth of vaster dimensions than the mounds that have been raised over his own relics, or those of his disciples; and the cave temples that have been excavated in his honour are equally without a parallel in the labour that has been bestowed upon their preparation. In the system that bears his name there is the germ of nearly all the teachings that are now the most rife among the speculative philosophers of Europe; and in the discipline of his adherents there are resemblances without number to the most striking usages of the monastic orders of Christendom. Yet this ancient reformer is hitherto without a niche in our great temple of the world's biography; and his existence is regarded as a myth or mystery, without any warrant for its reality beyond the vivid imagination of the myriads who place in him their trust.

It is now most generally admitted that Gotama was born in the year 623–4 B.C., at Kapila-wastu, on the borders of Nepaul. The name of his father was Sudhodana, a monarch of the Sakya race. As other kings are said to have reigned within a few miles of his metropolis, his dominions can have been of no great extent, though his race is represented as having sprung from that of the sun. His mother, Maya, died seven days after his birth. When he had attained his sixteenth year, he was married to the princess Yasodhara. The inoffensiveness of his disposition made the relatives of his bride suppose that he was unworthy to receive her hand; but by bending a bow of mighty strength, and other deeds of prowess, he convinced them, in the presence of multitudes, that they had entirely mistaken his character. Nevertheless, it was rather in obedience to the command of his parents than from personal inclination that he entered into the marriage state. Other thoughts were already brooding in his reflective mind, by which he was led to resolve upon renouncing the world and becoming an ascetic. The fulfilment of this resolution was hastened by four sights that he witnessed—an aged pilgrim leaning upon a staff; a loathsome leper full of sores; a dead body fed upon by worms; and a grave recluse passing modestly through the crowd without noticing its gaiety or grandeur. The day on which he fled from the palace was spent in unwonted revelry, perhaps to deceive the more readily those who might otherwise have detained him by force. Upon the same day the princess was delivered of a son, Rahula; but after taking a furtive glance at his wife and child, he succeeded in escaping to the forest on horseback with only one attendant. When at some distance he dismissed the attendant, with a charge to his relatives that they were not to sorrow for him under the supposition that he was lost, as he was about to become an ascetic. This occurrence took place when he was twenty-nine years of age. After seven days he entered the city of Rajagaha as a mendicant, but the gracefulness of his manner attracted the attention of the citizens, who informed the king, Bimsara, that some superior being must have become their visitant. On receiving this intelligence the king sought an interview with him, and entreated him, when he became acquainted with his rank, to renounce the low mode of life he had chosen, and return to the splendour of the palace. But Gotama was unmoved by these solicitations. Having seated himself upon a rock outside the city, he ate the food given him in alms, though it was not of the most inviting description. For the space of six years he practised the most severe austerities, which reduced him to a state of extreme weakness; but as he did not thereby obtain the object of his search, he commenced a less rigid course of abstinence, until his strength was restored. In a forest, on the banks of the Niranjara river, at the spot where the city of Buddha Gaya was afterwards built, he is said to have sustained a severe conflict with the powers of darkness; and after he had gained the victory by repelling the wiles of the tempter, he is represented as attaining an intuitive illumination of the most powerful kind, by which he became a Buddha. The joy of his triumph was expressed in a well-known stanza, in which he declared that he should now be free for ever from the trammels of existence, as he had attained to the extinction of desire.

Gotama Buddha.

About two months after this period, being thirty-five years of age, he began to proclaim the tenets of his religion, at a temple near Benares; and when his converts were sixty in number, he sent them forth to declare that a supreme Buddha had appeared in the world. Bimsara, at this time lord paramount of India, declared himself a convert to the teachings of the sage. His principal disciples were Seriyut and Mugalan. The former was convinced of the truthfulness of his doctrines by hearing one of his followers repeat the stanza that is found engraven in Pali upon many existing monuments: "All things proceed from some cause; this cause has been declared by Buddha; all things will cease to exist; this is that which is declared by the great ascetic." Soon afterwards, Gotama delivered another stanza of equal celebrity: "This is the advice of the Buddhas; avoid all demerit; obtain all merit; let the mind be cleansed from all evil desire." In process of time, his wife, his royal father, and his son, acknowledged the validity of his claims to the Buddhaship; and in all the regions that he visited he made numerous converts. The manner in which he taught the people maybe inferred from the following narrative:—There was a ploughing festival near Rajagaha, held by a wealthy Brahman, at which were a thousand oxen profusely ornamented; five hundred ploughs tipped with gold; five hundred ploughmen in gay attire, and many thousands of spectators. Thither the sage repaired, and seated himself in a conspicuous part of the field. When perceived, he was upbraided by the Brahman, and reproached with idleness, for attending festivals and other places, that he might receive something to eat instead of working like the rest of men. "I plough and sow," said he, "and from my ploughing and sowing I receive grain and enjoy the produce; priest, it would be better if you, in like manner, were to plough and sow, and then you would have food to eat." "Brahman," was the reply, "I do plough and sow, and from my ploughing and sowing I reap immortal fruit." But the Brahman thought thus: "The ascetic says that he ploughs and sows, but he has neither plough nor any other implement; he must have spoken falsely;" then addressing Buddha, he said, "I see no plough; no goad; no oxen; if you perform the work of the husbandman, where are the necessary implements?" In reply to this question, he was informed that the field of Gotama was the truth; the weeds that he plucked up, the cleaving to existence; the plough that he used, wisdom; the seed that he sowed, purity; the work that he performed, obedience to the precepts; the harvest that he reaped, the cessation of the evils of existence; and when he had explained these matters at great length, he exhorted the Brahman to sow in the same field, that he might reap its unrivalled fruit. The Brahman was thereby caught in the net of wisdom, and immediately prepared a repast for Buddha of the most excellent food. The teacher however refused to partake of it, telling him that it was not the custom of the Buddhas to receive offerings after they had been setting forth the excellence of the truth, or they would be like musicians and dancers, who make a collection after they have amused the people.

The principal opponents of Gotama were the fire-worshippers; but it was an age of religious excitement, and many sects are presented in the story of his life, all claiming to have the power to overcome evil desire, and free man from its presence and consequences. It was not unopposed that he was allowed to maintain his opinions, and extend his system. At one time he was accused of incontinence by a female unbeliever, Chinchi; but the charge resulted only in the greater confusion of his adversaries. His bitterest foe was his own brother-in-law, Dewadatta, who made several attempts to take his life: once, by the arrow of an assassin; at another time by hurling a stone from a machine constructed for the purpose; and again, by letting loose against him an intoxicated elephant. After wandering from place to place, confounding the sceptics who opposed him, and everywhere teaching the emptiness and vanity of all sensuous pursuits, in his old age he was entertained at the house of a smith, Chunda, who prepared for him a repast of pork; but by partaking of this gross food he became disordered, and soon afterwards died, at Kusinara, having attained his eightieth year. His body was burnt with many honours; after which his relics were collected and divided among his disciples. All the accounts that are given of him represent him as being extremely beautiful in person; graceful in deportment as became a prince, and gentle in disposition as became one who professed to be a divine teacher. It is said that he never addressed to any one a ruder epithet than to call him "vain."

We must now leave entirely the meagre thread of reality, almost imperceptible amidst the vast tissue into which it has been woven; in which exaggerations carried out until they become monstrous, and errors the most destructive to the best interests of man, are strangely blended with gorgeous imaginings, or the dim shadows of great and important truths. The legends of the far east are too improbable to be in themselves an object of interest; but the extent to which the system has been received, the massiness of the lore that its votaries regard as inspired, the wildness of some of its speculations, and the near approach to revelation in some branches of its ethics, entitle it to more regard than it has yet received from the learned men of our own country; and as no system can be properly comprehended unless taken in its entirety, we shall present, in order that it may be the more perfectly understood, its romance as well as its reality. The people of Ceylon, Burmah, Siam, China, and Tibet, are equally agreed in the extravagance of the character they ascribe to Gotama; and we may here remark, that in all the more popular of their legends, as well as in all the more important of their tenets, a uniformity may be traced, which proves an identity of origin; and even those customs that at first sight appear to be the most anomalous may be reconciled with the records that profess to introduce us to the doctrines of primitive Buddhism. In the present article we shall confine ourselves almost exclusively to the principles upon which nearly all the Buddhist nations are agreed; leaving the exceptions and discrepancies to be noticed under the head of the people among whom they take place.

In order to separate Gotama from the numerous other teachers, all claiming the same powers, who existed in the same age, his followers have ascribed to him perfect intelligence. The others saw truth, but it was partially; they could only reason imperfectly from the premises that were within their reach. The wisdom of Buddha did not arise from any process of reasoning, nor was it imparted unto him from any outward source whatever, either immediately or as an instrumentality. It came to him as the result of his own efforts and aspirations, carried on through myriads of ages; and was "an intuitive underived power, or self-generated effulgence." By the energy of his own mind, the whole field of truth was presented to his vision; and he could see it at once, and with the utmost clearness. The literal meaning of the word Buddha, according to Professor Wilson, is "he by whom truth is known," which answers exactly to the idea formed of him by his disciples. There have ever been Buddhas, and there ever will be; but they appear after intervals of time inconceivably vast. There is a period (asankya) so immense, that it requires a unit with 140 cyphers to express it. By Klaproth, a still vaster period is mentioned, which he says is "indiciblement indicible," and is expressed by a unit followed by 4,456,448 zeros, and would present, in ordinary type, an array of figures nearly 44,000 feet long. As many of these periods intervene between the appearance of one Buddha and that of another, it is only the cycles of geology that can approach them in immensity. The history of some of these Buddhas is known; but for all the intelligence we receive of their acts we are indebted to Gotama, as he is made to declare, repeatedly, that all knowledge of these distant ages is derived solely from his own intuition. There were, therefore, no traditions of the previous Buddhas until Gotama made known their existence. In the present cycle four Buddhas have appeared, Kakusanda, Konagamana, Kasyapa, and Gotama, and another is yet to appear, Maitree. Attempts have been made to ascertain the era in which they existed; and though, upon the acknowledged principles of the system, this may not be possible, further researches may enable us to reduce these limitless periods to some standard nearer the truth. It is somewhat remarkable, when these mighty numbers are looked at, that Gotama should have predicted, as he is said to have done, the decline of his religion, after the comparatively limited period of 5000 years.

The period at which existence commences is unknown to all but the Buddhas, so that we cannot tell when Gotama began to be; but we can trace his actions in some of these remote ages by the aid of his own revelations. The Buddhas, previous to their last appearance, as the deliverers of sentient being from the sequence of existence, are called Bodhisats. The story of the previous births of Gotama is contained in the *Pali Commentary* on one section of the discourses of Buddha, called *Jataka Gat'ha*, or *Birth Stanzas*. In this work we have the history of the Bodhisat, who afterwards became Gotama Buddha, in 550 different births. These narratives occupy about 2000 pages of the palm-leaf on which they are usually written, and are of unequal length. In some of them we have the fables we have been accustomed to ascribe to Æsop, with scarcely a single variation of circumstance. Each story begins with the well known formula "in days of yore;" and the foxes and monkeys, whose wit and cunning amused us in childhood, little as we suspected it, became afterwards "the all-wise teacher of the three worlds." In all these births he did, or said, or suffered something that further fitted him for the high office he was afterwards to assume. The sufferings he voluntarily endured no one can compute; but we may give one example out of many that are named. Were all the blood shed from his person, in the instances in which he suffered it to be poured out for the good of others (as when he threw himself before a hungry tiger, that he might save its life by his own death), to be collected together, it would form a greater mass than all the water of the four oceans. Myriads of years before his last birth he lamented the misery that prevailed. He might then have ceased to be, and thus have escaped finally from the unquiet of existence; but as he foresaw that by becoming a Buddha he might impart the same privilege to numberless other beings, he voluntarily threw himself into the stream of continued existence, in all the births he afterwards received making some progress towards the accomplishment of his great design. It was from a residence in one of the heavens that he entered into the womb of Maya, and was born as man.

At the moment of his conception thirty-two wonders were presented: the sky was covered as by a canopy of flowers; the waters of the sea became sweet; and the torments of the lapsed intelligences had a temporary cessation. The body of his mother was transparent, so that in the months of gestation he appeared like an image of gold in a vase of crystal. The queen one day set out to visit her native city in a golden litter, but on arriving at the garden of Lumbini she alighted, that she might enjoy its prospects and perfumes. As she held the branch of a tree the other branches bent around her of their own accord, and whilst in this seclusion her wondrous boy was born. At once he asserted his supremacy, and stepping forth he looked round in all directions that he might search through all worlds; but as he saw no one greater than himself, in any place, he exclaimed, as with the voice of a fearless lion, "I am the most excellent and the most exalted of beings." Five months after his birth there was a ploughing festival, attended by the king, at which he sat in the air without any support, and received the homage of his father and his nurses. But we pass by the accounts that are given of his marriage, his escape from the palace, his wanderings in the wilderness, and his contest with Mara and an innumerable host of demons and sprites; all of which abound with the most incredible accompaniments. The day on which he gained the victory over Mara was the most memorable in his whole career, including his previous births as well as the present. In the first watch he was able to remember all the circumstances of all the births he had previously received; in the second watch he saw the varied miseries to which sentient beings are exposed in the repetition of existence; and in the third watch he acquired the knowledge that unfolds the causes of the repetition of existence, and sets forth the means by which the stream of existence can be arrested for ever.

The last attainment is regarded as the essentiality of the Buddhaship, and its most exalted privilege. When the incipient Buddha awakes to a realization of the misery attendant upon sentient existence, he looks into all worlds to try if he can discover any state that is entirely free from its evils. For this purpose he looks to the insect in the sunbeam, the worm in the clod of earth, the fish as it glides through the waters, the fowl as it darts through the air, and the beast as it browses on the tender grass, or roams through the forest in terrible majesty; to man in all positions, from the monarch to the outcast: then, not finding one species of being with whom there is the home of absolute peace, he passes in thought to the other systems, the worlds beneath and the worlds above; but among all the varied intelligences that inhabit these innumerable worlds he finds no one that is not subject, either at the present moment or in some future state, to the three evils of existence, impermanency (anitya), sorrow (dukha), and unreality (anatma). In all beings there is a cleaving to sensuous objects, and so long as this remains there will be the continuance of existence. The agent that carries on the continuance of existence, and that, as to any given individual, is the cause of existence, is karma. This karma is the aggregate of all the actions ever done by the individual in whatever birth. Though a mere abstraction, it controls his destiny; it shapes out his weal or woe; it is fate not acting blindly, but under the guidance of moral influences. The Buddhist carries out the principle, "whatsoever a man soweth that shall he also reap" to its utmost extent, not restricting it to the present life alone, so that man is now as much under the influence of acts he did a myriad ages ago, as if they were done in his infancy or youth, or in the moment just passed away. On these accounts, as there is sorrow wherever there is existence, it is man's great object to free himself from the sequence of existence; and as this sequence can only be overcome by the destruction of all cleaving to sensuous objects, the wise man seeks the utter annihilation of the passions, which may be accomplished by an attention to the course of ascetic discipline set forth by the Buddhas. The cessation of existence is called nirwana in Sanscrit; in Pali, nibbanna or nibbuti. Though expressions are sometimes used relative to it which would seem to indicate that it is a state, it cannot mean anything more or less than non-entity. Were it otherwise, Buddhism would fail to accomplish the very sequence which it regards as its greatest triumph—its own peculiar and exclusive heritage, constituting its great claim upon man's regard. It was this discovery that gave to Gotama his supremacy as a teacher, and entitled him to receive the homage of all intelligences in the three worlds. The four great truths, as they are called, are thus expressed: 1. Where there is existence there is sorrow; 2. Sorrow arises from an attachment to existing objects; 3. There is no escape from sorrow but by the destruction of this attachment; 4. This attachment will be destroyed by an entrance into the paths that lead to nirwana."

Accompanied by his disciples, the sage is represented as going about from place to place to teach men the way to "the city of peace," as nirwana is figuratively called. But we wonder, as we proceed, how even the most credulous can be brought to receive the legends of his life as a truthful narrative. It has ever been with the nations of India as it is now; they cannot be content with the simple truth, but must add some accompaniment to make it appear the more truthful, robbing it of its credibility by the mode in which they try to place its reality on a firmer basis. The wildest tale of the nursery is soberness itself when compared with the fictions of the Hindu religionist. Of this we have ample evidence in the deeds that are recorded of Buddha. When he put his foot on the ground there sprang forth a lotus on which for him to step; he could pass through the earth or the sky; he could hear all sounds, and tell the thoughts of all intelligences; at the doing of his more important acts, deities innumerable were present, and the rays proceeding from his person penetrated to all worlds. His stature is represented as being twelve cubits; but it is said to be difficult to describe his appearance, and for this a cogent reason is given. He could walk in a space not larger than a mustard-seed, and in an instant he could scale the heavens. If there were any substances that might hinder or obstruct his walking, they moved out of his path of their own accord, and the ground became level as the head of a drum; the air appeared as if sweetened by perfumes; and if he passed any being that was in pain it ceased in an instant.

With such advantages as a teacher we wonder not when we are told that he soon numbered among his converts more than a hundred nobles and princes; and that a thousand fire-worshippers were convinced of his superiority to their own teachers by the displays of his power. A visit to his native city resulted in the conversion of nearly all his relatives. In the ninth month of his Buddhaship he visited Ceylon, which he found to be inhabited exclusively by demons, and he afterwards paid two other visits to the same island. As no other place in Southern India is mentioned as having received a similar honour, we may suppose that this legend, which is by no means confined to the Singhalese, was invented that he might not appear to be inferior to Rama, the conqueror of the giants of Lanka in an earlier age. When the city of Wisala was becoming desolate from the ravages made by pestilence, famine, and sprites, he commanded his attendant to go round the city sprinkling water from his alms-bowl, by which the city was freed at once from its deadly plagues. There was an assassin, in a forest, who had put many hundreds of travellers to death, but he followed him to his retreat, and succeeded in persuading him to renounce his cruelties and become a recluse. This led the convert to say, "The hook of the driver subdues the elephant and other animals, but Buddha subdues by kindness." It was the custom in that age for companies, both of men and women, to visit different places, and hold public disputations. But whenever any of them encountered Buddha they were obliged to confess the superiority of his wisdom in every instance, and they generally became his adherents at the conclusion of the contest. One of the greatest of his encounters was with a demon, Alawaka, who every day demanded the sacrifice of a human being from the king of Alow; but even this monster was overcome by the simple weapons of gentleness and equanimity. The ruler of one of the celestial worlds, Sekra, having paid him a visit, was enabled to gain a prolongation of his present state of existence, extending to many myriads of years, from the mere circumstance that Buddha, on his entrance, saluted him with these words, "May your age be multiplied." Subsequently the sage visited Sekra in his own dominion, and passed from earth to the celestial city at three steps. Here he remained three months preaching the word to the deities and their queens. On his departure, Sekra caused a ladder to descend to the earth, with another on each side, upon which were choristers and musicians, and the residents in many worlds assembled to do him honour. We are informed by Fa Hian, the Chinese traveller, that the three ladders disappeared under the earth; but that the monarch Asoka built a monument over the ladder by which Buddha descended, which was still in existence in the fourth century.

We have no contemporary account of Gotama, nor any writings of his immediate disciples. The sacred books of the Buddhists are written in Pali, the vernacular language of Magadha, of which Rajagaha was then the capital. It is allied to the Sanscrit, and is regarded as the language of the celestial regions. "There is a language," says the grammarian Kachayana, "which is the root [of all languages]; men and Brahmas, at the commencement of the cycle, who never before heard or uttered a human accent, and even the supreme Buddhas, spoke it; it is Magadhi." The discourses of Buddha are said to have been preserved in the memory of his followers during the space of 450 years, after which they were reduced to writing in the island of Ceylon. The volumes in which they are contained are called the Three Caskets, or Receptacles (Pitakattayan). 1. Winaya, or Discipline; 2. Sutra, or Discourses; 3. Abhidharmma, or Pre-eminent Truths. At a convocation held in the same year in which Gotama died, the discourses were orally repeated, and the text accurately defined; and at two subsequent convocations, held B.C. 443 and 309, they were again repeated, together with the Atakat'ha or commentaries; but as the native authorities, both Singhalese and Burman, affirm that the commentaries, as we now possess them, were translated from Singhalese into Pali, by Budhagosha, between A.D. 410 and 432, we may conclude that they had not previously been known in their collected form. Both the text and commentary are regarded as having been compiled by men who, from their purity, were incapable of falling into error; but the sages who thus claimed the intuitive possession of divine knowledge ceased to appear about 100 years B.C. The sacred books are worshipped with the same reverence that is paid to the images of Buddha. The scriptures of the Chinese are contained in 800 large volumes, known under the general name of Gandjour or Kan-gyur. The best edition, issued at Pekin from the imperial press, is in four languages—Tibetan, Mongol, Mantchou, and Chinese. An analysis of the contents of this great compilation was published by Csoma Körösi in the Asiatic Researches and the Journal of the Bengal Asiatic Society.

One of the most striking features of the system when seen in actual working is the monasticism of its priests. They sometimes live singly; whilst in some of the temples of Tartary there are several thousands of residents. The priesthood does not belong to them by primitive institution; but as their time is now principally occupied in receiving the offerings of the people and presenting them to the idols, with the recitation of a set form of words, they may be regarded as priests in a modified sense. The rules by which they are bound are most stringent. They are required, at their investiture, to take upon themselves ten obligations: not to take life; not to take that which has not been given; not to have sexual intercourse; not to say that which is not true; not to use intoxicating drinks; not to eat solid food after mid-day; not to attend places of amusement; not to use garlands, perfumes, or unguents; not to use seats or couches above the prescribed elevation; and not to receive gold or silver. The novice must be at least eight years of age; and he cannot receive investiture until he is twenty. From the time of his entrance upon the noviciate his head is shaven and he wears the yellow robe. The form of investiture is extremely simple. A chapter having been called, the candidate is asked if he is free from certain diseases that are named; if he is a human being, a male, and a freeman; if he is out of debt, and free from the king's service; if he has the consent of his parents; if he has attained the prescribed age; and if he is provided with the eight priestly requisites. These include—1, 2, 3. Three robes of different descriptions; 4. A girdle for the loins; 5. An alms-bowl; 6. A razor; 7. A needle; 8. A piece of rag for a water-strainer. When the answer is in the affirmative, his admission is proposed to the assembled priests; and if they agree to receive him, the more important of the rules by which he will have to abide are repeated to him, to which he makes known his assent. The precepts and prohibitions contained in the first and second of the five sections into which the Winaya is divided, are to be recited fortnightly in a chapter consisting of not fewer than four persons. When one class of precepts has been recited, the inquiry is made three times if all present have observed them; and if no answer is given it is supposed that no one is in fault; but if any one has broken the precept and does not confess it, he is regarded as being guilty of a wilful lie, and as subjecting himself to penance. The exercise of discipline includes reprimand, forfeiture, labour (such as carrying sand, and sweeping the sacred places), suspension, and exclusion. In certain cases that are named, the priest may ask permission of the chapter to lay aside his robe for a season; and if leave be granted, he may live as a laic, in all respects, and afterwards return to the position of a recluse without receiving any stain upon his character by this temporary breaking away from restraint. The present monarch of Siam, previous to his accession, was a high priest. The power of conferring investiture is confined within certain limits. It cannot be exercised but by a legally-constituted chapter, and must have been transmitted, in regular succession, from chapter to chapter, from the time of primitive Buddhism; and no investiture is regarded as valid, if the link required to bind the postulant of our own day to Buddha be broken. In some instances the succession has been lost from persecution or other causes; and in others particular castes have been wrongfully excluded from the privilege; but in both cases those who have assumed the yellow robe have regarded themselves as in the noviciate only, and they have patiently waited until the power could be received from some orthodox community without attempting to introduce an unauthorized order or a spurious succession.

The conduct of the priest who would live according to the strict rules of his order, is to be free from all suspicion of evil. He may not sit upon the same seat as a female, or ever be with one alone, even to teach her the precepts. The temples are sometimes rich in lands; but the individual priest is not permitted to have any property beyond the eight "requisites." He is not allowed to eat, in ordinary circumstances, any food that has not been presented to him in alms. Every morning he leaves his monastery, with a bowl slung across his shoulder, and visits a prescribed round. Every house is to be visited, in regular order, unless there be moral reasons for the omission, none being passed by on account of the low position of its inmates. Nothing is to be done to attract attention; there must not even be the lifting of a finger, a raising of the head, a movement of the jaw, or a hem of the throat. If nothing be given, after remaining a certain time, he is quietly to pass onward; and when his bowl is sufficiently full, he is to return home. He is not to eat any solid food before sunrise, or after the sun has passed the meridian; but in the lawful hours the use of animal food is not prohibited. He is not to carry a burden, dig the ground, cut down trees, or light a fire. During the months of the rainy season he may reside in a substantial dwelling; and at this period he is to read and expound the discourses of Buddha to the people; but at other times, according to the institute, he is to have no settled dwelling; like the beast of the forest, in whatever place he may happen to be, he is to lie down to sleep. One part of his daily service is, to introduce the people into the presence of the image of Buddha, when they come to worship; and to assist them in repeating the formulary of protection,—"I take refuge in Buddha, the Truth, and the Associated Priesthood;" or in repeating as many of the precepts as their circumstances will allow them to observe. The Buddhists are taught that their sage has become entirely extinct; that he has passed away like the light of the lamp when the flame is extinguished. Yet they worship him upon this principle: They believe that the act is in itself an *opus operatum;* that as the seed germinates when it is put into the earth, without any consciousness upon the part of the elements relative to the vivifying influence they exercise, so does merit arise from the worship of the images of Buddha, though the being they represent is unconscious of the deed; and this merit is, in like manner, spontaneously, without the intervention of any intelligent agent, productive of prosperity and peace. For the same reason they worship the bo, or *Ficus religiosa*, the tree under which the Buddhaship was attained. Equal honours are paid to the relics of the sage, and to those of his disciples, which are usually enshrined under a dagoba or tope. The Swadagon pagoda, at Rangoon, 338 feet high, is a receptacle of this kind; and at Anuradhapura, in Ceylon, there are the remains of a tope which was originally 405 feet high. The images of Buddha are in several postures —recumbent, sitting, and standing—and of all sizes, from an inch to 50 feet.

The exercise of meditation is enjoined upon the priest who would enjoy the fullest privileges of his order. It is to be carried on far away from the haunts of men, and will be most efficient when conducted amidst the offensiveness of a cemetery. There are various modes, all intended to free the mind from earthly agitation, and prepare it for an abstraction the most intense. He is to take a circle, about the making of which directions the most minute are given, and to contemplate it, in various ways that are named, until he attains to an illumination that will enable him to exercise miraculous power. He may then pass through the air, or walk on the water, or penetrate the earth; shake the foundations of the world, and cause a light to be enkindled that will enable him to see in any place, as by divine eyes. By another process, a joy so great may be made to arise, that it will overcome the grossness of the body and enable the ascetic to rise into the air; and by the recitation of acts of merit done by the individual in this or some former birth, he may produce any effect he wills to be, however wonderful its character. By this means a courtezan turned the stream of the Ganges backward. But it is wisely said, that out of a hundred thousand persons who practise these rites, scarcely one attains to the full reception of the power.

At the commencement of the system there were female recluses, or nuns, who were subject to the same rules, and appointed to the same offices as the men. But the practice was not encouraged by Gotama, who speaks most disrespectfully of the sex. "That which is named woman," he says, "is sin;" that is, as the meaning has been interpreted, she is not vicious, but vice. There are no nuns in Ceylon, but they are met with in Burmah, Arracan, China, and Nepaul. They make a vow to remain chaste so long as they continue in the order, but they may leave it at any time. Though Buddha has spoken in such rude terms of woman, in some of the countries where his system is professed she enjoys considerable influence. This may arise, however, from the facility of divorce, which allows the wife to leave her husband for reasons so trifling that the bond of marriage has little power.

It is probable that the ethics of Gotama have come down to us in the form in which they were originally taught, as to the more important of the rules; but so many glosses have been added, and exceptions made, that their purity is vitiated, and their power weakened. It is difficult to speak of this part of the system correctly, without great circumlocution. The moral observances can neither be called laws, precepts, nor commands. They are self-imposed restraints, taken by the postulant for a set purpose, the acquirement of merit. They have not proceeded from an authoritative power or supreme judge. The Buddhas have made known to the universe, that particular courses of action will lead to certain results, pleasant or painful, as the case may be; and that, therefore, the wise man will choose the course that ensures prosperity, and avoid the practice that leads to pain. No contrition is required from the transgressor; and if he expresses sorrow, as he knows nothing of condemnation or guilt, it will merely be because he has acted contrary to his own interests, and not because he has grieved any Intelligence whose will he is bound to obey, or insulted any authoritative Legislator. The practice of the right, and the avoiding of the wrong, become, under these circumstances, little more than mercenary acts; and man is robbed thereby of his dignity as a moral agent. Beyond the offering of the flower or the first-fruits, and the giving of alms, the idea of atonement, or vicarious sacrifice, never enters into the mind of the Buddhist. In the *Discourses* of Gotama there are insulated sentiments of the purest order of morality, but they mingle with others that are imperfect, confused, or contradictory, and all are without authority. A single excerpt from a comparatively modern work, on the taking of life, will illustrate the nature of the glosses to which we have alluded. "There are five things," it is said, "necessary to the crime of taking life:—1. There must be the knowledge that there is life. 2. There must be the actual presence of a living being. 3. There must be the intention to take life. 4. With this intention, there must be something done, as the placing of a bow, or the setting of a snare; and there must be some movement towards it, as walking or running. 5. The life must be actually taken." The laics are aware of the subtle distinctions made by their priestly casuists, and use them in defence of their conduct when accused of having acted wrong.

On the essentialities of being, the doctrines of Gotama are imperfect and unsatisfactory; but possess an interest from their originality. There are five classes of constituents that enter into the composition of a sentient being, each of which is divided into a number of elements, defined by the Buddhist authors with great precision; but the insertion of their names, amounting to 184, would be useless, without extended explanations. In this enumeration, which is said to include every essentiality pertaining to that which we call man, we can discover nothing that answers to the soul or self. It was expressly declared by Gotama, that "supremely happy is the state in which the pride of *I am* is subdued." The aggregate of a number of things, such as wood, leather, brass, is called a chariot; but apart from these things, there is no chariot, it is but a name; so also, the aggregate of a number of things, such as blood, hair, sensation, is called a man; but apart from these things, there is no man; it is but a name. There is, therefore, no individuality, no *ego*. When a sentient being dies, all the elements of his existence are broken up, and pass away; they exist no more. But though the being dies, his actions (karma) still live, and possess potentiality. This power it is that causes the existence of another being, into which being it enters, with all its virtues and energies, causing a virtuous and prosperous being to exist, if it be good; but if bad, a wicked and unfortunate being. This process must necessarily go on until the attainment of nirwana. The manner in which it commences, the first causes of being, no one can learn unless he become a Buddha. The causes of the continuance of being are thus enumerated, in what is called the sequence of existence. On account of ignorance, merit and demerit are produced; then, in regular succession, the first-named educt producing the next constituent, consciousness; body and mind; the six organs of sense; touch, or contact; desire; sensation; cleaving to that which causes sensation; renewed existence; birth; decay and death. Inversely: when ignorance ceases, merit and demerit are not produced; and so on, through every link of the chain of existence. This normal arrangement is common to all Buddhists. The Singhalese, Burmese, and Siamese have it in Pali, of which the above is a literal translation. Hodgson gives it from the Nepaulese; Csoma Körösi, from the Tibetan; Klaproth, from the Chinese; and Colebrooke, from the Sanscrit.

The cosmical speculations of Buddhism, though retaining, in some respects, a character of their own, are more nearly allied to the theory of the Brahmans than some other parts of the system. In the centre of the earth is a huge mountain, Maha Meru, around which are four continents, surrounded by seven concentric circles of rock, separated from each other by vast seas. We live in the southern continent, Jambudwipa, and cannot reach the others but by supernatural aids. The earth rests upon a world of waters, and the waters upon a world of wind. There are twenty-two superior worlds, divided into dewa and brahma, in the highest of which "the inhabitants are not fully conscious, and yet not altogether unconscious;" and there are eight infernal worlds. The systems of worlds are infinite in number, but homogeneous in their character. They are all subject to destruction, at periods regularly recurring, by fire, water, or wind. The first inhabitants of the earth came from a brahma world, and for a time retained their celestial splendour and purity; but by degrees these advantages were lost, and the brahmas degenerated into men. It is from them that the human race has sprung. All men are of one origin and one caste; and the only caste recognised by Buddha was that of the wise and the unwise. No distinction was made among his disciples on account of their former position; the prince and the barber were of equal rank.

The Buddhists of Nepaul suppose that there is a Supreme Creator, whom they call Adi Buddha; but in Ceylon this word would be interpreted as meaning ancient, or former—one who existed prior to Gotama, but of the same order and attributes. In Tartary and Tibet there are living Buddhas, one of whom is to be found in every monastery of the first class. The principal Buddha is the Grand Lama of Lassa, a living idol, who is daily worshipped by the devout. At his death, his spirit is supposed to enter into some child, who is recognised by certain tokens, and succeeds to the same office. But in these regions the monks have departed greatly from the rules of Gotama. One single sentence spoken by certain novices to the missionaries Huc and Gabet will be sufficient to confirm this statement. "The prayers are known best," said they, "that one has gotten with the most blows. The lamas who cannot recite prayers, or cure maladies, or tell fortunes, or predict the future, are those who have not been beaten well by their masters." Among the Buddhist nations visited by M. Huc, those who appeared to him to be most attached to their religion were, first, the Mongols, then came the Tibetans, in the third place the Singhalese, and lowest in the scale stood the Chinese, whom he regards as having fallen into complete scepticism.

The age in which Gotama appeared has been disputed, there being different eras in use among the nations that profess his faith. The other records, so far as we can learn, speak doubtfully upon the subject, or their discrepancies can be accounted for; but in the Pali *Commentary* on the sacred books a series of epochs is given, by which the date of his appearance may be calculated with precision; and with regard to several of these periods we have collateral evidence of their general correctness. In the ritual of the novice, one duty that he is required to attend to daily is, to reflect on the number of years that have elapsed since the death of Buddha, as they appear in his lita, or calendar. The very existence of Gotama has been called in question by one of the most eminent of living orientalists; who, however, acknowledges it to be certain that "a change in the religious organization of the Brahmanical system did take place about the time attributed to Sakya's death."

From the traditions of the Buddhists, and the monuments, inscriptions, images, and coins, that have been discovered in almost every part of India, it is evident that at one time the religion of Gotama was generally received among the nations of the Peninsula; but if we may judge from the prevalence of nat worship in Burmah, of demon worship in Ceylon, and of the unauthorized usages of other countries among the Buddhists of the present day, we may infer that it was never the exclusive religion of the people. After the sixth century, we can discover few traces of its existence; but whether it was put down forcibly by the terrible arm of power, or by the slow progress of events, we are yet unable to determine. The deciphering of the ancient alphabets of India by the lamented James Prinsep, and the explanation thereby of the inscriptions upon monuments now known to be Buddhist, will enable the future historian of India to investigate this subject with greater precision than has hitherto been possible, from the want of authoritative data. The vexed question of the relative antiquity of Buddhism and Brahmanism presents no difficulty to the followers of Gotama. The existence of the Vedas, and the proud pretensions of the Brahmans, are frequently referred to in the legends of his life; but we conclude, from the same premises, that the social position of the "twice-born" must have been greatly changed since that period, and that nearly all the more popular usages of the present race of Hindus are of more recent origin.

If we except Nepaul, it is probable that there is not now a single Buddhist in the whole continent of India; but the system still lives among the lovely groves and flower-clad mountains of Ceylon; the voices of its priests mingle with the murmur of the Irrawaddy, the Meinam, and the Cambodia; it droops and dotes among the forlorn masses of China; it flourishes under the protective exclusiveness of Japan; and exercises kingly authority amidst the snows of Tibet and the vast steppes of Tartary. It is the most rigidly atheistic system ever invented, reducing man to a temporary organization, and referring all events, as well as the mightiest creations, to the exercise of a non-intelligent power. It does not say, in so many words, that there is no God; but it shuts out the necessity of his existence, by accounting for all things without the intervention of any power beyond that which we, in our own human wilfulness, call nature. But, notwithstanding the witheringness of its revelations, it must have some sources of attraction, or it would not have spread so extensively, or retained its hold upon the nations with so much tenacity. Among these we may include its disavowal of the Brahmanical opinions upon the subject of caste; the admission of men of all classes into the priesthood; the strictness of its monastic discipline; the moral grandeur of the character ascribed to Gotama; the presentation of its religious requisitions in aphoristic sentences that the conscience at once approves and the mind readily understands, and that can be retained in the memory without effort; the daily sight of the priests, from their custom of seeking alms; the simplicity of the rites of worship; the recurrence of festivals in which there is public teaching upon subjects full of interest to the thoughtful mind; the possession of a record supposed to be inspired, more popular and practical in its teachings than the Vedas, read and explained to the people; the great results to be obtained from acts comparatively trifling; an equal participation in all the rewards to be acquired by its votaries; and the miraculous powers within reach of its more rigid ascetics. It has been no greater bar to progress than the other systems of eastern heathendom. Though undeserving of the high encomiums that have been paid to it by some European writers; by the comparative purity of its moral code, its abhorrence of all cruelty, even as an act of penance, and its constant inculcation of the gentler virtues, it has thrown a spirit of mildness into the whole of the social polity, ameliorated the condition of the unprotected classes, and acted as a restraint upon the passions of the master and the monarch. It has had a theatre of action without a parallel in extent, as it has exercised an influence during one-half of the whole period in which man has existed under his present economy, and throughout nearly one-half of the varied populations of the world. (In addition to the authorities enumerated under the head Buddha, see *Journal of the American Oriental Society*, *Journal of the Bengal Asiatic Society*, and *Essays* and *Translations* by Gogerly, Turnour, Hodgson, Sangermano, Klaproth, Remusat, Landresse, Burnouf, and Lassen.) (R. S. H.)

GOTHA, a town of Central Germany, on the Leine, an affluent of the Nesse, and on the Thuringian railway, by which it is 13 miles W. of Erfurt, and about the same distance E. of Eisenach. This was the residence of the dukes of Saxe-Gotha previous to 1825, when the direct line became extinct, and the duchy passed to the Duke of Saxe-Coburg. It is now the usual winter residence of the Duke of Saxe-Coburg-Gotha. Gotha is well and regularly built, and is surrounded by beautiful pleasure grounds and public walks, and altogether is one of the finest towns of Germany. The ducal palace of Friedenstein was founded by Ernest the Pious in 1643. It is a large and imposing building, occupying the summit of a high hill, and surrounded by a terrace, gardens, and pleasure grounds. It contains a valuable library of about 150,000 volumes and 5000 MSS., a famous collection of coins, with a numismatic library of 6000 volumes, a picture gallery, and collections of antiquities, engravings, objects of natural history, &c. Among the educational institutions are the gymnasium, founded in 1524, and considered one of the best in Germany, a training school for teachers, a trade school, midwifery institute, and an anatomical theatre. South-east of the town is the well known observatory of Seeberg. The manufactures and trade of Gotha are considerable, the former comprising cotton and woollen goods, porcelain, paper, leather, musical and scientific instruments, sausages, &c., for the manufacture of which last article it is celebrated. The *Almanach de Gotha* is published here; and the large geographical establishment of Justus Perthes employs several hundred printers, engravers, map-colourers, &c. Pop. 14,280.

GOTHAM, a town in Nottinghamshire, celebrated for the Theban rusticity of its inhabitants. Hence the usual proverb, "One of the wise men of Gotham."

GOTHARD, St. See Alps.

GOTHENBURG (Swedish *Götheborg*), a maritime city of Sweden, capital of a cognominal län or province, on the left bank of the Götha, about 5 miles above its mouth in the Cattegat. In point of importance Gothenburg ranks next to Stockholm. It consists of a lower and an upper town, the former being in a marshy plain, and intersected by several canals, which give it somewhat of the appearance of a Dutch town—the latter on the adjacent rocky heights. The canals are crossed by numerous and frequently handsome bridges, while rows of trees line their banks. The streets are generally spacious and well paved, and the houses, which are mostly built of stone or of bricks well stuccoed, have always a substantial and often an elegant appearance. Of the walls which formerly surrounded the town only a few fragments now remain, but the harbour is defended by three forts. The suburbs are larger than the town itself, and extend for a considerable distance along the river. The principal public buildings are the new exchange a large and splendid edifice, three churches of which the cathedral is a simple but elegant cruciform edifice surmounted by a tower, town-hall, bishop's palace, governor's residence, arsenal, theatre, &c. It has a gymnasium with a library attached, a society of arts, 2 free schools, 2 orphan asylums, an infirmary, and many benevolent institutions. The manufactures are various and extensive. Among its industrial products may be mentioned sailcloth, linen, plain and printed cottons, woollen cloth, tobacco, snuff, leather, paper, sugar, and porter. Shipbuilding is also extensively carried on. Vessels do not come close to the town, but lie in the river at a short distance from the shore, goods being conveyed to and from them by means of lighters that navigate the canals of the lower town. The depth of water in the port is 17 feet; and there is no tide, bar, or shallow. Iron and steel, the former excellent, the latter inferior to that made in England, form the principal articles of export. The next great article of export is timber, particularly deals. The others are tar, pitch, copper, bark, sailcloth, linen, cobalt, manganese, bones, linseed, &c. The principal articles of import are colonial produce, cotton-yarn and twist, salt, wine, rice, fish, &c. The opening of the Götha canal has greatly benefited its commerce by bringing it into communication with a large portion of the interior of Sweden. In 1849, 718 vessels entered, and 1462 cleared in the coasting trade; and 1018 vessels entered, and 1011 left for foreign ports, exclusive of steamers, of which the number that entered and cleared out at the port were 88. Gothenburg was built on its present site by Gustavus Adolphus in 1611. Pop. about 30,000.

The län of Gothenburg is bounded on the N. by Norway, E. by the län of Wenersborg, S. by that of Halmstad, and W. by the Skager-Rack and Cattegat. The surface is mountainous and well wooded. Agriculture has recently made considerable progress, but the quantity of grain produced is not equal to the wants of the inhabitants. The streams are very numerous, but generally small, the principal being the Götha, which connects Lake Wener with the sea. The coast is much indented by bays and arms of the sea, and is lined by numerous islands. Area 1884 square miles. Pop. (1850) 187,583.

GOTHIC LANGUAGE. The peoples known in history under the names of Mœsogoths, Ostrogoths, and Visigoths, were all of the same race, and spoke different but closely similar idioms of the same language. This language differed very little from the ancient dialects of Germany; and during successive ages it spread with the Goths over all southern Europe, and occupied for a considerable time Spain and Italy, where but feeble effects have been left in the vernaculars of these countries. The case has been very different, however, in the northern countries of Europe, where the Goths firmly and permanently established themselves, and have perpetuated their race with their language. From the Gothic has sprung the Scandinavian, which is found in its greatest purity in Iceland; and, in more modified forms, in the Danish, Swedish, and Norwegian. The similarity between the remains of the ancient relics of Gothic and Sanscrit is very striking.

Example of Declension in Sanscrit and Gothic.

SINGULAR.

Sanscrit.	Gothic.
Nom. *Sūnus*, son	Nom. *Sunus*, son
Acc. *Sūnum*	Acc. *Sunu*
Instr. *Sūnunā*	Instr. *Sunau*
Genit. *Sūnōs*	Genit. *Sunaus*
Voc. *Sūnō*	Voc. *Sunau*

PLURAL.

Nom. *Sūnavas*	Nom. *Sunjus*
Acc. *Sūnūn*	Acc. *Sununs*
Instr. *Sūnubis*	Instr. *Sunum*
Genit. *Sūnūnām*	Genit. *Sunivē*

The affinity between the Sanscrit and the Gothic appears equally striking in conjugation as well as in declension. The terminations which in the verbs designate the same persons, are the same in both languages. The Gothic has even preserved in conjugation the dual which has been lost in declension, and like the Sanscrit, the Greek and the Latin, it has a particular form to express the passive.

Example of Conjugation in Sanscrit and Gothic.

SINGULAR.

Sanscrit.	Gothic.
1. *Barāmi*	1. *Baira*
2. *Barasi*	2. *Bairis*
3. *Barati*	3. *Bairith*

DUAL.

1. *Barāias*	1. *Bairōs*
2. *Baratas*	2. *Bairats*
3. *Barētām*	

PLURAL.

1. *Barāvas*	1. *Bairam*
2. *Barata*	2. *Bairith*
3. *Baranti*	3. *Bairand*

As to the variety of grammatical forms the Gothic holds a middle place between Sanscrit and Latin; and without possessing the richness of the former or the conciseness of the latter, it rivals both in precision and energy of expression. See GOTHS. (A. F. F.)

GOTHOFRED, or GODEFROY, DENIS or DIONYSIUS, the most celebrated jurisconsult of his age, was born at Paris in 1549. After having completed his classical studies he applied himself to that of law, which he prosecuted at the universities of Louvain, Cologne, and Heidelberg. On his return to France, in consequence of his profession of the Reformed faith, he found himself obliged to retire to Geneva, where, in 1580, he was nominated to a chair of law. Henri IV. appointed him magistrate of Gex in 1589; but this city having the year after been taken by the Duke of Savoy, his house was pillaged, and no resource remained for him but to pass into Germany. He, however, proceeded no farther than Strasbourg, where he taught the Pandects from 1591 till 1600, when the elector palatine called him to Heidelberg. But the proceedings of his colleagues forced him six months afterwards to return to Strasbourg, where he remained three years more; at the end of which time he consented to resume his functions at Heidelberg, upon an assurance which was given him that he should have nothing to apprehend from the jealousy of the other professors. It was only then that his countrymen became sensible of the fault which had been committed in not endeavouring to retain in France a man of such distinguished merit, and he was offered the chair which Cujas had just left vacant at Bourges; but he declined the offer upon the ground of his age, and alleged the same excuse in opposition to all the instances which were made to draw him to Angers, to Valence, and to other universities of France and Germany. In 1618 he was sent as deputy by the elector palatine to Louis XIII., who received him well, and solicited him to remain in Paris; but Godefroy had become attached to Heidelberg, where he enjoyed all the consideration due to his talents, and where he desired to end his days. In this expectation, however, he was disappointed. The war, which extended to the palatinate, forced him to return a third time to Strasbourg, where, oppressed with grief and infirmities, he expired on the 7th of September 1622, in the seventy-third year of his age. His friend Bernegger pronounced his funeral oration, which is printed in the *Opuscula* of Loisel. Of all the works of Godefroy, that which does him the greatest honour, and ensures him a permanent rank amongst jurisconsults, is his edition of the *Corpus Juris Civilis*, the publication of which forms an epoch in the history of the science. His text is that which has been adopted for ordinary reading in the universities and at the bar, and his notes are much esteemed. The *Corpus* of Godefroy has passed through a number of editions, but the most valuable are those of Paris, Vitré, 1628, in two vols. folio, and Amsterdam, Elzevir, 1663, also in two vols. folio. Among the other works of Godefroy may be mentioned, *Notæ in Ciceronem*, Lyons, 1588 and 1591, in 4to; *Antiquæ Historiæ ex xxvii. auctoribus contextæ libri sex*, Basil, 1590, in 8vo; *Conjecturæ, variæ lectiones, et loci communes in Seneca*, printed at the end of the works of Seneca; *Auctores Latinæ linguæ in unum redacti corpus, adjectis notis*, Geneva, 1595 and 1602, in 4to; *Maintenue et Défense des Princes souverains et Eglises Chrétiennes contre les attentats et excommunications des Papes de Rome*, 1594, in 8vo; *Dissertatio de Nobilitate*, Spires, 1611, in 4to; *Statuta Galliæ juxta Francorum, Burgundiorum, Gothorum, et Anglorum in ea dominantium Consuetudines*, Frankfort, 1611, in folio. Gothofred was the author of a very large number of works besides those here mentioned. A complete list of them will be found in Sénébier's *Histoire Littéraire de Génève*, which also gives a biographical memoir of Gothofred himself and of his son James, who, as a jurist and general scholar, was hardly, if at all, inferior to his father. The son's name will be long remembered by his edition of the *Theodosian Code*, which Gibbon pronounced "a full and capacious repository of the political state of the empire during the 4th and 5th centuries." (J. B—E.)

GOTHS (in Latin *Goti*, *Gothi*, *Gothones*, or *Guttones*), a great branch of the Germanic family of nations, who, on their first appearance in history, are described as occupying the country about the mouth of the Vistula, north of the Lygii. They are spoken of under the name of Guttones, and as inhabiting the coast of the Baltic as early as the time of Pytheas, the Massilian navigator, who seems to have been a contemporary of Alexander the Great. After this, several centuries pass away, during which we hear nothing of the Goths, until we find them mentioned in the *Germania* of Tacitus, under the name of Gothones, and as still inhabiting the coast of the Baltic. After the time of Tacitus they are not mentioned again until the reign of Caracalla, when Spartianus speaks of them under the name of Gothi, from which our Goth is formed, and which is evidently a more correct form of the name, as we know from the Gothic bishop, Ulphilas, who lived in the fourth century of the Christian era, that the Goths called themselves by the name of Gutthiuda. But what is more interesting and important than all this, is the fact, that under Caracalla we find them no longer on the Baltic but on the coast of the Black Sea, about the mouths of the Danube, in a country which many centuries before had been occupied by the Getæ, a Thracian people. This circumstance has given rise to much confusion both with ancient and modern writers, who, identifying the Goths with the Getæ, or at least calling the former by the name of the latter, led many to the belief that the Goths were a Thracian or even a Sarmatian tribe. But all we know of the history and the language of the Goths does not leave a shadow of a doubt as to their Germanic character; they had no connection whatever with the Getæ, whether we regard these latter as Thracians or as Sarmatians. Some again have identified them with the Gothini, and believed them to be Celts, because Tacitus describes the Gothini as speaking a Celtic dialect. But Tacitus is innocent of this confusion, as he speaks of the Gothini and Gothones in the same chapter as two distinct tribes, calling the former Celts and the latter Germans. We must therefore assume that during the period between Tacitus and Caracalla the Goths had migrated from the coasts of the Baltic southwards to those of the Black Sea. Caracalla, during an expedition to the east, is said to have defeated them several times. For some time after this they appear to have remained quiet, but the Emperor Alexander Severus (A.D. 222–235) found them to be very troublesome neighbours, and endangering the safety of the province of Dacia, for they were animated by the same hostile feelings towards the empire as the more western German tribes on the Upper Danube and the Rhine. In the reign of the Emperor Philippus (A.D. 244–249) they not only succeeded in conquering the province of Dacia, but even penetrated into Mœsia, where they laid siege to the city of Marcianopolis, and compelled it to pay a large sum of money for their departure. Not long after this they invaded Mœsia a second time, and although they were at first (B.C. 250) obliged to retreat before the legions of Decius, they soon after returned and destroyed the whole Roman army, and sacked the town of Nicopolis at the foot of Mount Hæmus (Balkan). Without thinking of the possibility of their return being cut off, the Goths pushed forward into Macedonia, and advanced as far as the pass of Thermopylæ in Greece; but here they met a most determined resistance, and were forced to return to the north. Near the town of Abrutum in Mœsia, they met Decius with a fresh army; but the emperor was slain and his army annihilated, A.D. 251. Meanwhile the Goths extended their dominion on the coasts of the Black Sea, and having made themselves masters of the Crimea, they formed a formidable navy consisting of numerous flat boats. With this they boldly sailed to all parts of the Euxine and took possession of the towns of Pityus and Trapezus, in the harbour of which latter city they captured many vessels, with which they sailed to the sea of Azow, A.D. 258. In the following year they directed their attacks against the wealthy cities on the Thracian Bosporus, and conquered Chalcedon, Nicomedia, Nicæa, Prusa, Apamea, and Cius. A third expedition which they undertook with 500 ships was still more disastrous to the empire; they attacked and destroyed Cyzicus, crossed the Ægean Sea, and landed at the port of Athens; all the country from the south of Peloponnesus as far as Thessaly and Epirus was fearfully ravaged, and the whole of the Illyrian peninsula was devastated. At length, wearied of their long toils and dangers, a portion of them returned by land through Mœsia to their own country; the remainder returned by sea along the coast of Asia Minor, spreading devastation wherever they appeared. But they found it impossible to remain inactive for any length of time, and, in A.D. 268, entered upon a still larger maritime enterprise, during which, although they made unsuccessful attacks on Tomi and Marcianopolis, and although they sustained great losses in the Thracian Bosporus and on the coasts of Asia Minor, they yet succeeded in devastating Crete and Cyprus, and produced great distress at Cassandria and Thessalonica, which were besieged by them. At length, however, the Emperor Claudius, in A.D. 269, gained a great victory over the Goths near the town of Naissus, whence he obtained the honourable surname of Gothicus. Few only returned to their country on the Black Sea, but under the two following emperors they nevertheless continued to harass the adjacent parts of the empire, and in A.D. 272 Aurelian thought it proper to give up to them the large province of Dacia. There now followed a period of nearly 50 years during which the Goths did not engage in any fresh undertaking against the empire, except that in the reign of Tacitus they undertook an unsuccessful expedition into Colchis and Asia Minor. About the time when Constantine had overcome all his opponents the Goths again took the field against the Romans; their king, Araric, in A.D. 331, crossed the Danube, and although he gained some advantages in the first engagement, he was worsted in a second; and, as at the same time the Goths had to quell an insurrection of their own subjects in the Crimea, Araric concluded peace with Constantine. This peace was faithfully kept, and as long as the family of Constantine occupied the imperial throne the Goths never molested the empire, and Hermanric, the successor of Araric, was never engaged in war against the Romans. It was not till the reign of Valens that both parties were again involved in a war, which lasted three years, from A.D. 367 to 369, and in which the Goths appear to have gained some advantages over their enemies. At the time when the Huns appeared, the south-western portion of the Goths, alarmed at the approach of the savage hordes, implored the emperor of the East to allow them to settle in the empire, and place themselves under his protection. The request was granted, and in A.D. 375 these Goths, commanded by two of their chiefs, crossed the Danube and entered the empire; the eastern portion of the Goths, who had made the same request, were refused admission into the empire. If the emperor had kept his promise, the western Goths (or, as they are more commonly called, the Visigoths) might have become useful subjects; but being provoked by the ill treatment they experienced at the hands of their pretended protectors, they took up arms, defeated the Roman legions, and, having formed connections with a division of Goths engaged in the service of the emperor, and with a portion of the eastern Goths or Ostrogoths, fought a great battle near Adrianople, in which the Emperor Valens lost his life. The Goths then marched upon Constantinople, which, however, was well defended; and then turning westwards, advanced as far as the Julian Alps. In the reign of Theodosius I. (A.D. 379–395) the Goths continued their ravaging expeditions both in the north and south; and although they sustained many a defeat, still they maintained themselves in Thrace as well as in Dacia, and their strength was repeatedly increased by the arrival of kindred tribes from the north. The court of Constantinople perceiving the impossibility of subduing these formidable barbarians, at last formed the plan of winning them over, and amalgamating them with the empire. Whole swarms of Goths now entered the armies of the empire; but after the death of Theodosius those who were stationed in Thrace, commanded by their bold chief, Alaric, broke up, and without meeting with any great obstacle, advanced through the pass of Thermopylæ towards Thebes and Athens, Corinth, Argos, and Sparta, all of which were plundered. When the work of destruction was complete they turned northward towards Epirus, where they remained. During this same period the Ostrogoths, under their chief, Gainas, made an attempt to seize Constantinople, and place their own leader upon the imperial throne, but they were forced to retreat across the Danube. Notwithstanding the acts of hostility committed by Alaric in Greece, he was invested by the emperor with the dignity of Duke of Illyricum, in which capacity he made his first invasions of Italy in the years A.D. 400–404. His example was followed by Radagaisus, who crossed the Alps with an immense host of Goths. Alaric even advanced as far as Rome, and penetrated into southern Italy, where his career terminated. The emperor of the West then purchased peace of the Visigoths by ceding to them, in B.C. 412, the southern part of Gaul. They accordingly evacuated Italy, and, after a short period of rest, Athaulf, the successor of Alaric, led his Goths across the Pyrenees into Spain; there he was assassinated. His successor, Wallia, assisted the Romans in their struggles against the Vandals and Alani in Spain, and was rewarded by the whole of Aquitania from Tolosa to the ocean being given up to him. The empire of the Visigoths now gained consistency on both sides of the Pyrenees during the reigns of their kings Theodoric I., Thorismund, and Theodoric II.; and in the second half of the fifth century king Euric raised it to its highest prosperity. The kings of the Visigoths, now ruling over Spain and a great portion of Gaul (France), resided sometimes at Toulouse, sometimes at Arles, and sometimes at Bordeaux; but, after the death of Euric, the Visigoths in Gaul were gradually driven across the Pyrenees by another set of German conquerors—the Franks—who ultimately succeeded in making themselves masters of the country, and giving it the name which it still bears. In Spain, however, the Visigoths maintained themselves for two centuries longer, until, in the end, the Moors overthrew their kingdom, and established Mohammedanism in the south of Spain. The institutions and language of the Goths in Spain have completely disappeared, and at the present moment there are scarcely any traces of the dominion of the Goths in Spain.

We have already observed that the Emperor Valens refused to allow the Ostrogoths to enter the empire in A.D. 375; but the terror of the Huns, and the desire to take revenge, soon after tempted the Ostrogoths to take by force of arms what had been denied to their request. Accordingly they crossed the Danube in defiance of the Romans, and many made of them common cause with the ill-treated Visigoths. But when the latter turned southward, the Ostrogoths marched into Pannonia. At the time when the Visigoths were establishing their power in Gaul and Spain, about A.D. 386, a new swarm of Ostrogoths under a chief, Œdotheus, was in commotion in the country about the Lower Danube, but while attempting to cross the river they were completely defeated. During the ascendancy of the Huns, the Ostrogoths, with the exception of some bands following Attila into Gaul, committed no act of hostility against Rome; but after the destruction of the power of the Huns, we find them, commanded by three brothers, Walamir, Theodemir, and Widimir, in Pannonia, which was ceded to them by the Romans. The Eastern empire was obliged several times to purchase peace of the barbarians; and in one of these transactions Theodoric, a son of Theodemir, then a boy of seven years old, was given up to the court of Constantinople as a pledge that the peace should not again be disturbed. After the death of Walamir, Widimir led his hosts into Italy, where he maintained himself a long time; his son, however, on succeeding his father, was induced by the Emperor Glycerius to quit Italy and join the Visigoths in the west. Theodemir and his son Theodoric, who had in the meantime returned from Constantinople, harassed the Eastern empire by repeated predatory incursions, after which the country between the Lower Danube and Mount Balkan—that is, Lower Mœsia—was given up to them. Theodoric was now the ruler of his nation, and his capital seems to have been the town of Nova. For a time things went on tolerably well; but when the western empire was overturned, and Odoacer had set himself up as the ruler of Italy, Theodoric was induced by Zeno, emperor of Constantinople, to invade Italy and expel the usurper. Accordingly, in A.D. 489, Theodoric led his hosts from Lower Mœsia to the west, and was successful in establishing an Ostrogothic kingdom on the ruins of that of Odoacer in Italy. The power thus formed and recognized by the court of Constantinople was irresistible, and the prestige of Theodoric's name secured his kingdom, as long as he lived, against all foreign aggression. But the approach of his death, A.D. 526, was the signal for the dissolution of his empire. His family was distracted by internal feuds; and being at the same time attacked from without, the kingdom, though bravely defended, in the end fell into the hands of the emperor of the East, and the Ostrogoths ceased to be an independent kingdom, A.D. 555. The Longobards and other German tribes, who had assisted in the destruction of the Ostrogothic kingdom, now established themselves in their turn in the north of Italy, and founded the Longobardic or Lombardic kingdom.

During the migrations of the Goths from north to south, and from east to west, some branches of the nation having during their residence in a country become aware of the advantages of a settled mode of life, remained behind, while their brethren went forth in search of new adventures. The most celebrated among the former were the Mœsogoths, a branch of the Visigoths, who remained behind in Mœsia at the time when the great body of their nation migrated westward; but they were by no means quiet neighbours of the empire; for under their king, Theodoric (not to be confounded with the Ostrogoth), they extorted money and honours from the Roman emperor. The Gothic Tetraxitæ were a branch of the Ostrogoths who remained behind about the Lower Danube, and preserved their national peculiarities for a long time. Besides these, however, there are several other tribes, such as the Gepidæ, Taifalæ, Guthrungi, Greutungi or Grutungi, and others, which, notwithstanding their distinctive names, must be regarded as belonging to the great nation of the Goths. In fact, the nation appears to have been divided into a great number of subdivisions with special names, each of which was at first governed by its own chief. Some of these smaller tribes forming a closer connection among themselves ultimately united into larger bodies under one common ruler. This gave rise to the two great divisions into which we afterwards find the nation divided—the western and the eastern Goths, the former occupying the fertile and woody districts of the west, and the latter the sandy steppes of the east. The western Goths are called by the ancient writers *Wisigothi*, *Vuisigothi*, *Wesegothæ*, or *Wesigothæ*, and the eastern *Austrogothi* or *Ostrogothi*. Zosimus and Ammianus Marcellinus apparently did not know these names and divisions of the Gothic people; Jornandes, on the other hand, goes too far in assuming that the distinction of Visigoths and Ostrogoths existed even at the time when the nation still dwelt on the Vistula. The complete separation of the two branches did not take place until the power of the Ostrogothic king, Hermanric, was crushed by the Huns who came from the distant east.

As the Goths were unquestionably Germans, their religion and language were in all points of importance the same as those of the other German tribes. Christianity was gradually introduced among them even before the time of Constantine the Great, for, at the council of Nicæa, A.D. 325, a Gothic bishop of the name of Theophilus was present. This fact would seem to suggest, that they belonged to the orthodox or Catholic Christians; but it is quite certain that, in the reign of the Emperor Valens, Arianism predominated among them. Attempts, however, to crush Christianity were still made from time to time by their rulers. Thus, Athanaric, the chief of the Thervingi, the principal tribe among the Visigoths, did all he could to exterminate the new religion, and cruelly persecuted those who disobeyed his commands. But no man did more firmly to establish Christianity among his countrymen than the Mœsogothic bishop Ulphilas, about the middle of the fourth century, who invented a Gothic alphabet, by a combination of those of the Greeks and Romans, adapting it to the Gothic language. When this was accomplished, he translated the Scriptures into the Mœsogothic, a translation which is still extant in part, and is the most ancient written specimen of any of the various German dialects. A somewhat incomplete MS. of this work, which was probably written about 150 years after the time of Ulphilas, and is known under the name of *Codex Argenteus*, exists in the library at Upsala in Sweden; another likewise imperfect MS. is preserved in the library of Wolfenbüttel, under the name of the *Codex Carolinus*. This translation and separate portions of it have often been printed, and are invaluable to the student of philology. The best edition is that of Gabelentz and Lœwe, bearing the title, *Ulfilæ Veteris et Novi Testamenti Vers. Goth. Fragmenta quæ supersunt cum Commentario et Glossario*, Altenburg, 1836, 4to. Besides this translation of the Bible, there are a few other literary productions, which show that the connection of the Goths with the Greeks and Romans was not without a considerable influence in inspiring the barbarians with a love of literature. It is owing to this influence that, independently of the radical identity between the classical and Gothic languages, a number of Greek and Latin words are found in the work of Ulphilas. Another Goth who distinguished himself as a writer, though he composed his work in Greek, was the priest Jornandes, who, according to some, was Bishop of Ravenna, and wrote a history of the Goths—*De Rebus Geticis*—from the earliest times, down to the year A.D. 552. This work is the most important we have on the history of the Goths. He regards the nation as having come from Scandinavia, which, he says, was their original home. The fact of there having been Goths in the country now called Sweden, is sufficiently well established, and is evident from several local names, as Gothland, Gothenburg, and others; but it is much more probable to suppose that Goths migrated or sailed to Scandinavia at the time when they still occupied the country about the Vistula, than that Scandinavia should have been their original home. The literary character, or rather their aptititude for literature, is further attested by the fact, that the Visigoths had written laws as early as the time of Euric, when no other German tribes can be supposed to have been even acquainted with the art of writing. It is probably this superiority of the Goths over all other German tribes, that has led some modern writers to apply the term Gothic to all things connected with the ancient Germans; and even to speak of Saxons and other tribes as members of the Gothic stock; but such a usage is not warranted by anything we know about the Goths. In order to give the reader some idea of the Gothic language in the fourth century of our era, we shall here quote the *Lord's Prayer* from Ulphilas' translation, with a literal translation, which cannot fail to show the relationship of the Gothic to other German dialects:—

Atta unsar thu in himinam weihnai namo thein. Quimai
Father our thou in heaven, hallowed name thine. Come
thiudinassus theins. Wairthai wilja theins, swe in himina jah ana
kingdom thine. Be done will thine, as in heaven as on
airthai. Hlaif unsarana thana sinteinan give uns
earth. Bread our the perpetual or daily give us
himmadaga. Jah aflet uns thatei skulans sijaima, swaswe jah
to-day. And forgive us what guilty we are, as also
weis afletam thaim skulam unsaraim. Jah ni briggais uns in
we forgive the trespasses ours. And not bring us into
fraistubnjai, ak lausei uns af thamma ubilin, unte theina ist
temptation, but deliver us of the evil, for thine is
thiudangardi jah maths jah wultus in aiwins. Amen.
kingdom and might and glory for ever. Amen.

There are also some documents belonging to the Ostrogoths of the time of their dominion in Italy, especially one which is preserved at Naples, and another at Arezzo; both were composed about the end of the fifth, and the beginning of the sixth century. Among the numerous modern works which the reader may consult are, Gibbon's *Decline and Fall of the Roman Empire;* Aschbach, *Geschichte der Westgothen;* Manso, *Geschichte der Ostgothen in Italien;* Zeuss, *Die Deutschen und die Nachbarstamme.* (L. S.)

GOTTENBURG. See GOTHENBURG.

GÖTTINGEN, a town of Hanover, province of Hildesheim, and capital of a cognominal principality, is situated in the fertile valley of the Leine, at the foot of the Hainberg, 60 miles south of Hanover. It consists of three parts, the Altstadt, Neustadt, and Masch, the first being separated from the two latter by the New Leine, an artificial arm of the Leine. The ramparts which surround the town have been planted and converted into agreeable promenades. The town itself is generally well built, and the streets are mostly wide and spacious. Neither the trade nor manufactures are important, the town being chiefly dependent on its famous university. This institution, entitled the "Georgia Augusta," was founded by George II. in 1734. Previous to 1831 it was among the first of German universities, and from 1822 to 1826 the average annual number of students was 1481. Since then, in consequence of political disturbances at Göttingen, in which the professors and students were implicated, the university has fallen into disrepute, and from 1831 to 1837 the average annual number of students was only 868. The dismissal of some of the ablest professors in 1837 by the king, for political reasons, reduced the number still lower, so that in 1845 it was only 633. The number now averages about 700. The faculties are theology, law, medicine, and philosophy. The library contains upwards of 400,000 volumes and 5000 MSS. The museum contains extensive and valuable specimens in zoology, geology, &c., with models, instruments, coins, &c. There is also a botanic garden, a chemical laboratory, anatomical theatre, observatory, lying-in-hospital, two infirmaries for medical and surgical cases. The *Spruch Kollegium* is a judicial society, for whose decision questions are brought from all parts of Germany. Pop. (1849) 10,174.

GOTTLAND, a large island in the Baltic belonging to Sweden, and lying about 55 miles E. of the nearest Swedish mainland, between N. Lat. 56. 55. and 58., and E. Long. 18. 10. and 19. 10. It is of an irregular form, tapering from the centre towards the N. and S. extremities. From N. to S. it is about 80 miles in length, and its greatest breadth is about 34 miles. Area 1227 square miles. It presents the appearance of a large plateau rising from 80 to 130 feet above the sea, and is traversed by ranges of rocky heights, which, however, nowhere rise to more than 200 feet above the sea. The coasts are for the most part rocky and precipitous, but in some parts they slope gradually to the sea. They are deeply indented by bays forming numerous excellent harbours, of which those of Kapelhamn on the N., and Slite on the N.E., are the best. The soil is fertile, but indifferently cultivated. A great part of it is wooded, and swamps occur in some places. The climate is comparatively temperate; the chief products are wheat, barley, oats, turnips, potatoes, and hops; and in favourable situations the walnut, mulberry, and grape, ripen in the open air. The chief articles of exportation are timber, marble, sandstone, and lime. Game is abundant; and the rearing of cattle receives a considerable degree of attention. Gottland was taken from the Swedes in 1361 by Vladimir III., king of Denmark. By the treaty of 1644 it was restored to the Swedes, and has since remained in their possession, with the exception of a short period in 1807, when it was occupied by the Russians. Its chief town, Wisby, was, in the middle ages, the seat of an extensive trade. It gives name to a læn of Sweden, comprising Gottland and several of the adjacent islets, and containing a population of (1850) 44,572. The town of Wisby contains about 4000 inhabitants.

GOUDA or TERGOUW, a town of Holland, province of South Holland, on the Yssel, at the influx of the Gouw, 11 miles N.E. of Rotterdam. It is generally well built, and has five churches, one of which, St John's, is celebrated for its organ and its splendid painted windows. The town-house is a spacious and substantial edifice, with a tower and spire. It has breweries, gin-distilleries, brickworks, and potteries; but the manufacture for which it is chiefly known is that of tobacco pipes, which affords employment to nearly one-half of the population. Gouda is also famous as a cheese market, the well-known Gouda cheese being brought here to the market and sold. Pop. (1850) 13,791.

GOUDOK, a rustic kind of violin with three strings, used by the Russian peasantry. Another name for it is Balalayka.

GOURDON, a town of France, department of Lot, and capital of an arrondissement of the same name, situated on the declivity of a hill, at the foot of which runs the Bleou, 20 miles N. of Cahors. It has manufactures of linens, woollens, and hats, and a considerable trade in wine and walnuts. Pop. (1851) 4990.

GOUROCK, a village of Scotland, county of Renfrew, on the left bank of the Firth of Clyde, three miles below Greenock. It is much frequented as a bathing-place in the summer season. Pop. of parish (1851) 3018.

GOUSLY, an ancient harp with four strings, employed by the Sclavonians to accompany the voice when singing their ballads or rhapsodies. Formerly every wealthy Sclave family had its bard, called a Gouslar; and the poetry, historical or religious, which he recited, was named Gouslo.

GOUT. This very peculiar modification of inflammatory action has been known since the days of Hippocrates, and is a disease of common occurrence among the higher classes of society, especially with those who indulge habitually in the luxuries of the table, and use little exercise, or who inherit a predisposition to its attacks. This hereditary tendency is often very strongly marked; sometimes indeed so much so as to prevail against every precaution of diet and bodily exercise. Gout is emphatically a disease of adults, and is for the most part confined to the male sex, females seldom being attacked; yet a few rare cases have occasionally occurred in boyhood, and in one well authenticated instance even so early as the eleventh year. That gout is a blood or humoral disease has long been the common opinion, and is the origin of its name, *gout* or *gutta*, or morbid matter passed, *drop by drop*, into the affected part.

An attack of the disease is generally preceded by heartburn and other dyspeptic affections. An acute seizure (and the first few are nearly uniformly acute) usually begins about an hour or so after midnight, when suddenly the patient is awakened by a severe pain in some part of the foot, most commonly in the great toe, though sometimes in the heel, instep, ankle, &c. With the commencement of the attack there is shivering, and very soon the pain becomes of an extremely acute character, and is attended by great general uneasiness. Commonly about the next midnight, the pain ceases, often almost in a moment, and the sufferer falls asleep and is soon in a gentle perspiration. Next morning when he awakes he finds the part that was affected red and swollen, and the skin over it tense and shining. The affected part, however, soon resumes its natural size, and the cuticle falls off—a process usually attended with much itching.

During the paroxysm the urine is almost invariably found to be loaded with urea and lithates. After the paroxysm is over, not only does the patient feel as well as he was before, but usually much better. "The fit," says Cullen, "leaves the person in very perfect health, enjoying greater ease and alacrity in the functions of both body and mind than he had for a long time before experienced." After a person has suffered from one attack, he may have no return of gout for some years, but it is very liable to revisit him again and again, the intervals between each attack becoming briefer and briefer, but the paroxysm being less painful, although there is more of stomachic disorder. Joints, too, that have been frequently affected seldom completely recover their pliancy, and in many instances are liable to have, what are popularly termed, chalk-stones (deposits of lithate of soda) formed immediately beneath the skin. These sometimes give rise to open sores, and then are very troublesome.

In the great majority of cases gout is an hereditary disease. Sir Charles Scudamore collected information regarding 522 gouty individuals, and found that 332 could trace the disease to their fathers, mothers, grandfathers, or other progenitors. Gout seldom makes its appearance until after the age of 35. Some time after its appearance the affection frequently becomes complicated with severe dyspepsia, including impaired appetite, heartburn, and gastrodynia, with irregular action of the bowels, hypochondriasis, and other disorders.

Sometimes during a paroxysm the gout suddenly disappears from the extremities, and violent pain is felt at the stomach, with great sinking of the pulse; or sudden inflammatory action may supervene, generally in the chest. The former of these affections is called *retrocedent*, and the latter *misplaced* gout.

The pathology of gout is now again generally believed to be humoral, and the essence of the disease to consist in a morbific matter or matters, which gradually accumulate in the system, producing general indisposition, until at length it is concentrated and expelled at the foot; after which "the bodily economy, like the atmosphere after a thunder storm, is for a while unusully pure and tranquil." That the poisonous matter should tend to one particular spot, usually the toes, is exactly analogous to what we know regarding other poisons. Thus, white arsenic tends to the stomach, cantharides to the bladder, and so in like manner does the morbid accumulation of lithic acid in the system tend to be deposited in the joints, particularly in those of the lower extremities. During the paroxysm it may be detected, says Berthollet, in the skin of the affected part, and, as before mentioned, in the urine, having doubtless been absorbed by the lymphatics.

As the paroxysm of the gout is the effort of nature to rid the system of a poison, many physicians have been unwilling to interfere with the progress of the disease, save by the antiphlogistic regimen, and some very slight antiphlogistic remedies. But it seems to be now quite confirmed by experience, that colchicum (meadow saffron) with antacids may be given during the paroxysm with the result of shortening it, and without producing any bad effects. If pushed too far, however, colchicum causes great sickness, purging, and faintness; and in such cases it is necessary to administer stimulants and opiates. Also by means of antacids and bitters administered during the intervals, the tendency to gouty paroxysms may be mitigated. But it is also quite certain, that if the latter be done without a change in the mode of life which produced or excited the gout, various internal diseases of a very serious nature, chiefly in the head and chest, are liable to be induced. The rational plan of treating gout, therefore, consists in relieving the attack, when it is fairly developed, by means of colchicum and antacids; and, in the intervals, to recommend a regimen calculated to diminish the tendency to it, such as food mainly vegetable, a small proportion of fermented drink, habitual exercise, and the general tonic mode of treating disease.

Cases of misplaced and retrocedent gout should be treated as in persons not gouty, and in the usual way; but great care should be taken to watch for and be prepared to treat the severe neuralgic attacks that are liable to supervene. (T. L. K.)

GOVERNMENT.

THE members of the human race are not isolated and independent individuals, each acting for himself without reference to his fellows. This is a fact borne out by all history and by all experience. Wherever a number of individuals have assembled on the face of the earth, it is found universally, that they have adopted certain regulations for their mutual guidance, thus proving that the association of men is not an accidental, but an inherent attribute of human nature. But as men, tribes, and nations, are placed in a variety of circumstances, this diversity of circumstances affects the arrangements by which societies are regulated.

Among these different circumstances, it is unnecessary to refer to the disputed question of variety of *species;* but it must be acknowledged that there are most extensive varieties in the moral, intellectual, and physical conditions of men. We may therefore be prepared to find a corresponding variety of systems of society, and of the institutions regulating them, according as these societies are distinguished by intellectual capacity, acquired knowledge, historic antecedents, and physical position on our globe.

In considering government therefore as a science which has rules, we must bear in mind that it involves two elements, the variable and the invariable, the abstract or ethical, and the economical. There is not only the intellectual perception of what the form of society ought to be, and of the principles on which it ought to be constructed; but there is the consideration of the peculiar circumstances in which the community is placed. The form of government that would suit Great Britain could not possibly be established among the Red Indians; yet those Indians might have their own rules for their own government, and as perfect a system of administration of them as the administration of the laws in Britain.

There is scarcely any truth more indubitably established by history, than that the form of government suitable at one period of a nation's history is not suitable, and could not be realized, at another and subsequent period.

SECTION I.—WHAT IS GOVERNMENT?

When it is admitted that man is by nature a social being, there can no longer be a question as to whether there ought or ought not to be rules by which he, in a collective capacity, should be governed. There can therefore be no question as to whether there ought or ought not to be a government, but only a determination of the proper nature of government, of its ends, objects, and purposes. We must accept government as a necessity, and inquire, not *whether* it should exist, but how and under what conditions it can exist profitably and beneficially. And, therefore, the first question is, What is government?

The system of rules regulating a society may be termed in general *law*, and the fact and form of administering the rules is *government*. Two countries might have exactly the same body of law, and yet have essentially different governments. On the other hand, two countries might have exactly the same form of government, and yet have laws radically dissimilar. We see this exemplified in several modern states.

Of the term government there are three distinct significations:—1. Government is, in general, the administration of rule, law, and direction. 2. Government is the form of the institutions by which the rules are administered. 3. Government is the body of administrators who rule.

SECTION II.—THE END OF GOVERNMENT.

Were we to ask from history what is the end of government, we should be compelled to affirm—"the interests and advantages of the governing classes." Reason replies differently, and assures us that there is another and more appropriate end which harmonizes with the higher and better instincts of our nature. From the days of Locke, or more properly speaking, from the days of Milton, this has been termed the "good of the public," the "good of the greatest number," the "good of the whole body of society," the "greatest good of the greatest number," with other equivalent expressions, which mean that the welfare of the whole mass of society is the true end of government. Nothing, of course, can be better than the greatest good; but there has been an obscure and indefinite enunciation of the principle which renders more minute examination desirable.

When we inquire into the character of the good that government ought to produce, we find two essential principles which have been more or less acknowledged in all societies, and which depend on the very nature of man himself. The first is the administration of *justice;* the second is the development of *social improvement and well-being.*

The first is the negative, or restrictive function of government, the second the expansive or positive function; the first lays upon society rules which deter all subjects or citizens from injuring their fellows by force or fraud; the second regulates those modes of action by which a much greater good can be achieved by combination, by distribution of labour, distribution of office, united effort and national action, than if each were to undertake for himself all the multifarious duties of life. On this distinction depends the division of government into its two great departments, *judicature*, or the judicial exercise of civil and criminal justice; and *administration*, including all fiscal arrangements, taxation, duties and customs upon home and foreign produce, municipal and electoral powers,—in fact, the whole organization of society, where crimes or civil suits are not involved. But as both of these divisions are presumed to be under the direction of law; and as laws must be made either by acknowledged custom, or by positive enactment, *legislation* is the department of government which dominates the other two.

But these are not the only ends of government, although the most important. Wherever there is a government, there is a geographical limit of space, or a numerical determination of persons to which the authority of government extends. Government is not merely an abstraction, but a concrete fact, and every government has its boundaries, either of geographical demarcation or of personal citizenship and accountability. The mariner on the high seas, although for the time located on a spot that is not claimed as the possession of any government, is yet amenable to the laws of his country, and is under the rule and sway of a special particular government which claims him as a subject.

This agglomeration of territory, with the sum-total of its people, is termed a *state*, a realm, kingdom, empire, republic, or some other term which expresses the *unity* of the whole. Where the persons only are united, and the territory is indefinite, or altogether undetermined, they form only a tribe, or it may be a small nation, which, however, may have a positive unity of its own, although fluctuating in its territorial residence.

This unity of the state involves another distinct end of government, namely, its defence against the aggression of other states. Hence the military establishments of countries. The third great end of government, therefore, is the defence of the national territory, and the defence or protection of every member of the state or nation. Every one who owes allegiance to a state is entitled to its protection;

hence, where there is a monarchy, the *subject* is sheltered by the whole military power of the monarch; and where there is a republic, the *citizen* is sheltered by the whole power of the republic.

But government has yet another end distinguished from the foregoing, namely, the distribution of *honours.* Whatever may be said regarding the futility of titular honours, it is a fact apparent from history, and from the practice of all civilized people, that honours form a very important ingredient in the composition of human society. To some men honours are more desirable than wealth; and if they were accorded only for distinguished services really performed, they would be just and reasonable rewards, marking out not the fallacious vanities which too often have been combined with an utter want of merit, but marking the national esteem and gratitude, which, if fairly earned, ought also to be publicly acknowledged.

To sum up concisely the ends for which government may be supposed to exist, we recapitulate as follows. The ends of government are—

1. The administration of justice, criminal and civil.
2. The development of the social improvement and wellbeing of society.
3. The military defence of the state.
4. The distribution of honours.

Under these four heads every operation of government may be ranged, with the exception of *legislation*, which overrides all the rest. Law is the rule, and the four operations are performed under the law and by authority of the law, so that legislation is the most general function of government. It might be said in still fewer words, that the end of government was "to enact good laws and to execute them with certainty and despatch," leaving it to be ascertained and determined what laws were or were not good.

But here it is necessary to point out the fact that history presents only an imperfect fulfilment of the ends of government, yet even in the imperfect fulfilment there is the similitude of the truth. We must regard government therefore as an imperfect art which historically grows and improves like other arts. Growth, development, the gradual perfection of systems, the decay of those systems, the recasting of materials, and the gradual issue of better systems, are the keys which enable us to read history—the history of government not less than the history of other arts. If we neglect this idea of growth we can never arrive at an intelligent understanding of history, nor of the changes which, as time rolls onwards, seem destined to invade the political constructions of mankind. Stability, in fact, seems only to be attainable by providing for perpetual change.

SECTION III.—THE ORIGIN OF GOVERNMENT.

We have already said that the origin of government is in the social nature of man. That is the æsthetic origin which renders government not only possible but necessary. Under the term *origin*, however, must also be included two circumstances of another character—the historical origin as matter of fact, and the logical origin as matter of political science. So far as history throws light on the chronological commencement of government, it points in the almost invariable direction of military leadership. The warrior or the representative of force and power was the original form of the governing man. The patriarchal system which accords the power of ruling to the father or elder of the family, and then by extension to the elder branch of a tribe, may perhaps claim priority; and this form, among the Arabs and other cognate tribes, has continued down to the present day. Nor is the patriarchal element obliterated even in the governments of the most civilized nations; for wherever there is a dynasty or reigning family, the eldest member of which assumes the throne, we recognise distinctly the remnant of the patriarchal system. It is one of the elements which are still woven into the constitution of European monarchies, and no doubt it was the earliest form of authority, the children being by nature placed under the authority of the father. But the patriarchal government, if it be taken to mean that all are subject to the will of the patriarchal ruler, can have no principles save the one principle of primogeniture, and, therefore, cannot be accepted as signifying what in modern times is meant by government; and if the ruler were to rule not merely by will, but by laws, customs, and equity, then he falls to be considered as the ordinary administrator of the law, and his patriarchal character may be viewed as a mere accident.

On the other hand, the military chief, who may be taken as the historic original of the true governor, is selected for the express purpose of directing the whole body of society; and the difference between the patriarchal ruler and the military ruler lies in the significant fact, that the authority of the former was based on the relationship of blood, whereas the latter occupies an *office.* His was the first creation of the *office of government, irrespective of the natural relationship of family;* and consequently the military leader may be considered as the original form, which, as circumstances change, and as the interests of society become more and more complex, undergoes change after change, till at last it may even lose its military character except in name.

The military leader or man of military ability and prowess would naturally become the director and ruler of his tribe. In some cases the hereditary element might be grafted on the system of military chieftainship; in others the office of ruler might be merely individual, and the most powerful general might seize the reins of government. Even in modern times, and among the most advanced nations, this military origin is not unknown. Washington the general was also the first president of the United States; Napoleon Bonaparte became emperor of France; the late king of Sweden, Bernadotte, was a general; and in the South American republics, the chief power appears to be considered the prize for which all military leaders may contend, seemingly as a matter of course.

The *logical* origin of government belongs to a different category from that of history. It belongs to political ethics, and should answer the question, What ought to be the origin, foundation, and basis of the governing power in its governing authority?

Here, of course, there is room for diversity of opinion. The democratic party of the world will point to the sovereign people, and proclaim it "universal monarch;" the autocratic party will point to the advantages of a strong executive, and will cite examples where democracy has failed and where despotism has succeeded—for a time. Others, like the British, will affirm that very much must depend on the circumstances of a people, and that no theoretic rule can be laid down which will apply to all cases. They will affirm that government, being a concrete fact, must be regulated by the necessities of time, place, circumstance, and habitual belief; that circumstances not only do, but *ought to* influence all deductions from abstract reason, and all inferences from historic teaching; that a republic may, theoretically, be the most correct, and a despotism (among semi-barbarous people) the most successful; but yet that there is another way of solving the difficulty, namely, by compensating advantages according to the actual conditions of the people who are to be ruled; that with a very free, enlightened, and well educated people there may be a tendency towards popular election becoming year by year more and more expansive, but that an ignorant and half-savage population must submit to the iron rod because they are unfit for governing themselves, and consequently must submit to those who will rule them ill.

There are then two poles to the theory of government, the one which points to democracy and the other to despotism; and in the midway between the two, there is a neutral point which equalizes powers and modifies extremes. The democrat derives the logical right to govern from the sovereign will of the people, his antagonist from the sovereign necessity of government, and from the ideal perfection of a single will. The British system, on the contrary—and the British system is absolutely unique in the world, having no counterpart or fellow—derives the right to govern from several distinct sources, mainly from the people, but only a small portion of the people; partly from the notion of hereditary right, which resides in the nobles; and to a great extent from the hereditary authority of the crown, which represents those ends of government that are independent of human will, namely, the ends of justice.

The logical origin of government, therefore, must be sought neither in the fury of the democrat nor the violence of the despot. It must be sought in the necessities of man, with an impartial consideration of circumstances and national peculiarities ever present before us. The circumstances of nations do, no doubt, allow a large limit of action intermediate between despotism and democracy, and according to those circumstances a people may be compelled to verge towards the one or the other. With a new, vigorous, expanding population, spreading itself out on new lands, occupying new territories, fighting its way, rifle in hand, against rugged nature and hostile Indians, there is necessarily produced a powerful tendency towards democracy. Democracy, in fact, grows of its own accord as the result of circumstances, and where not overstretched nor carried to unreasonable extremes, it answers perhaps better than a more rigid and stringent form of government. But it requires an intelligent and well-intentioned people who are in nearly uniform circumstances to conduct it. On the other hand, with a long settled and stationary population, accustomed to the ordinary administration of law, and where more especially each individual, instead of being called upon to do everything for himself, performs only a single part of the employments of life, where there is a division and subdivision of labour, and where each man desires to attend to his own particular business, there is quite as powerful a tendency to despotic rule, that is, to leave the government in the hands of some one or few whose especial occupation it is to govern and to administer justice and law. With good laws a despotic administrator acting with just impartiality may really rule well, but the danger is, that the possession of power may lead to its abuse, and therefore checks must be devised to secure the people from tyranny.

When, therefore, it is asked, "what is the logical origin of government, or what *ought* to be the *origin* of a government in any given country?" we should hesitate to lay down any absolute rule; but rather to regard government as an organic growth with which circumstances have much concern. Instead of saying "the will of the people," as Milton, Locke, De Foe, and the republicans would say; and instead of saying "the will of the prince," as Hobbes, Filmer, the Austrian catechism, the constitution of Denmark, and the despotic governments would say; we should rather reject both schemes, and affirm that government ought to originate "in the *intelligence* of the nation," without fixing, by any absolute dictum, where that intelligence is to be found, but leaving it to be determined by circumstances *what* classes have arrived at such a state of intelligence and stable good conduct, as to entitle them to become active members of the body politic, and to exercise political rights. All such dogmas as "the will of the people," or "the will of the prince," are hazardous and unreasonable propositions, which may have a show of logical completeness, but which are not suited to the circumstances of mankind. A good government is an organic growth, and it must originate in the *intelligence* of a nation.

SECTION IV.—OF THE KINDS OF GOVERNMENT.

It has been usual to classify the forms of government into the monarchical, or government by one person; the aristocratic, or government by a few privileged individuals; and the democratic, or government by all. This classification is a loose yet convenient mode of expressing certain facts and ideas; it answers a purpose, and may pass as the conventional mode of indicating that certain characteristics prevail more or less in certain political constitutions. But it would be difficult to point to any nation where there was really and truly a pure and simple monarchy, aristocracy, or democracy. Much, for instance, has been said and written on the advantages or disadvantages of republics, and the ancient republics have freely been cited as examples; overlooking the fact that there never *was* an ancient republic, and that the *name* alone has imposed on those who pretended to draw arguments from history. All the ancient republics contained *slaves*, persons who were excluded from political rights, and the so-called republics were only instances where a privileged class of citizens, or very numerous aristocracy, ruled the state or commonwealth. So also with monarchy. We can scarcely assign a time or place where all the members of a state have been subject to the will of one man. There has always been a council or divan which aided and controlled the monarch. The control may have been of the rudest kind, as in the Russian government, which has been termed "an aristocracy varied by an assassination;" but control has always been present. The great mass may have been subject to the monarch's will, but not the *whole* mass. The monarch has never stood alone as the one single dictator whom all others were willing to obey in all things. There may in Turkey, Russia, and other countries, have been a near approach to absolute domination and absolute submission; but the extreme point, if ever reached at all, has speedily been followed by circumstances which prove the existence of a counterbalance to the autocratic will. The feudal system was nominally a monarchy, but the barons had intelligible and acknowledged rights which limited the crown, and these rights were enforced against the king, as at Runymede, with the distinct understanding that the royal will was not and could not be paramount to the interests of all the subjects. The monarchical Pope of Rome has his college of cardinals, but the aristocracy of Venice had also their doge, the republican United Provinces had their stadtholder, the democratic United States have their president and their honourable senators, and France, under Louis XIV. (*l'état, c'est moi*), had her laws and her parliaments.[1] The logical division, therefore, into monarchy, aristocracy, and democracy, must be accepted as a species of general expression which indicates extreme forms, like the mathematical point that has no length, breadth, or thickness, or the line which is absolutely straight. In the real history of men and nations we find only approaches to these theoretic forms. They are mingled together in various proportions—here, monarchy is the predominant element—there, aristocracy—elsewhere, democracy. The *names* may be suitable, but the fact is found only in the conception of an ideal perfection that exists in the human understanding—not in the actualities of history. In actual fact the three elements, however disproportioned, will generally be found together;

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[1] One of the five-franc pieces issued in the time of the first Napoleon affords a curious illustration of this mixture of political elements. On the reverse it bears "*Republique Francaise*," and on the obverse "*Napoleon Empereur*."

and in the form of government, as well as in its theoretic origin, the object of research must be, not any dogmatic determination of a perfect form, but a compensation of advantages accommodated to the actual circumstances of a people.

We may therefore ask what each element represents, for unquestionably there is some reality represented by the monarch, the aristocracy, and the popular will.

The monarch represents the unity of the nation and the stability of the government. He is the fountain of all executive power, and in his name justice is executed—he is the head of all military forces—he alone enters into relations with foreign countries—he makes peace or war; and he is the fountain of honour to grant titles and dignities. So plainly do these functions indicate unity, that where there is not a monarch there is commonly a single person chosen to perform them—a president, a stadtholder, a doge, or some single official who represents a monarch, though passing by a different name. In foreign relations the essential purpose of a monarch is to represent the whole nation, and in home relations to represent the administration of justice. We therefore see how *hereditary* monarchy may arise by an easy and natural process. Justice is supposed to be permanent and unvarying; it ought to be administered under all circumstances. Whatever fluctuations there may be in other political matters, whatever parties, doctrines, theories, or schemes, may be uppermost for the time being, the administration of justice is supposed to be a permanent duty, and, therefore, it is not unreasonable that there should be a permanent person in whose name justice is administered. The king is thus said "never to die:" "le roi est mort—vive le roi," is an expression that contains a profound political truth, namely, the permanency of the nation, and the permanency of the administration of justice. Where, on the contrary, a mere *military ruler* dies there is usually a contest among the survivors, and government is only re-established when one shall have made himself supreme.

This view of the monarch, however, entails the question of a monarch's powers. If the monarch be the permanent representative of justice, the monarch, as a person, must reign but not *govern,—le roi régne, et ne gouverne pas.* Where the monarch attempts to enforce his own will, or to take a positive activity in the government, he abdicates the position into which the feelings of men have installed him. "The king can do no wrong" is only the sequel to the idea that the kingly office is occupied not for the sake of the person but for the sake of the office itself; and the true meaning is that the office can do no wrong, because it is not endowed either with a legislative or a dictatorial power. It is the representative of the execution of the law; and so long as the monarch restricts himself to his proper official capacity he can no more do a legal wrong than the law itself can do a legal wrong.

If it be considered, then, that the monarch represents the unity of the nation, an aristocracy may be regarded as representing the distribution of its powers and dignities. The noble also, like the monarch, originated in war leadership. While the monarch was the supreme head of the whole military power, the noble was the divisional commander; and in the feudal system, which made the monarch lord or suzerain of the whole national territory, the noble was the lord of a portion, a province, a county, or a minor subdivision of the kingdom. It has been stated that one of the ends of government is "the defence of the kingdom," and under this idea the feudal system portioned out the kingdom into districts over which a noble was appointed to preside. At first the office was not hereditary, nor were the lands the property of the nobles, but nobility gradually became hereditary, and the right of the noble families to the soil came to be acknowledged, first by custom, then by positive grant, and, finally, as in England in the reign of Charles the Second, the nobles were relieved from military service, and retained their lands by the tenure called free and common soccage.

It will thus be seen what aristocracy in its true sense represents. It represents, first, the territorial soil of the kingdom; second, the divisional exercise of power under the monarch; and third, the military distribution of the national forces. This was the feudal idea of an aristocracy; and where the state was constructed on a military system, the lands being held on condition of performing military service, it is evident that aristocracy was the native growth of circumstances, and fulfilled the requirements of the times. In entering as an element into the government of a country, therefore, an aristocracy may fairly be regarded as the representative of the fixed property of the soil; and as territorial wealth will always exercise its influence, whether ostensibly or implicitly, the aristocratic element is only an open and avowed acknowledgment of an influence that is sure to exist, whether it does or does not assume a separate standing of its own.

Such may appear the reasonable origin and purpose of an aristocracy; and even where the titular nobility is rejected, and hereditary dignities are unknown, we see an approach to a similar system. We see in the United States the territorial division into *separate* states, each of which has its governor, and each of which has its senator—the one holding an executive and the other a legislative office. These offices may be regarded as aristocracy in the birth; and if the offices were made hereditary—an event, however, which none can anticipate—there would be a genuine foundation of aristocratic nobility, just as Washington would have become a monarch, had he been appointed perpetual president, with hereditary succession of the office secured to his family. An instance of this kind has been furnished in the recent history of France, where a president elected for a term of years was transformed into an hereditary emperor by the suffrages of the people.

Where an aristocracy, however, from an element of government produced by the circumstances and necessities of society, becomes changed to a governing *caste*—where one family endowed with the title of nobility is supposed to differ in kind as well as in office from another family perhaps of equal wealth and equal worth—and where, instead of a compensation of advantages, and a due representation of all the interests of society, the noble families assume the whole government of the community, and form what is termed an *aristocratic* government, the greatest evils have always been found to prevail, and the state has sunk inevitably into factions which sooner or later have ended in the ruin of the commonwealth. Nor is this surprising, for the determination that a certain number of families shall enjoy all powers and privileges is the very destruction of the organic growth of society; it is an attempt to fix in perpetuity what nature has made variable and expansive—an attempt to make the physical accident of birth take the place of the true intelligence of the nation. An aristocracy existing in a country where there is both a monarch and a popular assembly is a very different thing from a government by nobles alone. The first may give stability to the government, and may prevent sudden fluctuations by the people when roused into temporary excitement, and rashly urging their measures with undue and unreasoning vehemence. The landed or property interest may sometimes balance the state when other interests would act with less consideration; and, as an element of government, it can scarcely be denied that property should have its weight because it is immediately implicated in the decisions of the body politic. But where the nobles rule as nobles born to dominate; where the doge is a puppet, and the people are nothing; where *caste* is made the criterion for office or power; where an impassable or scarcely passable wall of separation is built up between the privileged and the unprivileged families; where the interests of the order are preferred to all other considerations; and where factious ambition is the chief characteristic of the governing class, aristocracy presents itself under the form of a hateful and tyrannical oligarchy which is certainly doomed to self-destruction or decay. Society falls into a condition which nature cannot tolerate; there are no means for renewing the strength and vigour of the commonwealth, growth is arrested, expansion is impossible, the green moss grows upon the edifice of the state, which sinks into a picturesque ruin that only indicates the presence of its former glories by ornaments that have no longer a meaning, and by dignities that have fallen out of use.

Having thus endeavoured to exhibit the fundamental elements of society, represented by monarchy and aristocracy, it remains for us to inquire into the nature and characteristics of democracy. The democratic element, like the monarchical and aristocratic, has its foundation in one of the ends of government, namely, "the development of social improvement and well-being." Why should the people attempt to govern themselves instead of allowing the whole power to pass into the hands of the monarch? is a question that meets with a ready and specific answer, when we reflect that the interests of the whole population are involved in the administration of government. Every man's interest being at stake, and every man's life, liberty, property, and reputation, being implicated in the success or non-success of the society to which he belongs, he has a direct motive to assert his own views of the national policy, and, in a modified sense, a right to influence that policy according to his own will. That the will of the people ought in all cases to be supreme, that the popular will ought in all cases to be obeyed, and that "*vox populi* is *vox dei*," is one of those gigantic fallacies which gain currency in expression but never in fact. Nothing can be more fallacious than the idea that the will of the people ought to be obeyed *because it is their will.* It may be more probable that the judgment or decision of a large body is more correct than the judgment of a single individual or small selection of interested persons. We do not affirm that it is so, but admit the possibility that it may be so. Yet that circumstance could never establish the principle of democratic supremacy, nor ever render it right that the will of the people should be assumed as the last final criterion of political rectitude. The laws of justice are independent of human will, though not independent of human intelligence, because it is the province of human intelligence to discover and apply them. Human will, therefore, cannot be accepted as a universal and infallible rule of duty, because man being subject to passion may be blinded to right, and a majority or the whole of an assembled multitude may commit a crime, even as an individual may commit a crime. The will of the multitude can no more change right into wrong, or wrong into right, than can the will of the monarch or the will of the aristocracy. It is not the multitude of *wills* that establishes the propriety of democratic influence, but the agglomeration of interests and the agglomeration of intelligences.

But although the will of the multitude must be rejected as an absolute criterion of right, there is nevertheless a vast department of the public business of society where the popular dictum comes into reasonable and appropriate action. The many have interests, and instincts, and intelligence. They bear burdens, pay taxes, and live by the sweat of their brow. They "know where the shoe pinches;" and often, by the instinct of their common interest, they arrive at truer and better conclusions regarding the economical influence of the laws, than others gifted with greater powers of speculation, yet who are not placed under the instructive agency of direct pressure. Pressure is the great instructor of the people. Many bad laws having been enacted in almost all countries, deeply injurious to the welfare of the people, and greatly detrimental to their interests, the operation of the popular will has been called into exercise to amend those laws, and to ameliorate the circumstances of social existence; and thus the democratic influence, directly or indirectly, has operated in the most beneficial of all directions, namely, towards the purification of the permanent laws that are habitually administered among civilized men. The code, or statute-book, whether in France, Britain, America, or Germany—meaning thereby the body of positive law actually enforced in the present day—owes its justice and impartiality in a very high degree to the democratic spirit generated in England during the time of the parliamentary struggles; carried out at a later period in the laws and constitutions of the United States; reproduced in the turmoil of the great French Revolution, and embodied in the spirit of French law even after the insurrectionary portion of the revolution had ceased, and now habitually acknowledged as a worthy and genuine contribution to the principles of law and government. Without that democratic element infused into the spirit of modern legislation, liberty would have been far less extensive and far less secure;—not that we are nearer to what is termed a democracy, but that numberless bad laws, customs, institutions, privileges, class exemptions, or class injustices, have been swept away, probably for ever; and that the body of modern law has been purified to an extent that can only be appreciated when we turn to the pages of past history, and inquire into the condition of society in England before the accession of William, and on the Continent before the French Revolution. This undeniable fact points out what may be the good influence of the democratic element even though we are left as far as ever from the establishment of a democracy. It works, when it works for good, as a principle infiltrating through the institutions of society, and amalgamating with the other principles—not overthrowing everything that stands in the way of the popular will, but gradually removing those things that stand in the way of the popular good. The true aim of democracy is not to war against thrones, but to war against unjust and injurious laws, and to obtain the enactment of good laws whose administration shall be secured by a powerful sceptre. Democracy in its best sense, in fact in its only good sense, means *impartiality;* and the great aim of modern society should be to infuse impartiality into the laws, and to have the laws executed by a strong government.

In thus viewing democracy, it need scarcely be added that we cannot regard it as solving the difficulties of government. As a principle or element capable of being wrought into the framework of society, democracy has a true and vital existence, which cannot be obliterated among freemen. But as a form of government in which all things and all measures come ultimately to depend on the popular will, it is a mere violent extreme, which may, like the highest despotism, exist for a period in extreme circumstances, but which time must modify as society grows into more and more complex conditions.

SECTION V.—OF CONSTITUTIONAL AND REPRESENTATIVE GOVERNMENT.

Admitting, then, that there are three essential ideas, or principles, involved in the fact of good government—first, the unity of the state and administration of justice; second, the fixed property of the realm; and, third, the rights and interests of the people,—it remains to be asked whether a system can be found that shall combine these in such due *proportion* that the welfare of all shall work together coincidently, so that a nation possessing a certain territory shall be organized in such a manner that it shall no longer be subject to the sudden and disastrous fluctuations of political revolution. Let it be granted that organized society is a growth—that it begins in simple forms and ends in more complex forms—that, like a tree, it has its roots, its stem, and its branches—that time, experience, amendment, and continual improvement, are necessary to bring it to perfection;—let this be granted, and we see at once that the simple forms of social organization are elementary, and, in one sense, barbarous. A monarchy can be manufactured at once by a strong-minded and strong-handed military chief, who assumes the supreme rule: a democracy can spring into existence wherever a multitude of human beings assemble: an aristocracy can be produced where the more knowing and the more wealthy agree to rule the multitude. Such systems of government are not organizations; and however long they may be perpetuated, they are only rude and elementary; because, let society be reduced into anarchy, and one of these forms can be reproduced at any given moment. This is not growth nor construction, but the mere spontaneous commencement of what ought to lead to construction. No length of time can make such forms other than elementary—no universality of practice, other than the mere beginnings of the complex machinery of civilization. A perfect government would be one that would produce the free, enlightened, and well-behaved citizen, who, conscious of his own duty and dignity, should walk with perfect freedom in obedience to perfect law. Such, indeed, is the great ultimate end of government,—not merely to *punish* crime, but to prevent it altogether; to lead the whole body of society to the intelligent conclusion that crimes and evil deeds are the worst possible investments; that good conduct shall be attended with perfect liberty, but that evil conduct shall be instantly followed by swift and certain retribution. It is true that man being endowed with passions and impulses cannot be manufactured like raw material; but all the *external motives* capable of being presented in one form rather than another should be so arranged as to be inducements to good and not evil; that is, that the machinery of government shall be as perfect as possible, whatever may be the nature of the material that is subjected to its operation.

Complexity is in reality no objection to a government, provided the ultimate operations are simple. The more complex the machine, the more perfectly it ought to do its work, and with the least cost and trouble to the proprietor—that is, the nation.

How then can the ends of government be efficiently carried out so as to preserve the rights and promote the interests of all parties?

The answer to this question must, we apprehend, be one derived from practice. Whatever conclusions may be derived from theory, or whatever logical deductions may be derived from the intuitional principles of the reason, it is plainly evident that the best form of government cannot be derived from abstract considerations alone, because there are, in the concrete nature of the individuals of the human race, certain circumstances and tendencies that can never be sufficiently accounted for in abstract reasonings. Politics may be a science, and may be studied in its universal doctrine of ethics; but government is an art, and as an art, must depend on experience. Trial, failure, trial again, and ultimate success, must precede the analysis which shows us the principles of government. Those principles are not *à priori* but inductive. They are drawn by careful study from the actual facts which history presents; and induction has this immense advantage over speculation, that the circumstances and peculiarities of men, which no sagacity could bring into calculation, are seen at work in the actual world exhibiting both the quality and the quantity of their real influence.

Let us, then, consider the three facts,—

1. The unity of the nation.
2. The fixed territorial property of the nation.
3. The rights and interests of the people.

The first is represented by a monarch who *reigns* but does not *govern*. The second is represented by an assembly of the great landlords. The third is represented by an assembly of notables chosen by the people.

No *à priori* scheme would ever have produced a combination of this kind, and arguments of the most conclusive character have been advanced to prove that it could never work. But it has worked and does work, not perfectly perhaps, but with such a manifest superiority over the other systems of Europe that no European nation can boast of the same security and liberty that have been developed under this complex system. In no other country has the utmost freedom been combined with the same regular administration of law; and this fact entitles the British, or limited constitutional system, to particular attention. It is not perfect, and never has been perfect, but it has shown such a real adaptation to the circumstances of man, that, under it, a small island kingdom of little geographical importance, has attained a strength and vigour that have not only carried the British name but the British power and influence into all quarters of the globe. This assertion cannot be construed into a boastful laudation of Britain; for it is a mere historical and political fact that Britain has gigantic colonies, and the territory of India subject to her crown; that her colonies exceed in wealth and importance those of any other nation, and even those of all other nations put together. To assert this fact is not to boast, but to point out one of the most remarkable phenomena that ever appeared in the world of politics—one that ought to convey instruction to all despotic governments, and that ought to inspire all nations with a love of sound and wholesome liberty, not run riot, but duly tempered and regulated by wise and reasonable institutions. The progress of Great Britain, since the establishment of her constitutional government, is a marvellous fact that has excited the astonishment and perhaps occasionally the envy of other countries. It depends upon two circumstances, on *liberty* and *security*. Britain was the first country that discovered the mode of combining the utmost amount of reasonable liberty with the utmost amount of legal security; and to this she owes her progress. It is, therefore, not merely a matter of opinion that the British constitutional government has worked well, but a great and instructive fact worthy of the best attention of all political students, and indeed of all nations that desire to improve their condition.

Let us then endeavour very briefly to extract the essential characteristics of the British constitutional government.

In the first place, the hereditary monarch reigns, and is the first magistrate of the kingdom, in whose name all justice is administered. The monarch is also the fountain of honour, and alone confers titular dignities. All naval and military commissions are held from the monarch, and the monarch alone enters into relation with foreign states. The crown, it is true, has an official veto on laws passed by the Lords and Commons; but this prerogative, where all parties are really bent on full and fair discussion—and the laws are the result of judgment, not of will—may be considered formal rather than practical. The great fact, however, is, that the monarch must govern *according to law*. This provision, introduced at the accession of William III., is the true hinge of the British monarchy, and it is the safeguard not only of the people, but of the monarchy itself, because it prevents those contests between crown and people which prevail elsewhere. Instead of a revolution, which perils or changes the monarch, the British system *changes the advisers of the crown*—that is, changes the ministry—and the monarch becomes practically as new as if a new personage had been promoted to the kingly office. This excellent provision, which keeps the monarch irresponsible, and devolves the responsibility on the advisers of the crown, combines constant opportunity for change with constant stability. The queen's *ministry* may be removed as often as occasion requires, but the queen's *government* never ceases. The parties, or factions, of the kingdom, instead of entering into contests with the crown as in former ages or in other countries, circulate round the crown as round a centre; and that party which for the time being can occupy the greatest portion of the circumference claims the sanction of the crown to its measures, the crown remaining always at the point of stability, and as regards the nation, of *impartiality*.

The despot, however, affirms that the monarch ought to govern, and the republican affirms that there ought to be no hereditary monarch. Both propositions are true in certain extreme circumstances, but only in the early growth of a constitution. When once a nation has settled down into form, and has recognized its laws, there is every disadvantage in allowing the monarch to become a partizan—which he must become if he assume one side or other of a national question, agitated perhaps with the rancour and vehemence which proverbially attach to questions of politics. In a country where many serious struggles have at last instituted a regular system of law which ought to be carried out and enforced under all circumstances of party, there is an immediate and evident advantage in having the highest official removed from taking a part in what are really the minor questions of a nation's existence.

But the republican says that there ought to be no hereditary monarch; yet it must be confessed that it would require a larger amount of experience than the world has hitherto accumulated to prove the advantage of abolishing all monarchies, or even of adopting an *elective* monarchy. To subject a nation to the perpetual play of faction, and to cast the first office of the state into the arena of political strife, to be contended for by the great or ambitious families, can be attended with a very small amount of good when the stability of the office and not the qualities of the person are the great requisites. Justice is not better administered in the name of a president than in the name of a king; and the very circumstances which have been adduced to prove the evils of monarchy are those in which the monarch has departed from the duties of his office and has become a politician, with personal opinions and predilections. Nor can the example of the United States be fairly cited in this case, for the states contain several millions of people who are deprived of all political rights, and the slave states are no more republics than Great Britain is a despotic monarchy. They are virtual *aristocracies*, and aristocracies of the worst kind, the aristocracy of a dominant race reducing another race to slavery. To call such a system a *republic* is to make a mockery of our mother tongue. The only instance of a true and genuine republic, where all men were presumed equal, and where universal suffrage was reduced to real practice by a great nation, is to be found in France in 1849; but the existence of that form of organization was too short to prove anything either on the one side or the other, except the instructive fact that anarchy is historically followed by a strict rule, which introduces the element that had been omitted in the republican calculation.

Next to the throne comes the House or Assembly of Peers, composed of the lords spiritual and temporal. When the church was a great landed proprietor, possessing from a third to two-fifths of the soil of the kingdom, and when the bishops were the nobles of the church and of the church lands, there was a *feudal* reason for admitting ecclesiastics into the councils of the state. But since the Church of England has been undergoing a modification, which may at some future time divest it of all *direct* proprietorship in the soil, the reason for the presence of bishops in the House of Peers becomes more and more attenuated.

The temporal peers may be supposed to represent the territorial soil and the dignities of the kingdom. A hereditary nobility, possessing the right of legislation in conjunction with the crown and the commons, is based on the idea of hereditary possession of the soil. In the feudal system, where the noble was, strictly speaking, a constituent portion of the military organization of the kingdom, the office of nobility is clearly intelligible. Nobility was as much an office as monarchy itself. The noble was bound to appear in the field (bishops not unusually handled the sword as well as the crozier) with so many knights, and each knight with so many followers or men-at-arms. The noble in fact was the divisional military commander; he was bound to serve, and for his service he received the use of the lands which belonged to the king, or rather to the nation, these being held by the crown for the purpose of the national defence. The office of nobility was then a distinct portion of the national organization. Since the introduction of a standing army, however, the feudal service has lapsed and ceased, and the nobles now form a separate assembly, apparently on account of their titular dignities alone. If the crown confer a peerage on an individual, he immediately takes his place as a legislator, whatever may have been the motive for conferring the dignity. The possession of the title gives the right to a seat in the chamber of the aristocracy; but so essential is wealth, that where the crown confers a peerage on an individual not endowed with broad acres or a large income, a provision is made out of the *national funds*, either in permanency or for a certain number of lives. This fact proves that nobility is mutually considered as a national office, and not merely a personal and inherent dignity. The doctrine of *caste* still remains to a small extent, but it must be remembered that British society has grown out of a strictly feudal system, which was essentially a system of caste, and the small remnants of the doctrine now extant are probably not more than coincide with the national feelings; for there can be no doubt that Britain is actually proud of her aristocracy; and not altogether without reason, as many a hard-fought field and gallant feat of arms can testify. With the exception of the Russian aristocracy, which has not yet begun to decline, the British aristocracy is the only one in Europe that has preserved the high mental and physical qualities necessary for the maintenance of its position. It can still stand before the world without shame, and before the nation without fear; and this it owes to the circumstance that the doctrine of caste has been practically abolished, and that the institution of nobility has been renovated from time to time by the introduction of the more successful and distinguished commoners.

But the office of the nobles is not confined to legislation alone. They form, when assembled, the ultimate *judicial court* of the kingdom. With them lies all final appeal in the administration of civil law; and as judges their very position is a sufficient safeguard against the intentional abuse of the judicial office. In ordinary cases they leave the decision to certain professional members termed law lords—men of distinguished acquirement who have attained a peerage; but the court is comprised of the whole of the peers, and on occasion the whole assembly may record its judgment.

Having thus considered the two hereditary branches of the legislature, we turn to the third branch—the House of Commons—constructed on quite a different plan, and representing a totally distinct series of principles. The British House of Commons may, without exaggeration, be termed the most important popular assembly that has ever been brought together. A larger amount of money is annually subject to its immediate control than ever was placed at the disposal of any other assembly, a population is affected by its decisions greater than any other assembly could ever directly reach by legislation, and a more extensive territory owns its legislative sway. In the direction of the affairs of the world, and in all quarters of the globe, the British House of Commons wields a more massive power and influence than ever fell to the lot of any similar assembly; and although it cannot in any particular interfere as a legislative assembly with the executive government of the empire, the principle seems to be established beyond question that no executive government can continue in office in Britain, unless it have a majority of the representatives of the people in its favour. The Commons also, having the exclusive command over the national purse, have the constitutional power of suspending the payment of the army, navy, and all government officials—in fact, of arresting the course of administrative government altogether. The real power of the Commons, therefore, has no assignable limit, and consequently all great questions of policy are virtually decided in the House of Representatives. What then is the House of Commons, and how do its members come to exercise their powers?

The House of Commons, as the representative of the people of Great Britain, is distinguished from the monarch and the House of Peers by the fact that its members are chosen by the votes or suffrages of the nation. The assembly is not democratic, but is supposed to represent the more intelligent portion of the population. How far the suffrage ought to be extended, that is, what number out of the whole population ought to exercise the right of election, is a matter of expediency which depends not on any abstract idea that all men are equal, but on the real progress of the people in those qualities which enable them to exercise the right for the benefit of themselves and their fellow-countrymen. De Lolme, in his *Constitution of England*, draws this distinction between *freedom*, which is every man's right, and *the franchise*, which is a political function. He says, "What is liberty? Liberty so far as it is possible for it to exist in a society of beings whose interests are almost perpetually opposed to each other, consists in this,—that every man, while he respects the persons of others, and allows them quietly to enjoy the produce of their industry, is himself secured in the enjoyment of the produce of his own industry, and the safety of his person. But to contribute by one's suffrage to procure these advantages to the community—to have a share in establishing that order of things by means of which an individual, lost as it were in the crowd, is effectually protected—to lay down the rules for those who, being invested with power, are charged with the defence of individuals, and to provide that they should never transgress them—these are *functions*, are acts of government, but not constituent parts of liberty." (P. 245.)

Here, as in all other departments of government, there must be a compensation of advantages, a contest with the democracy on the one hand, and with the aristocracy of land or wealth on the other. The great advantage of a wide constituency is, that it diminishes or prevents that undue influence over the popular elections which the aristocracy are certain to exercise over tenants, dependents, and those who hope to propitiate favour by the sacrifice of a vote which thus comes to represent not self-government but self-interest. The great disadvantage of a too widely-extended constituency is that electors are tempted to follow the demagogue, and to do his bidding in moments of excitement when there is some common object before them. Between these extremes there is a point which must be estimated by a rational consideration of the circumstances of the country; but as this point is unquestionably moveable, there ought to be some provision for the rearrangement of the national constituency, and for the revision of the electoral scheme so as to make it suitable to the circumstances of the time being.

The object of the Reform Act of 1832 was to place the franchise in the hands of the middle classes. It gave the preponderance, not to the populace or the working-men, but to persons in a rank of life below the aristocracy and gentry, but above that of the labouring poor. It embraced a large proportion of the intelligent, well-conducted, and, at least, moderately cultivated, and thus infused into the government an element of progressive improvement and stability.

In any new reform bill it is of essential importance that what has been stated as the end of government should be steadily kept in view—"the greatest good of the greatest number." No man, no class of men, have a right to exercise the franchise unless it can be shown that by so doing they conduce to this end. Our electoral system is but an instrument for working a great good; whoever adds or withdraws from the machinery so as to impair its efficiency inflicts an injury on the community. If it can be satisfactorily proved that any part of it prevents the proper working of the machine, it should be removed; if it can be proved that any addition would increase its efficiency, let it be added. There are those who base their arguments on abstract right, in whose estimation all men are entitled to a voice in the representation. If their theory were carried into practice, then all the other classes would be swamped by the overwhelming numbers of the operative classes, and the government would be handed over to the more excitable, more ignorant, and the more corruptible part of the community. The history of the past and the history of the present alike testify to the calamitous results of this course. An extension of the suffrage may not only be just but desirable and necessary, but that extension should be beneficial and safe. In the first place, the franchise should not be conceded on any ground that involves the principle of right, or on the notion that the mere lowering of the qualification is an extension of liberal government. Next, if we are asked, how then can the franchise be safely and beneficially extended, we answer in the words of an able article in the *Edinburgh Review* (No. 196):—"Our reply to this, if it is to be satisfactory, must be not evasive, but direct. That reply is briefly an appeal to the fundamental idea lying at the basis of our constitution, and at the very core of the national character, which is not that of democratic equality, but of distinct and privileged but open orders. We ground our polity upon, and owe our safety to, two great principles—*retaining the powers of the state in the hands of the less numerous, but more select, more cultivated, and more competent classes*, and, *making ingress into these classes accessible to all.* The union of these two principles is safety; their disjunction would be injustice and ruin. The old *régime* in France fell by denying the second; the new *régime* has never been able to maintain itself, from having negatived the first. Let it be our fixed resolution to avoid with equal care either error."

Theoretically, the crown and the peers ought to have no power to influence the election of popular representatives; but practically, it must always be expected that official authority and territorial wealth will *de facto* have a social power which, though not belonging to the office of the administration or of the peerage, operates on the conditions of human nature.

If, then, we ask what are the direct and indubitable advantages of a government composed of king, lords, and commons, with a king who cannot initiate legislation, with a responsible ministry, with a house of representatives that cannot interfere in the executive administration of the national affairs, and yet that has the exclusive power of the purse, the answer is precise and definite. Such a government possesses stability on the one hand, the power of change and of adaptation to circumstances on the other; and also, it must be observed, that such a government can find a place for men of the most extreme views. The most

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antiquated conservator of old customs appears not ungracefully in an assembly that has feudal traditions, and when (as he must do on serious occasions) he stands almost alone, he represents the antiquarian spirit of government. The most extreme democrat need not be denied a place in an assembly where all the social influences are in favour of a reasonable preservation of order. He represents the opposite pole of political theory, and with much talk is in reality only the solitary speculator, who, perhaps, may point out a new course, but cannot move society in that direction until the whole field has been minutely surveyed and explored, and its advantages tested by experience. Under a constitutional government, therefore, there is really no serious danger in the presence of the most violent extremes. The extremes only point out the utmost limits of discussion, they are the outposts of the army, the sentries and pickets, who are removed from the main body to give warning of danger. But between these must be found the common sense of the nation, embodied not in this or that erratic individual, but in the agglomeration of interests, that neither desire to adhere to useless forms nor to rush into untried regions of probable disaster. Such are the advantages of a limited and constitutional monarchy; and such advantages, combining, as they do, stability with the power of change, have afforded the most successful example of government that has ever appeared in Europe, if we take into consideration the liberties of the people combined with the impartial administration of law. The radical virtue of a constitutional government is, that it affords a power of fluctuation, and can adapt itself in its ordinary course to the varying circumstances of the governed people, without revolutions, insurrectionary bloodshed, or civil war.

But in a constitutional government like that of Britain, it must not be supposed that the whole idea of government is summed up and exhausted when we have mentioned king, lords, and commons. These, it is true, constitute the political government, they frame the laws, and in their name the nation is supposed to act. But before the laws can be brought into contact with the individual, and carried into real operation, there is another institution of not less importance to the community, namely, the *jury*. It may be supposed that the jury does not form a constituent portion of the government of a country, but if we suppose the governing body to be *all those on whom the life, liberty, and property of the population depend*, we must necessarily include the jury, because the jury stands between the crown and the people; and no man can be punished, except with the minor inflictions of the law, unless a jury of his equals shall decide that he is legally worthy of punishment.

But even the king, the lords, the commons, and the jury, do not constitute the whole of constitutional government. To these must be added as another guarantee for the well ordering of the national affairs, *local self-government*, which is found in the municipal institutions of the towns, and in the local arrangements for the management of county business. Municipal government is in fact the real basis of popular liberty; and no circumstance is so well calculated to maintain the self-governing spirit of a people as the constant and habitual practice of managing their own local affairs through persons of their own selection. The process may be troublesome, and, perhaps, even cumbrous, but it keeps alive a vigorous and wholesome spirit of social independence, which makes a manly nation that cannot be oppressed. Local self-government is the very root of liberty, out of which the excellences of the higher government grow naturally, because in local self-government there is the constant preparation for the exercise of political functions, and it may be said that the citizen finds his political education in the school of the municipality, while many of the representatives of the people in the House of Commons have become skilled in the transaction of public business by passing through municipal offices, and conducting the affairs of a town or county.

These five institutions, the crown, the upper or aristocratic house of legislators, the lower or commons' house of representatives, the jury, and the municipalities, are the organs of constitutional government. Despotism is tyranny, and democracy is anarchy and confusion. But constitutional government is the organization of society for the administration of law and the security of freedom. Society is no longer in a state of slavery ruled by a despot, nor in a state of dissolution, without rule or order. It is in a state of *organization*, and, properly speaking, it ought to be organized from the meanest individual up to the monarch. We might thus say that the idea of a perfect government could be reduced to very simple terms, and that the institutions of a country should strictly correspond with its local divisions, those divisions being made on a principle of convenient adaptation to the local circumstances of the population. It might be said that the parish should govern the parish in all matters that are purely parochial; that the union, district, or division, should govern itself in all matters that belong to it; that the county should govern the county, the province the province, and the kingdom the kingdom; that the imperial government should regulate only imperial affairs, the provincial government only provincial affairs, the county only county affairs, the parish parish affairs, and the town town affairs. Such a system would afford a practical realization of self-government, organized from the top to the bottom of society; and the more nearly it is approached the more nearly do all parties in the nation understand their political right, and perform their political duties. (P. E. D.)

GOWER, John, one of the best of the English minor poets, was born probably in or about the year 1320; but the date is not exactly known. The place of his birth is equally uncertain. Weever makes him a native of Kent; in Caxton's edition of the *Confessio Amantis* he is mentioned as a Welshman. Popular tradition, however, has always pointed to Stitenham in Yorkshire as the place of the poet's birth; and the Rev. H. J. Todd, in his *Illustrations of the Lives and Writings of Gower and Chaucer*, publishes a deed from the charter-chest of the Duke of Sutherland (the present head of the family of which the poet was a scion), in which the signature of "Johannes Gower" stands first among those of the subscribing witnesses. On the back of this document is a note to the effect that the Gower is "Sir John Gower, the poet." The handwriting of the note is believed to be about a century posterior to that of the deed itself.

Possessing considerable means, Gower studied law, at that time a very expensive accomplishment, at the Inns of Court, and there contracted a friendship with Chaucer and Hoccleve. It is even said, though it has never been proved, that he attained the dignity of Chief Justice of the Common Pleas. It is known with certainty that he attached himself to Thomas of Woodstock, Duke of Gloucester, just as Chaucer had done to John of Gaunt. Like Chaucer also, he seems to have taken especial pleasure in railing at the weeknesses and vices of the churchmen of those times. It has been common among the recent biographers of Chaucer to maintain that a coolness sprung up between him and Gower in their old age. No direct proof of this has yet been brought forward. Tyrwhit suspects it from some expressions of Chaucer (which, however, might easily be explained away), and is confirmed in his suspicion by finding that Gower, in the second edition of his poems, omits some eulogistic verses upon Chaucer, which had appeared in the first edition. Their friendship, however, was certainly still unbroken in the year 1393, for near the close of the *Confessio Amantis*, finished in that year, Gower puts the following compliment to Chaucer into the mouth of Venus:—

> "And greet weel Chaucer when ye meet,
> As my disciple and my poet;
> For in the floures of his youth,
> In sundry wise, as he well couth,
> Of ditties and of songes glade,
> The which he for my sake made,
> The land fulfilled is over all; &c."

The second edition of Gower's poems was published only a year before Chaucer's death; and if their author intended a slight upon his old friend, it is most probable that that friend died without knowing it. The attachment between them, so long as it lasted, seems to have been very sincere on both sides; for Gower, in the above quoted lines, was merely requiting a compliment that had been paid him some years before by his brother-poet, who, in dedicating to him his *Troilus and Cressida*, addressed him as "O moral Gower." This epithet, though not remarkably happy, has stuck to Gower, just as that of "judicious" is always associated with the name of Hooker. Of Gower's personal history little more is known, except that in his old age he became blind, and at his death, in 1402, was buried in the church of St Mary Overie, or, as it is now called, St Saviours, in Southwark, where his monument is still to be seen. The beautiful church in which he lies was rebuilt in great part at his expense, and proves among other things that Gower must have been exempt from one of the usual misfortunes of poets—poverty.

Gower's poetical works are three in number—the *Speculum Meditantis*, a treatise on the duties of married life, written in French verse, and divided into ten books; *Vox Clamantis*, a narrative in Latin elegiacs, of the insurrection of the Commons in the reign of Richard II.; and the *Confessio Amantis*, of which a specimen has already been given. The first of these works is believed to have perished; manuscript copies of the second exist in the Cottonian and Bodleian libraries; the third had gone through four editions before the year 1560. The *Confessio Amantis*, or Lover's Confession, is a huge miscellaneous collection of physical, metaphysical, and moral reflections, and of stories culled from the common repertories of the middle age.

A kind of unity is given to these apparently incongruous materials by the form of the poem, which is a dialogue between a lover and his confessor, who is a priest of Venus, and is called Genius. In the moral part of his theme, Gower is confessedly wise, impressive, and sometimes almost sublime. But as Ellis, in his *Specimens of the Early English Poets*, observes, "His narrative is often quite petrifying; and when we read in his works the tales with which we have been familiarized in the poems of Ovid, we feel a mixture of surprise and despair at the perverse industry employed in removing every detail on which the imagination had been accustomed to fasten. The author of the *Metamorphoses* was a poet, and at least sufficiently fond of ornament. Gower considers him as a mere annalist, scrupulously preserves his facts, relates them with great perspicuity, and is fully satisfied when he has extracted from them as much morality as they can reasonably be expected to furnish." Though Gower's descriptions are often extremely agreeable, and his diction easy and smooth, the general tediousness of the narrative, and the prosaic feebleness of the conceptions, will prevent the *Lover's Confession* from ever rivalling or even approximating in popularity the works of the author of the *Canterbury Tales*. (Todd's *Illustrations of the Lives and Writings of Gower and Chaucer*; Ellis's *Specimens of the Early English Poets*; Craik's *Hist. Lit.*; Spalding's *Hist. Eng. Lit.*; Warton's *Hist. Eng. Poetry*; Godwin's *Life of Chaucer*; Gower's Works, &c., &c.)

GOWER or Gwyr, a peninsula of South Wales, projecting into the Bristol Channel, and forming the most western portion of Glamorganshire. It is 15 miles in length from N.E. to S.W., and has an average breadth of 5 miles. A colony of Flemings settled here in the time of Henry I., and their descendants still retain much of their national characteristics, and rarely intermarry with the Welsh.

GOYANNA, a town of Brazil, province of Pernambuco, on the right bank of the Goyanna river, 15 miles from the sea, and 40 miles N.W. of Pernambuco. It is the seat of civil and criminal courts, has several factories, and an active trade. Pop. about 6000.

GOYAZ (formerly *Villa Boa*), a town of Brazil, capital of a cognominal province, and situated on the Vermelho, an affluent of the Araguay, 680 miles N.W. of Rio de Janeiro, being almost in the very centre of the empire. It contains the governor's palace, seven churches, and some other public buildings. Pop. about 7000. The province of Goyaz has an estimated area of 320,000 square miles, and a population of 100,000.

GOYT, a romantic river on the borders of Cheshire, Derbyshire, and Staffordshire, about four miles S.W. of Buxton. From its source to the junction with Etherow it forms a boundary between Cheshire and Derbyshire. At Newmills it receives the brook Kinder, from the west side of Kinderscout, and flows through a romantic dale. Below this village and dale the Goyt passes through some beautiful meadows bounded by hills and woods, after which it enters a narrow vale replete with beautiful scenery. After its passage through Marple Bridge, the scenery becomes strikingly beautiful, the river impetuous and broad, and its banks are lofty and precipitous. Its junction with the Etherow is further down, where the scenery becomes still more imposing and picturesque; and hence the river flows westward a few miles through part of Cheshire, passing Marple Hall and Woodbank, to Stockport, where it unites with the Tame, and thus forms the Mersey.

GOZO, an island in the Mediterranean. See Malta.

GOZZI, the name of two brothers, natives of Venice, who, each in his own sphere, attained considerable distinction in Italian literature. Gasparo, the elder, and, as he is often called, the "Addison" of Italy, was born in 1715. He inherited a large fortune, which, as he was careless and indifferent in money matters, soon melted away, and he was compelled to write for a livelihood. Such means as he had been able to save from the wreck of his fortunes were swamped by an unsuccessful speculation of his wife (a woman of considerable literary powers and accomplishments), who undertook the management of the theatre of San Angelo at Venice, and failed utterly. Till the age of sixty Gozzi supported himself by his pen. His most valuable contributions to literature are his *Osservatore Veneto*, on the model of the English Spectator, distinguished by a high moral spirit, a fine play of fancy, and a pleasant glancing satire, couched in the choicest diction; his *Lettere Famigliari*, a delightful collection of short racy pieces in prose and verse on every subject, and generally pointing some useful moral; and his *Opere in versi e in prosa*, consisting chiefly of dramatic pieces, translated for the most part from the French, and displaying, like all Gozzi's works, great elegance of style. Not the least valuable of his works is his defence of Dante (whom he enthusiastically admired), against the attack of Bettinelli. Much of the work which passed through his hands in the course of his long literary career was merely done to meet the exigencies of the hour. Such were his translations of Fleury's *Ecclesiastical History*, Marmontel's *Tales*, Pope's *Essay on Criticism*, &c. He is also said to have written the greater part of Foscarini's *History of Venetian Literature*, the so-called author having only contributed the plan and an unfinished sketch of the work. Gozzi's life closed in peace and happiness. On the suppression of the Order of Jesus in 1774 he was commissioned to organize a new school system for the north of Italy. He executed his commission with such ability that he was appointed to do the same good office to the university of Padua. In this city he died in 1786, in the seventy-third year of his age.

Carlo Gozzi, his younger brother, was born in 1722. He was a man of greater vigour of mind and general force of character than his brother Gaspard. Before his sixteenth year he had written four poems of great length, besides a vast number of smaller pieces. His literary career, however, like that of his brother, though always congenial enough, became at length, through that brother's mismanagement of the common inheritance, a necessity. In 1761 he produced his comedy of *The Three Oranges*, which had an immense run from its successful revival of the masks and impromptu dialogues so long popular in Italy, but which Goldoni had recently banished from the stage. (See Goldoni.) He followed up his success with a series of similar pieces, and was able to make head for a time against Goldoni. Like Goldoni, Gozzi enjoys the somewhat strange privilege of being a greater favourite abroad than at home. Native critics, indeed, deny him altogether the praises liberally bestowed on him by Ginguené, Madame de Staël, and other French writers. His *Useless Memoirs of his own Life* were discontinued in 1798; at least no part of them was published after that date. Gozzi died in 1806 at the advanced age of eighty-four. (See Ginguené's articles on the Gozzi in the *Biog. Univ.*, where a complete list of the works of the two brothers will also be found.)

GRABE, John Ernest, a learned theologian, was born at Königsberg in 1666. The perusal of the works of the fathers having inspired him with doubts as to some points of his creed, he explained them in a memoir addressed to the consistory of Sambia. The elector of Brandenburg ordered three theologians to examine the memoir of Grabe, who afterwards proceeded to Berlin to confer with Spener, one of his adversaries. Upon some of the points in dispute they came to agree; but Grabe persisting in maintaining the necessity of the apostolical succession in the ministry, Spener, having despaired of overcoming his conviction of this doctrine, counselled him to proceed to England, where he would find it established. Grabe followed this advice, and, having reached London, got himself ordained priest according to the English ritual; but he always preserved his private opinions touching the eucharist and consecration. Nevertheless, the regularity of his conduct, and his useful labours, recommended him to notice; he obtained some benefices; and Queen Anne granted him a pension, which he enjoyed till his death, which took place at London on the 13th of September 1711, in the forty-fifth year of his age.

His works, which have obtained him the reputation of a learned and laborious man, but indifferent critic, are—*Specilegium SS. Patrum et Hæreticorum sæculi post Christi natum primi, secundi, tertii*, Oxford, 1698 and 1699, in 8vo; *S. Irenæi episcopi Lugdunensis adversus hæreses libri quinque*, Oxford, 1702, in folio; *Vetus Testamentum juxta Septuaginta Interpretes*, Oxford, 1707, 1719, 1720, and 1729, in folio: *Liturgia Græca*, Hague, 1715, in 8vo; *De forma consecrationis Eucharistiæ, hoc est, Defensio Ecclesiæ Græcæ contra Romanam*, London, 1721, in 8vo; Editions of the First Apology of St Justin Martyr, of the works of George Bull, and of the treatise of Daubuz *pro Testimonio Flavii Josephus de Jesu Christo; Doubts presented to the Consistory of Sambia*, in German, two writings in English against Whiston, and some polemical pieces of little importance. (J. B—E.)

GRABOW, a town of Germany, Mecklenburg-Schwerin, on the Elde, 24 miles S.S.E. of Schwerin. It is a station on the Hamburg and Berlin railway, and has a handsome church, manufactures of woollen cloth and tobacco, and a considerable trade in butter. Pop. 5300.

GRACCHUS, Tiberius and Caius, celebrated Roman tribunes and popular leaders, were the sons of the famous Cornelia, and thus grandsons of the elder Scipio Africanus. Tiberius, the elder and greater of the two, was born about 163 B.C., and was killed in 133 B.C.; Caius was born in 154 B.C., and was killed in 121. The personal history of both these men is only important in so far as it is connected with the general history of Rome. See Roman History.

GRACE, Days of, in commercial law, certain days allowed to be added to the time after which a bill falls due. See Exchange, vol. ix., p. 428.

GRACES (in Latin *Gratiæ*, in Greek Χάριτες), the goddesses of grace, are described in ancient mythology as three sisters of surpassing beauty, the attendants of Venus. Their names were Aglaia, Euphrosyne, and Thalia. Various accounts of their parentage are given. By some they are made the daughters of Jupiter and Eurynome, by others of Apollo and Ægle, by others of Bacchus and Venus or Coronis. The Spartans, however, had only two Graces, Kleta and Phaënne, whose temple was still extant in the days of Pausanias. The Athenians, also, had only two, Auxo and Hegemone, whom they seem to have worshipped from a very early period. Originally there seems to have been only one Grace, in whom the pure idea of beauty was typified. By and bye, when the principles of æsthetics came to be more deeply investigated by the Greeks, their number was increased to three, to each of whom a special function was assigned. Thus Aglaia symbolized generally the beauty and splendour of the forms of nature, Euphrosyne mirth and happiness, and Thalia social festivity. Hence they were invoked to preside at marriages, births, and festivals of every kind. On these last-named occasions they were believed to interpose in preventing the evil consequences apt to result from excessive indulgence in wine.

The worship of the graces is said to have originated in Bœotia; and they are always represented as innocent maidens in the full bloom of youth and beauty, carrying either lyres, or myrtle branches, or roses. In early statues and carvings they are always found dressed; but in later times it became the fashion to represent them naked. As might have been expected, they form a favourite subject with modern as well as ancient sculptors and painters. Raphael and Canova have both reproduced the idea; and the marble of the one is as widely known as the painting of the other.

GRACIOSA, one of the Azores. See Azores. Also one of the Canary Islands. See Canary Islands.

GRADISKA or Berbir, a strongly-fortified town of European Turkey, province of Bosnia, on the right bank of the Save, 28 miles N. by E. of Banyaluka. Immediately opposite to it stands the Austrian fortress of Alt-Gradiska.

GRADUATION, among mathematical instrument-makers, is the process of dividing the arcs of quadrants, theodolites, circular instruments, measures, &c., into degrees, fractions of a degree, &c. Accuracy in this operation is of the utmost importance in practical astronomy and surveying, and no small amount of practical skill is requisite to insure its successful execution. There are two methods employed in the dividing of instruments—the ordinary one consisting in making a copy of a system of divisions already existing; the other and more delicate process is that of *original dividing*. Straight scales and rules, such as are used in drawing, are divided by placing the particular instrument and the original pattern side by side, then passing a straight edge (with a shoulder fixed at right angles to serve as a guide) along the original, and pausing at each division, when a corresponding line is made on the copy by the dividing knife. Segments of circles may be graduated by making the straight edge revolve on the centre of a divided circle, and marking off the divisions as in the straight scale. This method, which in skilful hands admits of considerable accuracy, was applied to the dvision of theodolites and common circular instruments until superseded by Ramsden's *Dividing Engine.* For the invention of this ingenious machine the author received from the Board of Longitude a premium of L.300, and L.315 for the machine itself, which he was permitted during pleasure to retain in his own possession, on condition of his dividing sextants and octants for other instrument-makers at fixed rates. A description of Ramsden's dividing engine would require a diagram to render it perfectly intelligible; but perhaps some general idea of its mode of action may be formed from the following brief explanation :—A horizontal circle, four feet in diameter, turns upon a vertical axis, and is moved by an endless screw, one revolution of which carries forward the circle ten minutes, or one sixth of a degree; the screw is moved forward by depressing a treadle, at each descent of which the screw, by a series of ingenious mechanical appliances, may be turned through any portion of its revolution; and when the pressure is removed, the position of the several parts is restored without communicating any return motion to the screw. The circle to be graduated is fixed upon the dividing-plate of the machine, and concentric with it, and the lines are cut after each depression of the treadle.

Some idea of the extreme delicacy required for original dividing may be derived from the fact that Ramsden, in laying down the original divisions on his dividing engine, divided his circle first into five parts, and each of these into three; these parts were then bisected four times, but being apprehensive lest some error might arise from quinquisection and trisection, in order to test the accuracy of the divisions he described another circle $\frac{1}{10}$th inch within the former by continual bisections, when the two sets of divisions were found to exhibit no sensible difference. It was by means of this machine that Ramsden graduated his great theodolite, constructed under the inspection of General Roy for the trigonometrical survey of Great Britain. A description of this fine theodolite, with illustrative plates, may be found in the *Philosophical Transactions*, Lond., vol. lxxx.

Ramsden's dividing machine is the prototype after which various similar ones (with some alterations and improvements) have been constructed by Troughton, Adie of Edinburgh, and various other artists. The dividing machines of Reichenbach, Gambey, and other continental inventors, differ somewhat from those above mentioned. The German method of division, which admits of the greatest accuracy under skilful management, is performed by copying from a large circle originally divided with extreme precision. Upon this the copy is fixed concentrically; and by the aid of the micrometer-microscope fixed independently over the divided circle, the degrees and their fractional parts are cut in the copy.

Ample details of the different methods employed for graduation are to be found in various published works which treat of this particular subject, such as those of Bird, Ramsden, Troughton, de Chaulnes, &c., &c.

Graduation, in the arts, the process of accelerating evaporation by exposing a large surface of the liquid operated on to a current of air.

GRÆCIA MAGNA (ἡ μεγάλη Ἑλλάς), in *Ancient Geography*, a collective name for the numerous Greek colonies which at an early age were established along the southern, south-eastern, and south-western shores of Italy. The term, however, is never used in a territorial sense to signify the southern half of the Italian peninsula, but is restricted entirely to the Greek cities on coasts.

GRÆVIUS, the Latinized form of GRÆFE, John, George, one of the most learned and laborious writers of his time, was born at Naumburg, in Saxony, Jan. 29, 1632. He began his studies in the gymnasium of Pforta, and completed them at the university of Leipzig, under Rivinus and Strauch. Grævius was led to the study of letters by his natural inclination, and every day he became more and more devoted to this pursuit. But his father wished that he should study the law; Strauch seconded this view, and Grævius obeyed, though with repugnance. He had the curiosity to visit Holland, while Salmasius, Heinsius, and Frederic Gronovius, were in the zenith of their reputation. The conversation of Gronovius revealed to him the painful truth that his studies had been almost entirely unavailing, that he had been taught according to the principles of a bad school, and that he had no time to lose if he desired to correct the vices of its method of instruction. He entreated Gronovius to become thenceforth his guide; nor could he have chosen one more able; so, having abandoned jurisprudence, he passed two years at Deventer, attending assiduously the lessons of his new master. He then proceeded to Amsterdam to hear Alexander Morus and David Blondel, whose counsels decided him to quit Lutheranism for the sect of Calvin. Peter Burmann, his panegyrist, anxious that this change of religion should not be misrepresented, declares that the new convert listened only to the voice of conscience. Grævius, whose reputation had now begun to be extended, was, in 1656, called to the university of Duisburg; and he had been there two years, surpassing all the hopes which had been conceived of his talents, when Gronovius, who had entered the university of Leyden, solicited the magistrates of Deventer to appoint Grævius his successor. They agreed to this application, and Grævius, notwithstanding the efforts of the elector of Brandenburg, who, in order to retain him, offered an augmentation of fees, quitted a university for a simple gymnasium, influenced probably by the desire of living under a free government. After a stay of three years at Deventer, he yielded to the solicitations of the university of Utrecht, which offered him the chair of history, then vacant by the death of Æmilius. This satisfied all his ambition, and, content with his situation, he declined the invitations of the magistrates of Amsterdam and Leyden, who twice attempted, by brilliant offers, to attach him to the schools in those cities. The elector-palatine, who wished to draw him to Heidelberg, was also refused; the king of Prussia was not more fortunate; and the republic of Venice, which offered him a chair in the university of Padua, had as little success, although, in the hope of inducing him to accept, it had promised him, besides considerable appointments, full liberty on the score of religion, and complete protection against the inquisitors. But none of these offers could overcome his resolution. The eager desire of foreigners to obtain his services was justified by the great reputation which he had attained as professor. Pupils crowded to his lectures, not only from all Holland, but from all Europe. In Germany, particularly, almost all the great lords sent their sons to be educated by him; and he reckoned amongst his auditors sons of princes, and even of kings; for William III., who made him his historiographer, had confided to his care the young Prince of Nassau. Paquot, and before him G. Burmann, in the *Trajectum Eruditum*, have given a complete list of his works. He died suddenly Jan. 11, 1703.

The following are his principal works—An edition of the Letters of Casaubon, Brunswick, 1655; The Solecist of Lucian, Amsterdam, 1668, in 8vo, with notes rich in grammatical erudition; Hesiod, with a collection of excellent observations under the title of *Lectiones Hesiodeæ;* Justin, 1669, *cum Notis Variorum;* Catullus, Tibullus, and Propertius, Utrecht, 1680, *cum Notis Variorum;* Suetonius, 1672; Florus, 1680; The Commentaries of Cæsar; The miscellaneous Letters of Cicero, his Letters to Atticus, his Treatise of Offices, and his Discourses, *cum Notis Variorum.* But his masterpiece is his *Thesaurus Antiquitatum Romanarum*, in 12 vols. folio, a work of incredible labour and research, to which he afterwards added *Thesaurus Antiq. et Hist. Italiæ*, printed the year after his death, 1704, in 3 vols. folio, and continued by his successor Peter Burmann. Besides all these works, which are more than sufficient to have exhausted the industry of ten ordinary men, Grævius edited the Philological Lexicon of Martinus, the treatise of Junius *De Pictura Veterum*, the Greek and Latin Poetry of Huet, and several works of Meursius; and, in concert with Peter Burmann and Holthen, he had commenced a reimpression of the Inscriptions of Gruter. Fabricius has published a collection of his Prefaces and Letters, and Burmann a collection of his Discourses.

GRAFTING, in *Horticulture*. See BOTANY, vol. v., p. 167–8; and HORTICULTURE, § *Fruit-Garden*.

GRAHAM, GEORGE, a distinguished mechanician and clockmaker, was born in 1675 at Horsgills, in the parish of Kirklinton, and county of Cumberland. His inventions in science are numerous and valuable. He invented and constructed with his own hands the sector with which Bradley discovered two new movements in the so-called fixed stars. He also executed the superb mural arch in the observatory of Greenwich, on the pattern of which the best instruments of this kind are still made. The French Academy selected him to make the necessary instruments for their expedition to the north, undertaken for the purpose of determining the figure of the earth. Some of Graham's horological inventions are no less remarkable than those already alluded to. It is to him that we owe the mercurial compensation pendulum, the dead escapement for clocks, and the horizontal or cylinder escapement for watches, which are all detailed under CLOCK AND WATCH WORK. Graham was a Quaker, and a man of almost proverbial probity and veracity. His published works are limited to his contributions to the Royal Society, of which he was a member. He died in 1751, and was buried in Westminster Abbey.

GRAHAM, *James*, the celebrated Marquis of Montrose, born 1612, beheaded at Edinburgh, May 21, 1650. His history will be found under SCOTLAND. His character is familiar to all through Sir W. Scott's *Legend of Montrose*.

GRAHAM, *John*, Viscount of Dundee, better known as Claverhouse, from the name of his estate, born about 1650, killed at Killiecrankie in 1689. The details of his life are given in the article SCOTLAND. The recent attempts of party writers to whitewash the character of Claverhouse have been all signal failures. It would be hardly fair to except from that catalogue even Sir W. Scott, whose political sympathies lay altogether in favour of those views for which Graham fought and finally died. The sketch of Claverhouse in *Old Mortality* is in the highest degree vigorous and graphic, but a very different and far truer estimate of the arch-persecutor is that in the episode entitled "Wandering Willie's Tale," in the story of *Redgauntlet* by the same author.

GRAHAM, *Thomas*, Lord Lynedoch, the hero of Barossa, was a cadet of a very ancient and honourable Scottish family. The date and place of his birth are alike unknown with certainty, as no register of the event is known to exist. He was born, however, either in 1750, or (as is more likely) in 1748. The place of his birth was either the family estate of Balgowan, or his father's property of Blairgowrie, near the town of that name, both in the county of Perth. On his father's side he claimed kindred with the dukes of Montrose; his mother was a daughter of the first Earl of Hopetoun. He was the third son, but as both his brothers died young he inherited the family estates. His education was carried on at home, and his tutor was the celebrated James Macpherson, whose name is identified with the poems of Ossian. On reaching manhood, young Graham did very much as was and is the custom of his class—he travelled a good deal on the Continent; farmed a little; distinguished himself as a most daring rider and sportsman, and dipped a good deal into general, but more especially classical literature, for which he had a decided taste. In this way he spent his life till the year 1792, when he had the misfortune, while travelling on the Continent, to lose his wife (the second daughter of Charles, ninth Earl of Cathcart), to whom he was most devotedly attached. This loss preyed deeply and long upon his mind; and the means that he took to drown the memory of his affliction imparted a romantic interest to the whole tenor of his future life. He entered the army as a volunteer; in 1793 took part in the campaign of the south of France, and distinguished himself by the devoted gallantry with which he always marched at the head of his column into the thickest of the fight. On returning home he was made colonel of the 90th regiment, of which the first battalion had been raised by himself. In 1795 he was stationed at Gibraltar, but becoming tired of the dull monotony of garrison routine, he left it, and attached himself to the Austrian headquarters as British commissioner. In this capacity he assisted Wurmser in the defence of Mantua, when it was blockaded by the French under General Bonaparte.

On returning home he was again employed on foreign service, and attracted especial notice at the reduction of Minorca and the subsequent blockade and capture of Malta. In 1808 he accompanied Sir John Moore to Spain, and took part in the campaign that ended in the disastrous retreat to Corunna. In the hardships, almost unparalleled, then undergone by the British soldiers, Graham (to quote the words of Sheridan) was in the hour of peril their best adviser, in the hour of disaster their surest consolation. In 1811 he fought and won the memorable battle of Barossa, notable among other reasons as the first fight in which the English captured a French eagle. Hastening to join Wellington, he arrived in time to be present at the siege of Ciudad Rodrigo. At Vitoria he led the English left wing, and after taking St Sebastian, crossed the Bidassoa, and was the first to take seisin of the soil of France with British troops. He received the thanks of parliament for his numerous services, and in 1814 was made a baron of the empire with the title of Lord Lynedoch. In 1826 he was appointed governor of Dumbarton Castle, and before his death had received as many orders and decorations as any general in the British service, Wellington alone excepted. Sir Walter Scott pays him a touching tribute at the close of the Vision of Don Roderick:—

> "Nor be his praise o'erpast, who strove to hide
> Beneath the warrior's vest affection's wound,
> Whose wish heaven for his country's weal denied;
> Danger and fate he sought, but glory found.
> From clime to clime, where'er was trumpet's sound
> The wanderer went; yet, Caledonia, still
> Thine was his thought in march and tented ground;
> He dreamed 'mid Alpine cliffs of Athole's hill,
> And heard in Ebro's roar his Lynedoch's lovely rill."

"Never," said Sheridan, "was there seated a loftier spirit in a braver heart." Lord Lynedoch died at London, Dec. 18, 1843, in the 94th (or if we assign his birth to 1748, in the 96th) year of his age. He died without issue, and his title is consequently extinct.

GRAHAME, JAMES, author of *The Sabbath* and other poems, was a native of Glasgow, where he was born April 22, 1765. His father was a successful and prosperous legal practitioner, and, by a very common error, he conceived that no other profession could be so suitable or so advantageous for his son. James, dutiful, and shrinking from opposition, as he did all through life, obeyed the parental wish and studied law, first to qualify himself for the business of writer to the signet, and subsequently for the Scottish bar. His inclinations, however, were all for retirement and literature; and finally, when he had reached the mature age of forty-four, he took orders in the English Church, and was contented with an humble curacy in the north of England. He did not long enjoy an office which he adorned by his pious and eloquent ministrations. Ill health compelled him to try the renovating effects of his native air and landscape ever dear to his imagination, but he died shortly after his return, September 14, 1811. The works of Grahame consist of a dramatic poem, *Mary Queen of Scots*, *The Sabbath*, *British Georgics*, *The Birds of Scotland*, and several smaller poems. His principal work is *The Sabbath*—a sacred and descriptive poem in blank verse, characterized by a fine vein of tender and devotional feeling, and by the happy delineation of Scottish scenery. He is the Cowper of Scotland, but wanting Cowper's mastery of versification and easy idiomatic vigour of style. The blank verse of Grahame is often hard and constrained, though at times it swells out into periods of striking imagery and prophet-like earnestness. His description of the solemn stillness and unbroken calm of "the hallowed day" in the rural districts of Scotland, and of the Scottish Sabbath preachings among the hills in times of persecution, when

> "The scattered few would meet in some deep dell
> By rocks o'er-canopied,"

are finished pictures that will never fade from our poetry. In his *Georgics* he tried the wider field of rural occupations and manners, and produced some pleasing daguerreotypes of nature—for he was a careful as well as loving student—but he descends into minute and undignified detail. Cowper ventured upon the subject of manure, and his failure as to the "stercoraceous heap" should have warned Grahame from the "compost pile." Such rules of husbandry are unfitted for poetry—or at least it was given to Virgil only to render them pleasing in verse. He, indeed, as Dryden happily says, "delivers the meanest of his precepts with a kind of grandeur: he breaks the clods and tosses the dung about with an air of gracefulness." No other poet, however, has succeeded in the perilous employment. In the notes to Grahame's poems the author expresses manly and enlightened views on the subject of slavery, on popular education, the criminal law, and other public questions. He was emphatically a friend of humanity—a philanthropist as well as a poet. (R. C—S.)

GRAHAM'S TOWN. See Good Hope, *Cape of.*

GRAINGER, James, author of an *Ode on Solitude*, and other poems, and the translator of *Tibullus*, was born about the year 1721 of "a gentleman's family in Cumberland" (his own statement); but Dunse in Berwickshire is said to have been the place of his birth. In 1759 he accompanied a rich West India proprietor to St Christopher's, where he resided about five years. He there wrote a poem on the "Sugar Cane," in which he dignified the poor negroes with the name of *swains*. He died in London in 1766. Johnson considered the opening lines of his Ode a "noble" passage, and many parts of the poem are highly picturesque. Grainger was a learned and worthy man, much esteemed by the Johnson circle of wits.

GRAIN, the name of the smallest weight in common use. It is the 24th part of a pennyweight troy, and the 20th part of the scruple in apothecaries' weight.

GRAINS OF PARADISE, hot, acrid, aromatic seeds, produced on the coast of Guinea, and supposed to be derived from two distinct species of plants, viz., the *Amomum Grana-paradisi* of Linnæus, and the *A. Meleguetta* of Roscoe; perhaps also from others. They are of a glossy dark brown colour, are longer and rounder than the seeds of the true cardamom, and have a slight flavour of camphor. These seeds are much esteemed as a spice among the Africans, but are chiefly employed to give a fictitious strength to beer and spirits. (Archer's *Economic Botany.*)

GRAMMAR.

Grammar is the art of speaking or writing any language with correctness and propriety; and the purpose of language is to communicate thought.

Grammar, considered as an art, necessarily supposes the previous existence of language; and as its design is to teach any language to those who are ignorant of it, it must be adapted to the genius of that particular language of which it treats. A just method of grammar, therefore, without attempting any alterations in a language already introduced, furnishes certain observations called rules, to which the methods of speaking used in that language may be reduced; and this collection of rules is called the *grammar* of that particular language. For the greater distinctness with regard to these rules, grammarians have usually divided this subject into four distinct heads: *Orthography*, or the art of combining letters into syllables, and syllables into words; *Etymology*, or the art of deducing one word from another, and the various modifications by which the sense of any one word can be diversified consistently with its original meaning or its relation to the theme whence it is derived; *Syntax*, or what relates to the construction or due disposition of the words of a language into sentences or phrases; and *Prosody*, or that which treats of the quantities and accents of syllables, and the art of making verses.

But grammar, considered as a science, views language only as significant of thought. Neglecting particular and arbitrary modifications introduced for the sake of beauty or otherwise, it examines the analogy and relation between words and ideas; distinguishes between those particulars which are essential to language and those which are only accidental; and thus furnishes a certain standard, by which different languages may be compared, and their several excellencies or defects pointed out. This is what is called Philosophical or

UNIVERSAL GRAMMAR.

The origin of language is a subject which has employed much learned investigation, and about which there is still a diversity of opinion. The design of speech is to communicate to others the thoughts and perceptions of the mind of the speaker; but it is obvious, that between an internal idea and any external sound there is no natural relation; that the word *fire*, for instance, might have denominated the substance which we call *ice*, and that the word *ice* might have signified *fire*. Some of the most acute feelings of man, as well as of every other animal, are indeed expressed by simple inarticulate sounds, which, as they tend to the preservation of the individual, or the continuance of the species, and invariably indicate either pain or pleasure, are universally understood; but these inarticulate and significant sounds are very few in number; and if they can with any propriety be said to constitute a natural and universal language, it is a language of which man as a mere sensitive being partakes in common with the other animals.

Man is endowed not only with sensation, but also with the faculty of reasoning; and simple inarticulate sounds are insufficient for expressing all the various modifications of thought, for communicating to others a chain of argumentation, or even for distinguishing between the different sensations either of pain or of pleasure; a man scorched with fire or unexpectedly plunged amongst ice, might utter the cry naturally indicative of sudden and violent pain; the cry would be the same, or nearly the same, but the sensations of cold and heat are widely different. Articulation, by which those simple sounds are modified, and a particular meaning fixed to each modification, is therefore absolutely necessary to such a being as man, and forms the language which distinguishes him from all other animals, and enables him to communicate with facility all that diversity of ideas with which his mind is stored, to make known his particular wants, and to distinguish with accuracy all his various sensations. Those sounds thus modified are called *words;* and as words have confessedly no natural relation to the ideas and perceptions of which they are significant, the use of them must either have been the result of human sagacity, or have been suggested to the first man by the author of nature.

Whether language be of divine or human origin, is a question upon which, though it might perhaps be soon resolved, it is not necessary to enter here. Upon either supposition, the first language, compared with those which succeeded it, or even with itself as afterwards enlarged, must have been extremely narrow and rude. If it was of human contrivance, this will be readily granted; for what art was ever invented and brought to a state of perfection by illiterate savages? If it was taught by God, which is at least the more probable supposition, we cannot imagine that it would be more comprehensive than the ideas of those for whose immediate use it was intended; that the first men should have been taught to express pains or pleasures which they never felt, or to utter sounds that should afterwards be significant of ideas which at the time of utterance had not occurred to the mind of the speaker. Man once taught the elements of language would be able of himself to improve and enlarge it as his future occasions required.

As all language is composed of significant words variously combined, a knowledge of them is necessary previous to our acquiring an adequate idea of language as constructed into sentences and phrases. But as it is by words that we express the various ideas which occur to the mind, it is necessary to examine how ideas themselves are suggested, before we can ascertain the various classes into which words may be distributed. It is the province of *logic* to trace our ideas from their origin, as well as to unfold the process of reasoning; but it is necessary at present to observe, that our earliest ideas are all ideas of sensation, excited by the impressions that are made upon our organs of sense by the various objects with which we are surrounded. Let us therefore suppose a reasonable being, devoid of every possible prepossession, placed upon this globe; and it is obvious that his attention would in the first place be directed to the various objects which he saw existing around him. These he would naturally endeavour to distinguish from one another; and if he were either learning or inventing a language, his first effort would be to give them *names*, by means of which the ideas of them might be recalled when the objects themselves should be absent. This is one copious source of words, and forms a natural class which must be common to every language, and which is distinguished by the name of *nouns;* and as these nouns are the names of the several substances which exist, they have likewise been called *substantives.*

It would likewise be early discovered that every one of these substances was endowed with certain qualities or attributes, to express which another class of words would be requisite, since it is only by their qualities that substances themselves can attract our attention. Thus, to be weighty, is a quality of matter; to think, is an attribute of man. Therefore in every language words have been invented to express the known qualities or attributes of the several objects which exist. These may all be comprehended under the general denomination of *attributives.*

Nouns and attributives must comprehend all that is essential to language;[1] for every thing which exists, or of which we can form an idea, must be either a substance or the attribute of some substance; and therefore the two classes which we denominate substances and attributes must comprehend all the words that are necessary to communicate to the hearer the ideas which are present to the mind of the speaker. If any other words occur, they can only have been invented for the sake of dispatch, or introduced for the purposes of ease and ornament, to avoid tedious circumlocutions or disagreeable tautologies. There are indeed grammarians of great name, who have considered as essential to language an order of words, of which the use is to connect the nouns and attributes, and which are said to have no signification of themselves, but to become significant by relation. Hence all words which can possibly be invented are by these men divided into two general classes; those which are *significant of themselves*, and those which are *not.* Words significant of themselves are either expressive of the names of substances, and therefore called *substantives;* or of attributes, and therefore called *attributives.* Words which are not significant of themselves must acquire a meaning either as defining or connecting others, and are therefore arranged under the two classes of *definitives* and *connectives.*

That in any language there can be words which of themselves have no signification, is a supposition which a man free from prejudice will not readily admit. For to what purpose, we ask, should they have been invented? As they are significant of no ideas, they cannot facilitate the communication of thought, and must therefore be only an incumbrance to the language in which they are found. But in answer to this it has been said, that these words, though devoid of signification themselves, acquire a sort of meaning when joined with others, and that they are as necessary to the structure of a sentence as mortar is to the structure of an edifice; for as stones cannot be arranged into a regular building without a cement to bind and connect them, so the original words significant of substances and attributes cannot be made to express all the variety of our ideas without being defined and connected by those words which of themselves signify nothing. It is wonderful that he who first suggested this simile did not perceive that it tends to overthrow the doctrine which it is meant to illustrate. For surely the cement is as much the matter of the building as the stones themselves are; it is equally solid and equally extended. By being united with the stones, it neither acquires nor loses any one of the qualities essential to matter; it neither communicates its own softness nor acquires their hardness. By this mode of reasoning, therefore, it would appear that the words called definitives and connectives, so far from having of themselves no signification, are equally essential to language, and equally significant with those which are denominated substantives and attributives; and upon investigation it will be found that this is the truth. For whatever is meant by the definition or connection of the words which all men confess to be significant, that meaning must be the sense of the words of which the purpose is to define and connect; and as there can be no meaning where there are no ideas, every one of these definitives and connectives must be significant of some idea, although it may not always be easy or even possible to express that idea by another word.

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[1] This is the doctrine of many writers on the theory of language; yet it is not easy to conceive mankind so far advanced in the art of abstraction as to view *attributes* by themselves independently of particular *substances*, and to give one general name to each attribute wheresoever it may be found, without having at the same time words expressive of affirmation. We never talk of any attribute, a colour for instance, without affirming something concerning it; as, either that it is bright or faint, or that it is the colour of some substance. It will be seen afterwards, that to denote affirmation is the proper office of what is called the substantive verb; as, "Milk is white." That verb therefore appears to be as necessary to the communication of thought as any species of words whatsoever; and if we must range words under a few general classes, we should be inclined to say that nouns, attributes, and affirmatives, comprehend all that is really essential to language.

These different modes of dividing the parts of speech we have just mentioned because they have been largely treated of by grammarians of high fame. But it does not appear to us that any man can feel himself much the wiser for having learned that all words are either substantives or attributives, definitives or connectives. The division of words into those which are *significant of themselves*, and those which are *significant by relation*, is absolute nonsense, and has been productive of much error and much mystery in some of the most celebrated treatises on grammar. It is indeed probable that any attempt to establish a different classification of the parts of speech from that which is commonly received, will be found of little utility either in practice or in speculation. As far as the former is concerned, the vulgar division seems sufficiently commodious; for every man who knows any thing, knows when he uses a noun and when a verb. With respect to the latter, not to mention that all the grammarians from Aristotle to Horne Tooke have differed on the subject, it should seem to be of more importance, after having ascertained with precision the nature of each species of words, to determine in what circumstances they differ than in what they agree.

In most languages, probably in all cultivated languages, grammarians distinguish the following parts of speech, viz. noun, pronoun, verb, participle, adverb, preposition, conjunction. The Latin and English grammarians admit the interjection among the parts of speech, although it is confessedly not necessary to the construction of the sentence, being only thrown in to express the affection of the speaker; and in the Greek and English tongues there is the article prefixed to nouns when they signify the common names of things, to point them out, and to show how far their signification extends. In the method of arrangement commonly followed in grammars, adjectives are classed with substantives, and both are denominated nouns. But it is certain that, when examined philosophically, an essential difference is discovered between the substantive and the adjective; and therefore some philologists of eminence, when treating of this subject, have given the following classification of words, which we shall adopt: The ARTICLE, NOUN, PRONOUN, VERB, PARTICIPLE, ADJECTIVE, ADVERB, PREPOSITION, CONJUNCTION, INTERJECTION. All these words are to be found in the English language, and therefore we shall examine each class, endeavour to ascertain its precise import, and show in what respects it differs from every other class. It is impossible to investigate the principles of grammar without confining the investigation in a great measure to some particular language from which the illustrations must be produced; and that we should prefer the English language for this purpose can excite no wonder, as it is a preference which is due to every tongue from those by whom it is spoken. The principles, however, which we shall here expound and elucidate, being in substance the same with those so clearly and ingeniously established by Dr John Hunter of St Andrews, in his oral prelections on philology, will be found to apply universally; and our inquiry, though principally illustrated from the English language, will be an inquiry into Philosophical and Universal Grammar.

I. *Of the Noun or Substantive.*

Nouns are all those words by which objects or substances are denominated, and which distinguish them from one another, without marking either quantity, quality, action, or relation. The substantive or noun is the name of the thing spoken of, and in Greek and Latin is called *name;* for it is ονομα in the one, and *nomen* in the other; and if in English we had called it the *name* rather than the *noun*, the appellation would perhaps have been more proper, as this last word, being used only in grammar, is more liable to be misunderstood than the other, which is in constant and familiar use. That nouns or the names of things must make a part of every language, and that they must have been the words first suggested to the human mind, will not be disputed. Men could not speak of themselves, or of any thing else, without having names for themselves and the various objects with which they are surrounded. Now, as all the objects which exist must be either in the same state in which they were produced by nature, or changed from their original state by art, or abstracted from substances by the powers of imagination, and conceived by the mind as having at least the capacity of being characterised by qualities; this naturally suggests a division of nouns into *natural*, as man, vegetable, tree; *artificial*, as house, ship, watch; and *abstract*, as whiteness, motion, temperance.

But the diversity of objects is so great, that had each individual a distinct and proper name, it would be impossible for the most tenacious memory, during the course of the longest life, to retain even the nouns of the narrowest language. It has therefore been found expedient, when a number of things resemble each other in some important particulars, to arrange them all under one *species;* to which is given a name that belongs equally to the whole species, and to each individual comprehended under it. Thus the word *man* denotes a *species* of animals, and is equally applicable to every human being; the word *horse* denotes another species of animals, and is equally applicable to every individual of that species of *quadrupeds;* but it cannot be applied to the species of men, or to any individual comprehended under that species. We find, however, that there are some qualities in which several species resemble each other; and therefore we refer them to a higher order called a *genus*, to which we give a name that is equally applicable to every species and every individual comprehended under it. Thus, men and horses and all living things on earth resemble each other in this respect, that they have *life.* We refer them therefore to the genus called *animal;* and this word belongs to every species of animals, and to each individual animal. The same classification is made both of artificial and abstract substances; of each of which there are genera, species, and individuals. Thus, in natural substances, animal, vegetable, and fossil, denote *genera;* man, horse, tree, metal, *species;* and Alexander, Bucephalus, oak, gold, *individuals.* In artificial substances, again, edifice is a *genus;* house, church, tower, are *species;* and the Vatican, St Paul's, and the Tower of London, are *individuals.* Lastly, in abstract substances, motion and virtue are *genera;* flight and temperance are *species;* the flight of Mahommed, and temperance in wine, are *individuals.* By arranging substances in this manner, and giving a name to each genus and species, the nouns necessary to any language are comparatively few and easily acquired; and when we meet with an object unknown to us, we have only to examine it with attention, and, comparing it with other objects, to refer it to the genus or species which it most nearly resembles. By this contrivance we supply the want of a proper name for the individual; and, as far as the resemblance is complete between it and the species to which it is referred, and of which we have given it the name, we may converse and reason about it without danger of error;

whereas had each individual in nature a distinct and proper name, words would be innumerable and incomprehensible; and to employ our labours in language would be as idle as that study of numberless written symbols which has been attributed to the Chinese.

Although nouns are thus adapted to express, not the individuals, but the genera or species into which substances are classed; yet, in speaking of these substances, whether natural, artificial, or abstract, all men must have occasion to mention sometimes one of a kind, and sometimes more than one. In every language, therefore, nouns must admit of some variation in their form, to denote *unity* and *plurality;* and this variation is called *number.* Thus in the English language, when we speak of a single place of habitation, we call it a house; but if of more, we call them houses. In the first of these cases the noun is said to be in the *singular,* in the last case it is in the *plural* number. Greek nouns have also a *dual* number to express two individuals, as have likewise some Hebrew nouns; but this variation is evidently not essential to language; and it is perhaps doubtful whether it ought to be considered as an elegance or as a deformity.

But although number be a natural accident of nouns, it can only be considered as essential to those which denote genera or species. Thus we may have occasion to speak of one animal or of many animals, of one man or of many men; and therefore the nouns *animal* and *man* must be capable of expressing *plurality* as well as *unity.* But this is not the case with respect to the proper names of individuals; for we can only say *Xenophon, Aristotle, Plato,* in the *singular;* as, were any one of these names to assume a plural form, it would cease to be the proper name of an individual, and become the common name of a species. Of this, indeed, we have some examples in every language. When a proper name is considered as a general appellative under which many others are arranged, it is then no longer the name of an individual, but of a species, and as such admits of a plural; as the *Cæsars,* the *Howards,* the *Pelhams,* the *Montagues;* but *Socrates* can never become plural, as long as we know of no more than one man of that name. The reason of all this will be obvious, if we consider that every genus may be found whole and entire in each of its species; for *man, horse,* and *dog,* are each of them an entire and complete animal; and every species may be found whole and entire in each of its individuals, Socrates, Plato, and Xenophon, being each of them completely and entirely a *man.* Hence it is, that every genus, though *one,* is multiplied into *many;* and every species, though *one,* is also multiplied into *many,* by reference to those beings which are their subordinates; but as no individual has any such subordinates, it can never in strictness be considered as *many;* and so, as well in nature as in name, is truly an *individual* which cannot admit of number.

Besides number, another characteristic, visible in substances, is that of *sex.* Every substance is either male or female, or both male and female, or neither the one nor the other. So that with respect to sexes and their negation, all substances conceivable are comprehended under this fourfold consideration, which language would be very imperfect if it could not express. Now the existence of hermaphrodites being rare, if not doubtful, and language being framed to answer the ordinary occasions of life, no provision is made, in any of the tongues with which we are acquainted, for expressing, otherwise than by a name made on purpose, or by a periphrasis, duplicity of sex. With regard to this great natural characteristic, grammarians have made only a threefold distinction of nouns: those which denote *males* are said to be of the *masculine gender;* those which denote *females,* of the *feminine;* and those which denote substances that admit not of *sex,* are said to be *neuter,* or of *neither gender.* All animals have sex, and therefore the names of all animals should have gender. But the sex of all is not equally obvious, nor equally worthy of attention. In those species which are most common, or of which the male and female are, by their size, form, colour, or other outward circumstances, eminently distinguished, the male is sometimes called by one name, which is masculine, and the female by a different name, which is feminine. Thus in English we say, *husband, wife; king, queen; father, mother; son, daughter,* and so on. In others of similar distinction, the name of the male is applied to the female only by prefixing a syllable or by altering the termination; as *man, woman; lion, lioness; emperor, empress,* anciently *emperess; master, mistress,* anciently *masteress;* and so in other similar instances. When the sex of any animal is not obvious, or not material to be known, the same name, in some languages, is applied, without variation, to *all* the species, and that name is said to be of the *common gender.* Thus in Latin *bos albus* is a white ox, and *bos alba* a white cow. Diminutive insects, though they are doubtless male and female, seem to be considered in the English language as if they were really sexless things. No man, speaking of a worm, would say *he* creeps, but *it* creeps upon the ground. But although the origin of genders is thus clear and obvious, yet the English is the only language with which we are acquainted that deviates not, except in a very few instances, from the order of nature. Greek and Latin, and many of the modern tongues, have nouns, some masculine, some feminine, which denote substances where sex never had existence. Nay, some languages are so particularly defective in this respect, as to class every object, inanimate as well as animate, under either the masculine or the feminine gender, as they have no neuter gender for those which are of neither sex. This is the case with the Hebrew, French, Italian, and Spanish. But the English, strictly following the order of nature, puts every noun which denotes a male animal, and no other, in the masculine gender; every name of a female animal, in the feminine; and every animal whose sex is not obvious, or known, as well as every inanimate object whatsoever, in the neuter gender. And this gives our language an advantage above most others in the poetical and rhetorical style; for when nouns naturally neuter are converted into masculine and feminine, the personification is more distinctly and more forcibly marked. Some very learned and ingenious men have endeavoured, by what they call a more subtile kind of reasoning, to discern even in things without a sex a distant analogy to that *natural distinction,* and to account for the names of inanimate substances being, in Greek and Latin, masculine and feminine. But such speculations are wholly fanciful, and the principles upon which they proceed are overturned by an appeal to facts. Many of the substances that, in one language, have masculine names, have in others names that are feminine; which could not be the case were this matter regulated by reason or nature. Indeed, for this, as well as many other anomalies in language, no other reason can be assigned than that custom,

> Quem penes arbitrium est, et jus, et norma, loquendi.

It has been already observed that most nouns are the names, not of individuals, but of whole classes of objects termed genera and species.[1] In classing a number of individuals under one species, we contemplate only those qualities which appear to be important, and in which the several individuals are found to agree, abstracting the mind from the consideration of all those which appear to be less essential, and which in one individual may be such as have nothing exactly similar in any other individual upon earth. Thus, in classing the individuals which are comprehended under the species denominated horse, we pay no regard to their colour or their size; because experience teaches us that no particular colour or size is essential to that individual living creature, and that there are not perhaps upon earth two horses whose colour and size are exactly alike. But the qualities which in this process we take into view, are the general shape, the symmetry, and proportion of the parts; and in short, every thing which appears evidently essential to the life of the individual and the propagation of the race. All these qualities are strikingly similar in all the individuals which we call *horses*, and as strikingly dissimilar from the corresponding qualities of every other individual animal. The colour of a horse is often the same with that of an ox; but the shape of the one animal, the symmetry and proportion of his parts, are totally different from those of the other; nor could any man be led to class the two individuals under the same species. It is by a similar process that we ascend from one species to another, and through all the species to the highest genus. In each species or genus in the ascending series fewer particular qualities are attended to than were considered as essential to the genus or species immediately below it; and our conceptions become more and more general as the particular qualities which are the objects of them become fewer in number. The use of a general term, therefore, can recal to the mind only the common qualities of the class, the genus, or species, which it represents. But we have frequent occasion to speak of individual objects. In doing this, we annex to the general term certain words significant of particular qualities, which discriminate the object of which we speak from every other individual of the class to which it belongs, and of which the general term is the common name. For instance, in advertising a *thief*, we are obliged to mention his height, complexion, gait, and whatever may serve to distinguish him from all other men.

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[1] It is almost unnecessary to observe, that the words *genus* and *species,* and the phrases *higher genus* and *lower species,* are taken here in the logical sense; and not as the words *genus, species, order, class,* are often employed by naturalists.

The process of the mind in rendering its conceptions particular, is indeed exactly the reverse of that by which it generalizes them. For, as in the process of generalization, it abstracts from the ideas of any number of species certain qualities in which they differ from each other, and of the remaining qualities in which they agree constitutes the first genus in the ascending series; so, when it wishes to make its conceptions more particular, it annexes to the idea of any genus those qualities or circumstances which were before abstracted from it; and the genus, with this annexation, constitutes the first species in the descending series. In like manner, when it wishes to descend from any species to an individual, it has only to annex to the idea of the species those particular qualities which discriminate the individual intended from the other individuals of the same kind.

This particularizing operation of the mind points out the manner of applying the general terms of language for the purpose of expressing particular ideas. For, as the mind, to limit a general idea, connects that idea with the idea of some particular circumstance, so language, as we have already observed, in order to limit a general term, connects that term with the word denoting the particular circumstance. Thus, in order to particularize the idea of horse, the mind connects that general idea with the circumstance, suppose, of whiteness; and in order to particularize the word horse, language connects that word with the term white; and so in other instances. Annexation, therefore, or the connecting of general words or terms in language, fits it for expressing particular conceptions; and this must hold good alike in all languages. But the methods of denoting this annexation are various in various tongues. In English and most modern languages we commonly use for this purpose little words, which we have chosen to style *particles*; and in the Greek and Latin languages, the *cases of nouns* answer the same end.

Cases, therefore, though they are accidents of nouns not absolutely necessary, have been often considered as such; and they are certainly worthy of our examination, since there is perhaps no language in which some cases are not to be found, as indeed without them or their various powers no language could readily answer the purposes for which it was formed.

All the oblique cases of nouns, if we except the vocative, are merely marks of annexation; but as the connections or relations subsisting among objects are very various, some cases denote one kind of relation, and some another. We shall endeavour to investigate the connection which each case denotes, beginning with the *genitive*.

This is the most general of all the cases, and gives notice that *some* connection indeed subsists between two objects, but does not point out the particular kind of connection. That we must infer, not from our nature or termination of the genitive itself, but from our previous knowledge of the objects connected. That the genitive denotes merely relation in general, might be proved by adducing innumerable examples, in which the relations expressed by this case are different; but we shall content ourselves with one observation, from which the truth of our opinion will appear beyond dispute. If an expression be used in which are connected by the genitive case, two words significant of objects between which a twofold relation may subsist, it will be found impossible, from the expression, to determine which of these two relations is the true one, which must be gathered wholly from the context. Thus, for example, from the phrase *injuria regis*, no man can know whether the injury mentioned be an injury *suffered* or an injury *inflicted* by the king; but if the genitive case notified any particular relation, no such ambiguity could exist. This case therefore gives notice, that two objects are somehow connected,[1] but it marks not the particular sort of connection. Hence it may be translated by our particle *of*, which will be seen afterwards to be of a signification equally general.

The dative and accusative cases appear to have nearly the same meaning; each of them denoting apposition, or the junction of one object with another. Thus, when any one says, *Comparo Virgilium Homero*, Homer and Virgil are conceived to be placed beside one another, in order to their being compared; and this sort of connection is denoted by the dative case. In like manner, when it is said *latus humeros*, breadth is conceived as joined to or connected in apposition with shoulders; and the expression may be translated " broad *at* the shoulders."

This apposition of two objects may happen either without previous motion, or in consequence of it. In the foregoing instances no motion is presupposed; but if one say, *Misit aliquos subsidio eorum*, the apposition is there in consequence of motion. In like manner, when it is said *Profectus est Romam*, his apposition with Rome is conceived as the effect of his motion thither. From this idea of the accusative, the reason is obvious why the object after the active verb is often put in that case; it is because the action is supposed to proceed *from* the agent *to* the patient. But the same thing happens with respect to the dative case, and for the same reason. Thus, *Antonius læsit Ciceronem*, and *Antonius nocuit Ciceroni*, are expressions of the same import; in each the action of hurting is conceived as proceeding *from* Antony *to* Cicero; and this is finely illustrated by the passive form of such expressions, where the procedure above mentioned is expressly marked by the preposition *ab*, as *Cicero nocetur, Cicero læditur* AB *Antonio*. It is therefore not true that the accusative is that case, at least the only case, which to an efficient nominative and a verb of action subjoins either the effect or the passive subject; nor is the dative the only case which is formed to express relations tending to itself. The only thing *essential* to these two cases is to denote the apposition or junction of one object with another; and this they do nearly, if not altogether, in the same manner, although from the custom of language they may not be indifferently subjoined to the same verb.

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[1] The Greek grammarians seem to have been aware of the nature of this case when they called it *πτωσις γενικη*, or the general case; a name of which the Latin grammarians evidently mistook the meaning when they translated it *casus genitivus*, or the generative case, which is a name totally foreign to its nature.

The Greek language has no *ablative* case; but in the Latin, where it is used, it denotes concomitancy, or that one thing accompanies another. From this concomitancy we sometimes draw an inference, and sometimes not. For example, when it is said, *Templum clamore petebant*, clamour is represented as concomitant of their going to the temple; but here no inference is drawn. From the phrase *palleo metu*, although nothing more is expressed than that paleness is a concomitant of the fear, yet we instantly infer that it is also the effect of the fear. In most instances where the ablative is used, an inference is drawn, of which the foundation is some natural connection observed to subsist between the objects thus connected in language. When this inference is not meant to be drawn, the *preposition* is commonly added; as, *interfectus est* CUM *gladio*, he was slain with a sword *about* him; *interfectus est gladio*, he was slain with a sword as the *instrument* of his death.

The remaining cases, which have not been noticed, are the nominative and the vocative. These are in most instances alike in termination, which makes it probable that they were originally one and the same case. The foundation of this conjecture will appear from considering the use to which each of these cases is applied. The nominative is employed to call up the idea of any object in the mind of the hearer. But when a man hears his own name mentioned, his attention is instantly roused, and he is naturally led to listen to what is to be said. Hence, when one man meant particularly to solicit the attention of another, he would naturally pronounce that other person's name; and thus the nominative case would pass into a vocative, of which the use is always to solicit attention.[1]

The Greek and Latin among the ancient, and the German among the modern languages, express different connections or relations of one thing with another by cases. In English this is done for the most part by prepositions; but the English being derived from the same origin as the German, that is, from the Teutonic, has at least one variation of the substantive to answer the same purpose. For instance, the relation of possession, or belonging, is often expressed by a different ending of the substantive, which may be well called a case. This case answers nearly to the genitive case in Latin; but as that is not a denomination significant of the nature of the case in any language, it may perhaps in English be more properly called the possessive case. Thus, *God's grace*, anciently *Godis grace*, is the grace belonging to or in the possession of God; and may be likewise expressed by means of the preposition, as, *the grace of God*.

Although the word *Godis* is as evidently an inflexion of the noun *God* as the word *Dei* is an inflexion of *Deus*, there are grammarians who have denied that in English there is any true inflexion of the original noun, and who have said that the noun with the addition of that syllable which we consider as the sign of a case, ceases to be a noun, and becomes a definitive; a word which with them is devoid of signification. Thus, in the expression *Alexander's house*, the word *Alexander's* stands not as a *noun*, but as an article or definitive, serving to ascertain or point out the individuality of the house. But this is a palpable mistake. The word *Alexander's* serves not to point out the individuality of the house, but to show to whom the house belongs; and is therefore beyond dispute not an article, but a noun in the possessive case. Again, when we say *St Peter's* at Rome and *St Paul's* at London, the words *St Peter's* and *St Paul's* are neither articles, nor, as has been absurdly imagined, the proper names of edifices, like the Rotunda or the Circus, but they are, in the possessive case, the names of the two apostles to whom the churches were dedicated, and to whom they are supposed to belong.

But that this, which we have called the possessive case, is really not so, must be evident, it is said, because there are certain circumstances in which it cannot be substituted for the noun with the preposition prefixed. Thus, though a man may say, I speak *of* Alexander, I write *of* Cæsar, I think *of* Pompey, he cannot say, I speak Alexander's, I write Cæsar's, or I think Pompey's. This is indeed true, but it is nothing to the purpose. For though I may say *Loquor* DE *Alexandro, Scribo* DE *Cæsare, Cogito* DE *Pompeio*, I cannot say, *Loquor Alexandri, Scribo Cæsaris*, or *Cogito Pompeii*; and therefore all that can be inferred from this argument is, that as the Latin genitive is not always of the same import with the preposition *de*, so the English possessive is not always of the same import with the preposition *of*. Upon the whole, then, we may conclude that English nouns admit of one inflexion; and that though cases are not so essential to nouns as gender and number, no language can be wholly without them or their various powers.

II. *Of Articles or Definitives.*

The intention of language is to communicate thought, or to express those ideas which are suggested to us by our senses external and internal. The ideas first suggested to us are those of pain and pleasure, and of the objects with which we are surrounded; and therefore the words first learned must be nouns, or the names of objects natural, artificial, and abstract. Every object about which the human mind can be conversant is strictly and properly speaking particular; for all things in nature differ from one another in numberless respects, which, not to mention the idea of separate existence, so circumstance and individualize them, that no one thing can be said to be another. Now the use of language being to express our ideas or conceptions of these objects, it might naturally be expected that every object should be distinguished by a proper name. This would indeed be agreeable to the truth of things, but we have already seen that it is altogether impracticable. Objects have therefore been classed into genera and species; and names given, not to each individual, but to each genus and species. By this contrivance of language, we are enabled to ascertain in some measure any individual that may occur, and of which we know not the proper name, only by referring it to the genus or species to which it belongs, and calling it by the general or specific name; but as there is frequent occasion to distinguish individuals of the same species from one another, it became necessary to fall upon some expedient to mark this distinction. In many languages general and specific terms are modified and restricted by three orders of words; the *article*, the *adjective*, and the *oblique cases of nouns.* The cases of nouns we have already considered; the adjective will employ our attention afterwards; at present our observations are confined to the *article*, a word so very necessary, that without it, or at least some equivalent invention, men could not employ nouns to any of the purposes of life, or indeed communicate their thoughts at all. As the business of articles is to enable us, upon occasion, to employ general terms to denote particular objects, they must be considered in combination with the general terms as merely substitutes for proper names. They have, however, been commonly called definitives; because they serve to define and ascertain any particular object so as to distinguish it from the other objects of the general class to which it belongs, and, of course, to denote its individuality. Of words framed for this purpose, whether they have by grammarians been termed articles or not, we know of no language that is wholly destitute. The nature of them may be explained as follows.

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[1] The chief objection to this conjecture, that the nominative and vocative were originally the same case, is taken from the Latin tongue, in which the nouns of the second declension ending in *us* terminate their vocative in *e*. But this is easily accounted for. The *s* in such words was often dropped, as appears from the scanning of old Latin poetry; when this was done, the *u* being short, would naturally in pronunciation pass into *e*, a like short vowel; and thus, in the vocative case, *e* would in time be written instead of *u*.

An object occurs with which, as an individual, we are totally unacquainted; it has a head and limbs, and appears to possess the powers of self-motion and sensation; we therefore refer it to its proper species, and call it a dog, a horse, a lion, or the like. If it belongs to none of the species with which we are acquainted, it cannot be called by any of their names; we then refer it to the genus, and call it an animal.

But this is not enough. The object at which we are looking, and which we want to distinguish, is not a species or a genus, but an individual. Of what kind? Known or unknown? Seen now for the first time, or seen before and now remembered? This is one of the instances in which we shall discover the use of the two articles A and THE; for, in the case supposed, the article A respects our primary perception, and denotes an individual as unknown; whereas THE respects our secondary perception, and denotes individuals as known. To explain this by an example: I see an object pass by which I never saw till now: What do I say? There goes *a* beggar with *a* long beard. The man departs and returns a week after: What do I then say? There goes *the* beggar with *the* long beard. Here the article only is changed; the rest remains unaltered. Yet mark the force of this apparently minute change. The individual once vague is now recognised as something known; and that merely by the efficacy of this latter article, which tacitly insinuates a kind of previous acquaintance, by referring a present perception to a like perception already past.

This is the explanation of the articles A and THE as given by the learned Mr Harris, and thus far what he says on the subject is certainly just; but it is not true that the article THE always insinuates a previous acquaintance, or refers a present perception to a like perception already past. I am in a room crowded with company, of which the greater part is to me totally unknown; I feel it difficult to breathe from the grossness of the enclosed atmosphere; and, looking towards the window, I see in it a person whom I never saw before. I instantly send my compliments to *the* gentleman in the window, and request that, if it be not inconvenient, he will have the goodness to let a little fresh air into the room. Of this gentleman I have no previous acquaintance; my present perception of him is my primary perception, and yet it would have been extremely improper to send my compliments to *a* gentleman in the window. Again, there would be no impropriety in saying, "*A* man whom I saw yesterday exhibiting a show to the rabble was this morning committed to jail charged with the crime of housebreaking." Notwithstanding the authority, therefore, of Mr Harris, and his master Apollonius, we may venture to affirm, that it is not essential to the article A to respect a primary perception, or to the article THE to indicate a pre-established acquaintance. Such may indeed be the manner in which these words are most frequently used; but we see that there are instances in which they may be used differently. What, then, it may be asked, is the import of each article, and in what respects do they differ?

We answer, that the articles A and THE are both of them definitives, as, by being prefixed to the names of genera and species, they so circumscribe the latitude of those names as to make them for the most part denote individuals. A noun or substantive, without any article to limit it, is taken in its widest sense. Thus the word man means all mankind;

> The proper study of mankind is man;

where *mankind* and *man* may change places without making any alteration in the sense. But let either of the articles of which we are treating be prefixed to the word *man*, and that word is immediately reduced from the name of a whole genus to denote only a single individual; and instead of the noble truth which this line asserts, the poet will be made to say, that the proper study of mankind is not the common nature which is diffused through the whole human race, but the manners and caprices of one individual. Thus far therefore the two articles agree; but they differ in this, that though they both limit the specific name to some individual, the article A leaves the individual itself unascertained; whereas the article THE ascertains the individual also, and can be prefixed to the specific name only when an individual is intended of which something may be predicated that distinguishes it from the other individuals of the species. Thus, if I say, *a* man is fit for treasons, my assertion may appear strange and vague; the sentence, however, is complete, and wants nothing to make it intelligible; but if I say, *the* man is fit for treasons, I speak nonsense; for as the article THE shows that I mean some particular man, it will be impossible to discover my meaning till I complete the sentence, and predicate something of the individual intended to distinguish him from other individuals.

> The man that hath not music in himself....
> Is fit for treasons.

A man, therefore, means some one or other of the human race indefinitely; *the* man means, definitely, that particular man who is spoken of. The former is called the indefinite, the latter the definite, article.

The two articles differ likewise in this respect, that as the article A serves only to separate one individual object from the general class to which it belongs, it cannot be applied to plurals. It has indeed the same signification nearly with the numerical word *one;* and in French and Italian the same word that denotes unity is also the article of which we now treat. But the essence of the article THE being to define objects, by pointing them out as those of which something is affirmed or denied which is not affirmed or denied of the other objects of the same class, it is equally applicable to both numbers; for things may be predicated of one set of men, as well as of a single man, which cannot be predicated of other men. The use and import of each article will appear from the following example: "*Man* was made for society, and ought to extend his good will to *all men;* but *a man* will naturally entertain a more particular regard for *the men* with whom he has the most frequent intercourse, and enter into a still closer union with *the man* whose temper and disposition suit best with his own."

We have said that the article A cannot be applied to plurals, because it denotes unity. But to this rule there is apparently a remarkable exception in the use of the adjectives *few* and *many* (the latter chiefly with the word *great* before it), which, though joined with plural substantives, yet admit of the singular article A: as, *a few men, a great many men.* The reason of this is manifest from the effect which the article has in these phrases. It means a small or a great number collectively taken, to which it gives the idea of a whole, that is, of unity. Thus likewise *a hundred, a thousand*, is one whole number, an aggregate of many collectively taken, and therefore still retains the article A, though joined as an adjective to a plural substantive; as, *a hundred years.* The exception therefore is only apparent; and we may affirm that the article A universally denotes unity.

The indefinite article is much less useful than the other; and therefore the Greek and Hebrew languages have it not, though they have both a definite article. In languages of which the nouns, adjectives, and verbs, have inflexion, no mistake can arise from the want of the indefinite article; because it can always be known by the terminations of the noun and the verb, and by the circumstances predicated of the noun, whether a whole species or one individual be intended. But this is not the case in English. In that language, the adjectives having no variation with respect to gender or number, and the tenses of the verbs being for the most part the same in both numbers, it might be often doubtful, had we not the indefinite article, whether the specific name was intended to express the whole species or only one individual. Thus, if we say in English, *man was born sent from God*, we must be understood to mean that the birth of *every* man is from God, because to the specific term the indefinite article is not prefixed. Yet the words, Εγενετο ἀνθρωπος ἀπεσταλμενος παρα Θεου, convey no such meaning to any person acquainted with the Greek language; as the word ἀνθρωπος, without any article, is restricted to an individual by its concord with the verb and the participle; and the sense of the passage is, A *man was born, or existed, sent from God.* But though the *Greeks* have no article corresponding to the article A, yet nothing can be more nearly related than their ‘O to our THE; ‘O *βασιλευς*, THE *king*, TO δωρον, THE *gift*. In one respect, indeed, the Greek and English articles differ. The former is varied according to the gender and number of the noun with which it is associated, being ὁ, *masculine*, ἡ, *feminine*, το, *neuter*, and οἱ, αἱ, τα, in the *plural number;* whereas the English article suffers no change, being invariably THE before nouns of every gender and in both numbers. There are, however, some modern languages which, in imitation of the Greek, admit of a variation of their article which relates to gender; but this cannot be considered as essential to this species of words, and it may be questioned whether it be an improvement to the language. In tongues of which the nouns have no inflexion, it can only serve to perplex and confuse, as it always presents a particular idea of sex where in many cases it is not necessary.

The articles already mentioned are allowed to be strictly and properly such by every grammarian; but there are some words, such as *this, that, any, some, all, other*, &c. which are generally said to be sometimes articles and sometimes pronouns, according to the different modes of using them. That words should change their nature in this manner, so as to belong sometimes to one part of speech and sometimes to another, must appear very extraordinary; and if it were a fact, language would be a thing so equivocal, that all inquiries into its nature, upon principles of science and reason, would be vain. But we cannot perceive any such fluctuation in any word whatever; though we know it to be a general charge brought against words of almost every denomination, of which we have already seen one instance in the possessive case of nouns, and shall now see another in those words which are commonly called pronominal articles.

If it be true, as we acknowledge it to be, that the genuine *pronoun* always stands by itself, assuming the power of a noun, and supplying its place, then is it certain that the words *this, that, any, some*, &c. can never be *pronouns.* We are indeed told, that when we say *this* is virtue, give me *that*, the words *this* and *that* are pronouns; but that when we say, *this habit* is virtue, *that man* defrauded me, then are they articles or definitives. This, however, is evidently a mistake occasioned by overlooking those abbreviations in construction which are frequent in every language, and which, on account of that very frequency, have perhaps escaped the attention of grammarians whose sagacity has been successfully employed on matters less obvious. When we say *this* is virtue, it is evident that we communicate no intelligence till we add a substantive to the word *this*, and declare what is virtue. The word *this* can therefore in no instance assume the power of a noun, since the noun to which it relates, though for the sake of dispatch it may be omitted in writing or conversation, must always be supplied by the mind of the reader or hearer, to make the sentence intelligible, or *this* itself of any importance. "When we have viewed speech analysed, we may then consider it as compounded. And here, in the first place, we may contemplate that synthesis which by combining simple terms produces a truth; then by combining two truths produces a third; and thus others and others in continued demonstration, till we are led, as by a road, to the regions of science. Now *this* is that superior and most excellent synthesis which alone applies itself to our intellect or reason, and which to conduct according to rule constitutes the art of logic. After *this* we may turn to those inferior compositions which are productive of the pathetic," &c. Here, if any where, the word *this* may be thought to stand by itself, and to assume the power of a noun; but let any man complete the construction of each sentence, and he will perceive that *this* is no more than a definite article. Thus "We may contemplate that synthesis which by combining simple terms produces a truth; then by combining two truths produces a third truth; and thus other truths and other truths in continued demonstration, till we are led, as by a road, into the regions of science. Now *this* combination of truths is that superior and most excellent synthesis which alone applies itself to our intellect or reason, and which to conduct according to rule constitutes the art of logic. After we have contemplated *this* art, we may turn," &c.

The word *that* is generally considered as still more equivocal than *this;* for it is said to be sometimes an article, sometimes a pronoun, and sometimes a conjunction. In the following extract it appears in all these capacities; and yet, upon resolving the passage into parts, and completing the construction, it will be found to be invariably a definite article. "It is necessary to *that* perfection, of which our present state is capable, *that* the mind and body should both be kept in action; *that* neither the faculties of the one nor of the other be suffered to grow lax or torpid for want of use; but neither should health be purchased by voluntary submission to ignorance, nor should knowledge be cultivated at the expense of health;

for *that* must enable it either to give pleasure to its possessor, or assistance to others." If this long sentence be resolved into its constituent parts, and the words be supplied which complete the construction, we shall see the import of the word THAT to be precisely the same in each clause. "The mind and body should both be kept in action; *that* action is necessary to *that* perfection of which our present state is capable; neither the faculties of the one nor of the other should be suffered to grow lax or torpid for want of use; the degree of action proper to prevent *that* laxness is necessary; but neither should health be purchased by voluntary submission to ignorance, nor should knowledge be cultivated at the expense of health; for *that* health must enable it either to give pleasure to its possessor, or assistance to others." Again:

He that's unskilful will not toss a ball.

A man unskilful (he is *that*) will not toss a ball. Here the word *that,* though substituted for what is called the relative pronoun, still preserves unchanged its definitive import; and in every instance, except where it may be used very improperly, it will be found to be neither more nor less than a definitive article.

It appears, then, that if the essence of an article be to define and ascertain, the words *this* and *that,* as well as *any, some, all,* &c. which are commonly called pronominal articles, are much more properly articles than any thing else, and as such should be considered in universal grammar. Thus, when we say, *this* picture I approve, but *that* I dislike, what do we perform by the help of the words *this* and *that,* but bring down the common appellative to denote two individuals, the one as the more near, the other as the more distant? So when we say, SOME men are virtuous, but ALL men are mortal; what is the natural effect of this *all* and *some,* but to define that universality and that particularity which would remain indefinite were we to take them away? The same thing is evident in such sentences as, "SOME substances have sensation, OTHERS want it; choose ANY way of acting, and SOME men will find fault," &c. For here *some, other,* and *any* serve all of them to define different parts of a given whole; *some,* to denote any indeterminate part; *any,* to denote any indefinite mode of action, no matter what; and *other,* to denote the remaining part, when a part has been assumed already.

We have said that the article is a part of speech so very necessary, that without it, or some equivalent invention,[1] mankind could not communicate their thoughts; and that of words falling under this description we know of no language which is wholly destitute. We are aware that these positions may be controverted; and that the Latin may be instanced as a language which, without articles, is not only capable of communicating the ordinary thoughts of the speaker to the mind of the hearer, but which, in the hands of Cicero, Virgil, and Lucretius, was made to serve all the purposes of the most profound philosopher, the most impassioned orator, and the most sublime poet. That the Latin has been made to serve all these purposes cannot be denied, although Lucretius and Cicero both complain, that on the subject of philosophy, where the use of articles is most conspicuous, it is a deficient language. But should we grant what cannot be demanded, that these two great men were unacquainted with the powers of their native tongue, our positions would still remain unshaken; for we deny that the Latin is wholly without articles. It has indeed no word of precisely the same import with our *the* or the Greek ὁ; but the place of the indefinite article A might be always supplied, if necessary, with the numerical word *unus.* It may be so even in English; for we believe there is not a single instance where the words *one man, one horse, one virtue,* might not be substituted for the words *a man, a horse, a virtue,* without in the slightest degree altering the sense of the passage where such words occur. This substitution, however, can be but seldom or never necessary in the Latin tongue, of which the precision is much greater than that of the English would be without articles, because the oblique cases of the Latin nouns, and the inflexion of its verbs, will almost always enable the reader to determine whether an appellative represents a whole species or a single individual. The want of the definite article *the* seems to be a greater defect; yet there are few instances in which its place might not be supplied by *this* or by *that* without obscuring the sense; and the Latin tongue is by no means deficient of articles corresponding to these two. Let us substitute the words *one* and *that* for *a* and *the* in some of the foregoing examples, and we shall find, though the sound may be uncouth, the sense will remain. Thus,

THAT man who hath not music in himself....
Is fit for treasons,

conveys to the mind of the reader the very same sentiment which the poet expresses by the words *the* man that hath not music, &c. Again, *Man* was made for society, and ought to extend his good will to *all men*; but *one* man will naturally entertain a more particular regard for *those men* with whom he has the most frequent intercourse, and enter into a closer union with *that man* whose temper and disposition suit best with his own. Now the words *hic* and *ille* being exactly of the same import with the words *this* and *that,* it follows, that wherever the place of the article *the* may in English be supplied by *this* or by *that,* it may in Latin be supplied by *hic* or by *ille.* This is the case with respect to Nathan's reproof of David, where the definite article is indeed most emphatical. The original words might have been translated into English, "thou art *that* man," as well as "thou art *the* man;" and in Latin they may with the utmost propriety be rendered, "Tu es *ille* homo." Indeed the words *hic* and *ille,* and we might instance many more, though they are commonly called pronouns, are in truth nothing but definite articles. *Hic* is evidently ὁκε; and *ille* is most probably derived from the Hebrew word *al,* in the plural *ale,* which may be translated indifferently, either *the* or *that.* But, what proves beyond dispute that these words are not pronouns, but articles, is, that in no single instance will they be found to stand by themselves and assume the power of nouns. For the sake of dispatch, or to avoid disagreeable repetitions, the noun may indeed be often omitted; but it is always supplied by the reader or hearer, when *hic* and *ille* appear in their proper place, and are seen to be invariably definitive articles. We shall give an example of the use of each word, and dismiss the subject.

In the first oration against Catiline, Cicero begins with addressing himself in a very impassioned style to the traitor, who was present in the senate-house. He then exclaims pathetically against the manners of the age, and proceeds in these words: *Senatus hæc intelligit, consul videt,* HIC *tamen vivit. Vivit? immo vero etiam in senatum venit; fit publici consilii particeps.* In this passage *hic* cannot be a pronoun; for from the beginning of the oration there occurs not a single noun of which it can possibly supply the place. When the orator uttered it, he was probably pointing with his finger at Catiline, and every one of his audience would supply the noun in his own mind, as we do when we translate it, "*yet* this traitor lives." When Virgil says,

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[1] As in the Persian and other eastern languages, in which the place of our indefinite article is supplied by a termination to those nouns which are meant to be particularized.

> *Ille* ego, qui quondam gracili modulatus avena
> Carmen,

it is obvious that he means, I am *that man*, or *that poet*, who sung, &c.; and though we may translate the words "I am *he* who tuned his song," yet when we construe the passage we are under the necessity of supplying either *vates* or *vir*, which shows that *ille* is nothing more than a definite article signifying *that* or *the*. It appears, then, that the Latin tongue is not wholly destitute of articles, as few cases can occur where the Greek ὁ and our *the* may not be supplied by the words *hic* and *ille*, which have in our opinion been very improperly termed pronouns. If there be any such cases, we can only confess that the Latin language is defective; whereas, had it no articles, it is not easy to conceive how it could answer, to a cultivated people, the ordinary purposes of speech.

The articles *this* and *that*, unlike *a* and *the*, are varied according as the noun, with which they are associated, is in the singular or in the plural number. Thus we say, *this* and *that man* in the singular, and *these* and *those men* in the plural. The Latin articles *hic* and *ille*, for such we will call them, are varied, like the Greek ὁ, not only with the number, but also with the gender of their nouns. In languages where the structure of a sentence may be so changed from the order of nature, as it commonly is in Greek and Latin, and where the reader is guided, not by the position, but by the terminations of the words, to those which are in concord and those which are not, these variations of the articles have their use; but in English they are of no importance. Were it not that the custom of the language, the *norma loquendi* as Horace calls it, has determined otherwise, there would be no more impropriety in saying *this* or *that men*, than in saying *some men* or *the men*.

As articles are by their nature definitives, it follows of course that they cannot be united with such words as are in their own nature as definite as they may be, nor with such words as, being undefinable, cannot properly be made otherwise; but only with those words which, though indefinite, are yet capable through the article of becoming definite. Hence the reason why it is absurd to say, *the I* or *the thou*, because nothing, as will be seen afterwards, can make these pronouns more definite than they are of themselves; and the same may be said of proper names. Neither can we say, *the both*, because the word *both* is in its own nature perfectly defined. Thus if it be said, "I have read both poets," this plainly indicates a definite pair, of whom some mention has been made already. On the contrary, if it be said, "I have read two poets," this may mean any pair out of all that ever existed. And hence the numeral, being in this sense indefinite, as indeed are all others as well as itself, is forced to assume the article whenever it would become definite. Hence also it is that as *two*, when taken alone, has reference to some primary and indefinite perception, whilst the article *the* has reference to some perception secondary and definite, it is bad language to say *two the men*, as this would be blending of incompatibles, that is, it would be representing two men as defined and undefined at the same time. On the contrary, to say, *both the men*, is good language; because the substantive cannot possibly be less apt, by being defined, to coalesce with a numeral adjective which is defined as well as itself. So likewise it is correct to say, *the two men*, *these two men*, or *those two men*; because here the article, being placed at the beginning, extends its power as well through the numeral adjective as the substantive, and tends equally to define them both.

As some of the above words admit of no article because they are by nature as definite as may be, so there are others which admit it not because they are not to be defined at all. Of this sort are all *interrogatives*. If we question about substances, we cannot say, *the who is this*, but *who is this?* And the same both as to qualities and quantities; for we say, without an article, *what sort of*, *how many*, *how great?* The reason is, the article *the* respects beings of which we can predicate something; but interrogatives respect beings about which we are ignorant, and of which we can therefore predicate nothing; for as to what we know, interrogation is superfluous. In a word, the natural associates of articles are *all those common appellatives which denote the several genera and species of beings:* and it may be questioned whether in strictness of speech they are ever associated with any other words.

We have said that proper names admit not of the article, being in their own nature definite. This is true, whilst each name is confined to one individual; but as different persons often go by the same name, it is necessary to distinguish these from one another, to prevent the ambiguity which this identity of name would otherwise occasion. For this purpose we are obliged to have recourse to adjectives or epithets. For example, there were two Grecian chiefs who bore the name of Ajax; and it was not without reason that Mnestheus used epithets when his intention was to distinguish the one from the other. "If both *Ajaxes* cannot be spared," said he, "at least let mighty Telamonian Ajax come." But as epithets are diffused through various subjects, in as much as the same adjective may be referred to many substantives, it has been said to be necessary, in order to render both parts of speech equally definite, that the adjective itself assume an article before it, which may indicate a reference to some single person only. It is thus we say, Trypho *the* Grammarian, Apollodorus *the* Cyrenian, &c. This is the doctrine of Mr Harris, from which, with the highest respect for the learning of the author, we feel ourselves obliged to dissent. In the examples given, the article THE is certainly not associated with the words Grammarian and Cyrenian, in the same manner in which it is associated with the word *man* in the sentence, "The man that hath not music in himself." When we say Apollodorus THE Cyrenian, we may, without folly or impertinence, be asked, the Cyrenian *what?* And the moment this question is answered, it will be seen that the article defines, not an adjective, but a substantive. If the answer be, the Cyrenian philosopher, the article *the* is associated with the word philosopher, and the phrase Apollodorus THE Cyrenian is an abbreviation of Apollodorus THE philosopher of Cyrene. In like manner, Trypho THE grammarian, is Trypho THE grammarian writer, or Trypho THE writer of grammar. Such abbreviations are very common. We say familiarly *the Speaker*, and are understood to mean a high officer in the British parliament; yet as speaker is a name common to many men, we may without impropriety be asked, *what* speaker we mean; and if so, we must reply, *the Speaker of the House of Commons*. But that which is eminent is supposed to be generally known; and therefore, in common language, *the speaker* is deemed a sufficient designation of him who presides over the lower house of parliament. Hence, by an easy transition, the definite article, from denoting reference, comes to denote eminence also; that is to say, from implying an ordinary preacquaintance, to presume a kind of general and universal notoriety. Thus *a king* is any king, but *the king* is that person whom we acknowledge as our sovereign, the king of Great Britain. In Greek, too, as in English, the article is often a mark of eminence; for *the Poet* meant Homer, and *the Stagirite* meant Aristotle; not but that there were many poets besides Homer, and many Stagirites besides Aristotle, but none equally illustrious.

Before we dismiss the *Article*, we shall produce one example to show the utility of this species of words; which, although they may seem to be of small importance, yet, when properly applied, serve to make a few general terms sufficient for expressing with accuracy all the various objects about which mankind can have occasion to converse. Let *man* be the general term, which I have occasion to employ for the purpose of denoting some particular. Let it be required to express this particular as unknown, I say *a* man; known, I say *the* man; definite, *a certain* man; indefinite, *any* man; present and near, *this* man; present and at some distance, *that* man; like to some other, *such* a man; different from some other, *another* man; an indefinite multitude, *many* men; a definite multitude, *a thousand* men; the ones of a multitude taken throughout, *every* man; the same ones taken with distinction, *each* man; taken in order, *first* man, *second* man, &c.; the whole multitude of particulars taken collectively, *all* men; the negation of that multitude, *no* man; a number of particulars present and near, *these* men; at some distance, or opposed to others, *those* men; a number of individuals separated from another number, *other* men; a small indefinite number, *few* men; a proportionally greater number, *more* men; a smaller number, *fewer* men. And so we might proceed on almost to infinitude. But not to dwell longer upon this subject, we shall only remark, that minute changes in principles lead to mighty changes in effects; so that principles are well entitled to regard, however trivial they may appear.

III.—*Of Pronouns, or Substantives of the second order.*

To men who are neither intoxicated with their own abilities, nor ambitious of the honour of building new systems, little pleasure can accrue from differing upon points of science from writers of great and deserved reputation. In such circumstances a man of modesty, although he will not upon the authority of a celebrated name adopt an opinion of which he perceives not the truth, must always advance his own notions with some degree of diffidence, as being conscious that the truth which he cannot perceive, may be visible to a keener and more perspicacious eye. In these circumstances we feel ourselves with regard to some of the most celebrated writers on grammar, from whom, concerning one or two points, comparatively indeed of but little importance, we have already been compelled reluctantly to differ. In treating of pronouns we are likely to deviate still farther from the beaten track; but that we may not be accused of acting the part of dogmatists in literature, and of claiming from others that implicit confidence which we refuse to give, we shall state with fairness the commonly received opinions, point out in what respects we think them erroneous, assign our reasons for calling them in question, and leave our readers to judge for themselves. The most celebrated writer in English who has treated of pronouns, and whom, since the publication of his *Hermes*, most other writers have implicitly followed, is Mr Harris, who, after a short introduction, proceeds thus:—

" All conversation passes between individuals, who will often happen to be till that instant unacquainted with each other. What, then, is to be done? How shall the speaker address the other, when he knows not his name? or how explain himself by his own name, of which the other is wholly ignorant? Nouns, as they have been described, cannot answer this purpose. The first expedient upon this occasion seems to have been pointing, or indicating by the finger or hand; some traces of which are still to be observed, as a part of that action which naturally attends our speaking. But the authors of language were not content with this. They invented a race of words to supply this pointing; which words, as they always stood for substantives or nouns, were characterized by the name of *pronouns*. These also they distinguished into three several sorts, calling them pronouns of the first, the second, and the third person, with a view to certain distinctions, which may be explained as follows:—

" Suppose the parties conversing to be wholly unacquainted, neither name nor countenance on either side known, and the subject of the conversation to be the speaker himself. Here, to supply the place of pointing by a word of equal power, the inventors of language furnished the speaker with the pronoun I; *I* write, *I* say, *I* desire, &c.; and as the speaker is always principal with respect to his own discourse, this they called, for that reason, the pronoun of the first person.

" Again, suppose the subject of the conversation to be the party addressed. Here, for similar reasons, they invented the pronoun *thou; thou* writest, *thou* walkest, &c. And as the party addressed is next in dignity to the speaker, or at least comes next with reference to the discourse, this pronoun they therefore called the pronoun of the second person.

" Lastly, suppose the subject of conversation neither the speaker nor the party addressed, but some third object different from both. Here they provided another pronoun, *he, she*, or *it*; which, in distinction to the two former, was called the pronoun of the third person. And thus it was that pronouns came to be distinguished by their respective *persons*."

The description of the different *persons* here given is taken, we are told, from Priscian, who took it from Apollonius. But whatever be the deference due to these ancient masters, their learned pupil, though guided by them, seems not to have hit upon the true and distinguishing characteristic of the personal pronouns. He supposes, that when the names of two persons conversing together are known to each other, they may, by the use of these names, express all that the personal pronouns express; but this is certainly not true. To us, at least, there appears to be a very material difference between saying " George did this," and " I did this;" nor do we think that the power of the pronoun would be completely supplied by the name, even with the additional aid of indication by the hand. So, when one man says to another with whom he is conversing, " James did so and so;" it is surely not equivalent to his saying " You did so and so." If such were the case, one might pertinently ask, when both persons are known to each other, Why do they use the personal pronouns? Mr Harris tells us, that " when the subject of conversation is the speaker himself, he uses I; and when it is the party addressed, he uses *thou*." But, in fact, the nature of the personal pronouns has no sort of connection with the subject of conversation, whether that conversation relate to the speaker, the party addressed, or a Greek book. In this sentence, " I say that the three angles of every triangle are equal to two right angles," the speaker is surely not the subject of the discourse; nor is the party addressed, but the truth of his assertion, the subject of discourse in the following sentence: " *You* say, that Horne Tooke's Diversions of Purley is the most masterly treatise on grammar, as far as it goes, that you have ever seen." Mr Harris uses the phrase " becoming the subject of conversation," in no other sense than that when the speaker has occasion to mention *himself*, he uses I; when the party addressed, *thou*; and when some other person or thing, *he, she*, or *it*. But we know that he may use other words by no means equivalent to the two first of these pronouns, which will sufficiently mark himself, and the party addressed; and that he may use indifferently, and without the smallest injury to the sense, either the third pronoun, or the word for which it is merely a substitute. A man who sustains various characters may design himself by any one of them. Thus Mr Pitt might have spoken of himself as the first lord of the treasury, chancellor of the exchequer, or member for the university of Cambridge; and in each case he would have been what Mr Harris calls the subject of conversation; yet every one feels that none of these designations would have been equivalent to I. What, then, is the force of the personal pronouns?

It appears to be simply this: The first denotes the speaker, *as characterised by the present act of speaking*, in contradistinction to every other character which he may bear. The second denotes the party addressed, *as characterised by the present circumstance of being addressed*, in contradistinction to every other character. And what is called the pronoun of the third person is merely a *negation of the other two*, as the neuter gender is a negation of the masculine and feminine. If this account of the personal pronouns be true, and we flatter ourselves that its truth will be obvious to every body, there is but one way of expressing by other words the force of the pronouns of the first and second person. Thus, " The person who now speaks to you did so and so," is equivalent to " *I* did so and so;" and " The person to whom I now address myself did so and so," is equivalent to " *You* did so and so."

Hence we see why it is improper to say the *I* or the *thou*; for each of these pronouns has of itself the force of a noun with the definite article prefixed, and denotes a person of whom something is predicted, which distinguishes him from all other persons. *I* is the person who now speaks, *thou* is the person who is now addressed by the speaker. Hence too we see the reason why the pronoun *I* is said to be of the first, and the pronoun *thou* of the second person. These pronouns can have place only in conversation, or when a man, in the character of a public speaker, addresses himself to an audience; but it is obvious that there must be a speaker before there can be a hearer; and therefore, that the pronouns may follow the order of nature, *I*, which denotes the person of the speaker, must take place of *thou*, which denotes the person of the hearer. Now the speaker and the hearer being the only persons engaged in conversation or declamation, *I* is with great propriety called the pronoun of the first, and *thou* the pronoun of the second person. We have said, that with respect to pronouns, the third person, as it is called, is merely a negative of the other two. This is evident from the slightest attention to the import of those words which are called pronouns of the third person. *He*, *she*, or *it*, denotes not the person either of the speaker or of the hearer; and, as we have just observed, no other person can have a share in conversation or declamation. An absent person or an absent thing may be the subject of conversation, but cannot be the speaker or the person addressed. *He*, *she*, and *it*, however, as they stand by themselves, and assume the power of nouns, are very properly denominated pronouns; but they are not personal pronouns in any other sense than as the negation of sex is the neuter gender.

We have already seen that nouns admit of number; pronouns, which are their substitutes, likewise admit of number. There may be *many* speakers at once of the same sentiment, as well as one, who, including himself, speaks the sentiment of *many*; speech may likewise be addressed to *many* at a time, as well as to *one*; and the subject of the discourse may likewise be *many*. The pronoun, therefore, of every one of the persons must admit of number to express this singularity or plurality. Hence the pronoun of the first person *I*, has the plural *we*; that of the second person *thou*, has the plural *ye* or *you*; and that of the third person *he*, *she*, or *it*, has the plural *they*, which is equally applied to all the three genders.

The Greeks and Romans, when addressing one person, used the pronoun in the singular number *thou*; whereas in the polite, and even in the familiar style, we, and many other modern nations, use the plural *you*. Although in this case we apply *you* to a single person, yet the verb must agree with it in the plural number; it must necessarily be, *you have*, not *you hast*. *You was*, the second person plural of the pronoun placed in agreement with the first or third person singular of the verb, is an enormous, though common solecism, which ought to be carefully avoided. In very solemn style, as when we address the Supreme Being, we use *thou*, perhaps to indicate that he is God alone, and that there is none like unto him; and we sometimes use the same form of the pronoun in contemptuous or very familiar language, to intimate that the person to whom we speak is the meanest of human beings, or the dearest and most familiar of our friends. A king, exerting his authority on a solemn occasion, adopts the plural of the first person, " *we* strictly command and charge;" meaning, that he acts by the advice of counsellors, or rather as the representative of a whole people. But in all cases in which the use of the pronoun deviates from the nature of things, the verb in concord deviates with it; for, as will be seen afterwards, these two words universally agree in number and person.

But though all these pronouns have number, neither in Greek, Latin, or any modern language, do those of the first and second person carry the distinctions of sex. The reason is obvious,[1] namely, that sex, and all other properties and attributes whatever, except those mentioned above as descriptive of the nature of these pronouns, are foreign from the intention of the speaker, who, when he uses the pronoun *I*, means *the person who now speaks*, no matter whether man or woman; and when the pronoun *thou*, *the person*, no matter whether man or woman, *to whom he now addresses himself*, and nothing more. But the pronoun of the third person denoting neither the speaker nor the hearer, but the subject of the discourse, and being merely the substitute of a noun which may be either masculine, feminine, or neuter, must of necessity agree with the noun which it represents, and admit of a triple distinction significant of gender. In English, which allows its adjectives no genders, this pronoun is *he* in the masculine, *she* in the feminine, and *it* in the neuter; the utility of which distinction may be better found in supposing it away. Suppose, for example, that we should in history read these words, *He caused him to destroy him*, and were informed that the pronoun, which is here thrice repeated, stood each time for something different; that is to say, for a man, for a woman, and for a city, whose names were Alexander, Thais, and Persepolis. Taking the pronoun in this manner, divested of its gender, how would it appear which was destroyed, which the destroyer, and which the cause that moved to the destruction? But there is no ambiguity, when we hear the genders distinguished: when we are told with the proper distinctions, that *she* caused *him* to destroy *it*, we know with certainty that the prompter was the woman; that her instrument was the hero; and that the subject of their cruelty was the unfortunate city. From this example we would be surprised how the Italians, French, and Spaniards could express themselves with precision or elegance with no more than two variations of this pronoun.

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[1] The reason assigned by Mr Harris and his followers is, that " the speaker and hearer being generally present to each other, it would have been superfluous to have marked a distinction by art, which from nature and even dress was commonly apparent on both sides." This is perhaps the best reason which their description of the personal pronouns admits, but it is not satisfactory; for the speaker and hearer may meet in the dark, when different dresses cannot be distinguished.

Although in every language with which we are acquainted, there is but one pronoun for each of the first and second persons; and although it is obvious, from the nature and import of those words, that no more can be necessary; yet the mere English reader may perhaps be puzzled with finding three distinct words applied to each; *I*, *mine*, and *me*, for the first person; *thou*, *thine*, and *thee*, for the second. The learned reader will see at once that the words *mine* and *me*, *thine* and *thee*, are equivalent to the genitive and accusative cases of the Latin pronouns of the first and second persons. That *mine* is a pronoun in the possessive case is obvious; for if I were asked "whose book is that before me?" I should reply, "It is *mine*,"[1] meaning that it belongs to me. That the word *me* is the same pronoun in the case which the Latin grammarians call the accusative, is evident from the import of that word in the sentence *he admires me*, where the admiration is supposed to proceed from the person spoken of to the person who speaks. It appears, therefore, that though English nouns have only two cases, the nominative and possessive, the pronouns of that language have three, as, *I, mine, me; thou, thine, thee; he, his, him*, &c.; and that these are cases, can be questioned by no man who admits that *mei, mihi, me*, are cases of the Latin pronoun *ego*. Both pronouns, the Latin and the English, are irregularly inflected; and perhaps those words which are called the oblique cases of each may have originally been derived from nominatives different from *ego* and *I*; but these nominatives are now lost, and *mei* and *mine* have, beyond all dispute, the effect of the genitives of the Latin and English pronouns of the first person. These variations, however, cannot be looked upon as an essential part of language, but only as a particular refinement, invented to prevent the disagreeable repetition of the pronoun, which must frequently have happened without such a contrivance. This seems to have been the only reason why pronouns have been endowed with a greater variety of cases than nouns. Nouns are in themselves greatly diversified. Every genus and every species of objects has a distinct name, and therefore the sameness of sound does not so often occur among them as it would among the pronouns, without cases, where the same *I, thou, he, she*, or *it*, answers for every object which occurs in nature; but by this diversity in the form of the words, the *cacophonia*, which would be otherwise disgusting, is in a great measure avoided. It is, probably, for the same reason that the plural of each of these pronouns is so very different from the singular. Thus from *I, mine, me*, in the singular, is formed, in the plural, *we, ours, us*; from *thou, thine*, and *thee*, *ye* or *you, yours, you*; and from *he, she, it, his, hers, its, him, her, it*, in the singular, *they, theirs, them*, in the plural. In all of which there is not the least resemblance between the singular and plural of any one word; and except in *he, his, him; it, its; they, theirs, them*; there is not any similarity between the different cases of the same word in the same number.

From the account here given of the personal pronouns, it appears that the first or second will, either of them, coalesce with the third, but not with each other. For example, it is good sense, as well as good grammar, to say in any language, *I am he, thou art he, we were they, you were they*; but we cannot say, *I am thou*, nor *thou art I*, nor *we are you*, &c. The reason is, there is no absurdity for the speaker to be also the subject of the discourse, as when it is said, I am he; or for the person addressed, as when we say, thou art he. But for the same person, in the same circumstances, to be at once the speaker and the party addressed, is impossible; for which reason the coalescence of the pronouns of the first and second persons is likewise impossible.

I, thou, he, she, and *it*, are all that are usually called personal pronouns. There is another class of words, which are called sometimes pronominal adjectives, sometimes adjective pronouns, sometimes possessive pronouns; and by one writer of grammar they have been most absurdly termed pronominal articles. It is not worth while to dispute about a name; but the words in question are *my, thy, her, our, your, their*. These words are evidently in the form of adjectives; for, like other English adjectives, they have no variation to indicate either gender, number, or case; and yet they are put in concord with nouns of every gender and both numbers, as, *my wife, my son, my book; her husband, her sons, her daughters*, &c. But though in the form of adjectives, they have the power of personal pronouns in the possessive case: *my book* is the book of *me*, or the book of *him who now speaks; our house* is the house of *us*, or the house occupied by the *persons who now speak; her husband*, is the husband of a woman who can be known only from something preceding in the discourse; and *their property* is the property of them, of any persons, whether men or women, or both, who have been previously mentioned. Words which have the form of adjectives, with the power of pronouns, may, without impropriety, be called pronominal adjectives; and such is the name by which we shall henceforth distinguish them. To these pronominal adjectives, as well as to the personal pronouns, are subjoined the words own and self, and in the plural selves; in which case they are emphatical, and imply a silent contrariety or opposition. Thus, *I live in my own house*; that is, not in a hired house. *This I did with my own hand*; that is, not by proxy. *This was done by myself*; that is, not by another. The word self subjoined to a personal pronoun forms also the reciprocal pronoun; as, *we hurt ourselves by vain rage; he blamed himself for his misfortune. Himself, itself, themselves*, are supposed by Wallis to be put, by corruption, for *his self, its self, their selves*; so that *self* is always a substantive or noun, and not a pronoun. This seems to be a just observation; for we say, *the man came himself, they went themselves*; where the words *himself* and *themselves* cannot be accusatives, but nominatives, and were anciently written *his self, their selves*.

There are other words which are usually ranked under the class of pronouns; as *who, which, what*. These, when employed in asking questions, are called interrogative pronouns; though a name more characteristic might surely be found for them. Their import, however, will be more easily ascertained after we have considered another species of pronouns, which have been denominated relatives, and with which they are intimately connected.

The pronouns already mentioned may be called prepositive, as may indeed all substantives, because they are capable of introducing or leading a sentence: but there is another pronoun which has a character peculiar to itself, and which, as it is never employed but to connect sentences, and must therefore have always a reference to something preceding, is called the subjunctive or relative pronoun. This pronoun is in Greek, ὁς, ἡ, ὁ; in Latin, *qui*, *quæ*, *quod*; and in English, *who, which, what.*

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[1] If we mistake not, Dr Johnson has somewhere affected to ridicule Bishop Lowth for considering the word *mine* as the possessive case of the pronoun of the first person. According to the doctor, *mine* is the same word with the pronominal adjective *my;* and was anciently used before a vowel, as *my* was before a consonant. This is not said with the lexicographer's usual precision. That *mine* was anciently used before a vowel is certain; but it does not therefore follow that it is the same word with *my*. If it were, we might on every occasion substitute either of these for the other, without offending against grammar, however we might injure the sound; but we apprehend that this is not the case. "That book is *mine*," is good English; but "that book is *my*" would be a gross solecism. The reason is, that *mine* is a genuine pronoun, and stands by itself with the power of a noun; but *my*, being an adjective, cannot stand by itself.

In order to determine with precision the nature and import of the *relative pronoun*, it will be necessary to ascertain the powers which it contains, or the parts of speech into which it is capable of being resolved. Now, it is obvious that there is not a single noun, or prepositive pronoun, which the relative is not capable of representing; for we say, I WHO *saw him yesterday cannot be mistaken;* YOU WHO *did not see him may have been misinformed;* THEY WHO *neither saw nor heard can know nothing of the matter;* THE THINGS WHICH *he exhibited were wonderful.* From these examples, it is apparent, in the first place, that the relative contains in itself the force of any other pronoun; but it contains something more.

If from any sentence in which there is a relative, that relative be taken away, and the prepositive pronoun which it represents be substituted in its stead, the sentence will lose its bond of union, and stand quite loose and unconnected. Thus, if instead of saying *the man is wise* WHO *speaks little*, we should say *the man is wise* HE *speaks little*, the sentence would be resolved into two; and what is affirmed of the man's wisdom, would have no connection with the circumstance of his speaking little. Hence it is evident, in the second place, that the relative contains the force of a connective as well as of the prepositive pronoun. What kind of connection it denotes is next to be ascertained.

It may be laid down as a general principle, that, by means of a relative pronoun, a clause of a sentence, in which there is a verb, is converted into the nature of an adjective, and made to denote some attribute of a substance, or some property or circumstance belonging to the antecedent noun. Thus, when it is said, *homo qui prudentia præditus est*, the relative clause, *qui prudentia præditus est*, expresses nothing more than the quality of prudence in concrete with the subject *homo*, which might have been equally well expressed by the adjective *prudens*. In like manner, when we say, *vir sapit qui pauca loquitur*, the relative fact expresses the property of speaking little as belonging to the man, and as being that quality which constitutes, or from which we infer, his wisdom; but if there were such a word as *pauciloquens*, that quality might very properly be expressed by it, and the phrase *vir sapit pauciloquens* would express the same assertion with *vir sapit qui pauca loquitur.*

Now if a relative clause expresses that which might be expressed by an adjective, the presumption is, that it may be resolved into the same constituent parts. But every adjective contains the powers of an abstract substantive, together with an expression of connection; and may be resolved into the genitive case of that substantive, or into the nominative with the particle *of* prefixed, which, in English, corresponds to the termination of the genitive in the ancient languages. That the member of a sentence in which there is a relative, may, in every instance, be analysed in the same manner, will be apparent from the following examples. *Vir qui sapit*, *vir sapiens*, and *vir sapientiæ*, "a man who is wise, a wise man, and a man of wisdom," are certainly phrases of the same import. Again, *homo, cui ingratus est animus*, *malus fit amicus*, may be translated into Greek, ἀνθρωπος ἀχαριστιας κακος γινεται φιλος; and into English, "the man of ingratitude is a bad friend."

Thus then it appears, that the relative pronoun contains in itself the force of the prepositive pronoun, together with that connection implied in English by the preposition *of*, and in the ancient languages by the genitive case. When one says, *vir sapit qui pauca loquitur*, the relative clause *qui pauca loquitur* expresses that attribute of the man from which his wisdom is inferred. It is conceived by the mind, as stripped of its propositional form, and standing in the place of a substantive noun governed in the genitive case by *vir*. The whole sentence might be thus translated, "the man *of little speaking* is wise;" or, did the use of the English language admit of it, "the man *of he speaks little* is wise." In like manner, when it is said, "Man, who is born of woman, is of few days and full of trouble," the relative clause is equivalent to an abstract noun in the genitive case, and the whole might be expressed in the following manner: "Man *of he is born of woman* is of few days and full of trouble."

It is obvious that these expressions into which, in the instances adduced, the relative clauses have been resolved, will appear extremely uncouth and offensive; but it is not meant to recommend them as common modes of phraseology. Against their being employed as such, present use loudly remonstrates.[1] They are introduced only with a view to show the true import of the relative pronoun; and for that purpose they are well adapted. That pronoun seems to be of use only when there is a deficiency of adjectives or substantives to denote some complex attribute by which we want to limit a general term or expression. Where such adjectives or substantives exist in language, we may indeed use the relative or not at pleasure. Thus we may say, *homo qui grandia loquitur*, or *homo grandiloquus;* because the adjective and the relative clause are precisely of the same meaning. But if the Latins were called upon to translate *ανθρωπος αυτοδιδακτος*, we believe they must have made use of the relative pronoun, as we know not any corresponding adjective in their language

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[1] It is worthy of observation, however, that, repugnant as such expressions are to the present idiom of the English language, there is nothing in the nature of the thing that could render the use of them improper. All prepositions, as will be seen afterwards, are expressive of relations subsisting between those objects of which they connect the signs in discourse. Those objects may be denoted, either by single words, and then the preposition will govern a noun; or by assertions, and then it will govern a nominative and a verb. Thus, when it is said, "I came after his departure," the preposition *after* expresses the relation between two events, *my coming* and *his departure*, and governs a substantive noun; but if it is said, "I came after he departed," the preposition in this case (for, as shall be shown afterwards, it is absurd to call it in the one instance a preposition, and in the other a conjunction) expresses the same relation as before, but governs a nominative and a verb.

This last expression is exactly similar to those employed above. When one says, for example, "the man *of he speaks little* is wise," however uncouth the expression may appear from its not being supported by the authority of custom, the preposition *of* is used precisely in the same manner, and serves the very same purpose, as when it is said, "the man *of little speaking* is wise." In both cases it denotes the relation between the two objects, *man* and *little speaking;* only in the one it is prefixed to a noun, in the other to an assertive clause of a sentence, the import of which is to be taken as a noun. Custom has indeed determined that prepositions shall more frequently govern a noun than a nominative and a verb; but they are, in their own nature, equally well adapted to answer both purposes.

But as the pronoun of the third person is merely the substitute of some noun, an objector may ask, What noun is here represented by *he?* "The man *of he speaks little* is wise." Who is meant by the pronoun *he?* We answer, *the man* who is declared to be *wise.* The objection proceeds from inattention to the radical signification of the word *of*, which a late ingenious writer has shown to be the fragment of a Gothic or Anglo-Saxon word, signifying *consequence* or *offspring*. If this be admitted, and, after the proofs which he has given, we think it cannot be denied, the uncouth phrase, "The man *of he speaks little* is wise," may be thus resolved, "The man, *a consequence* (of his mind is) *he speaks little*, is wise;" or, in other words. "The man, *in consequence* of his speaking little, is wise." The same acute writer, Mr Horne Tooke, has shown that *of* and *for*, though of different radical meanings, may often be substituted the one for the other without injury to the sense. Let this substitution be made in the present instance, and the propriety of the phrase will be apparent: "The man is wise *for* he speaks little." It must be remembered, however, that such a substitution cannot be made in every instance, because *for* signifies *cause*, and *of* signifies *consequence.*

The learned and ingenious Mr Harris, in his Treatise on Universal Grammar, has given an analysis of the relative pronoun very different from that which has been given by us. The result of his inquiry is, that the relative is equivalent to another pronoun, together with an expression of connection of that kind which is denoted by the particle *and*. This analysis he exemplifies, and endeavours to confirm, by the sentence, " Light is a body which moves with great celerity." Now, says he, instead of *which* substitute the word *and it*, and in their united powers you see the force and character of the pronoun here treated. But let any one attentively consider these two expressions, " Light is a body *which* moves with great celerity," and " Light is a body *and it* moves with great celerity;" and he will find that they are not precisely equivalent. For, to speak in the language of logic, there is in the first but one proposition, of which the subject is light, and the predicate a complex term expressed by the words, *body which moves with great celerity*. In the second there are two propositions, or two predications, concerning light; first, that it is a body; and, secondly, that it moves with great celerity. The relative clause, in the first case, expresses a property of the antecedent body, which, with that property, is predicated of the subject light; in the second case, this property is removed from the predicate of which it was an essential part, and is improperly converted into a new predication of the subject. The sentence may be resolved upon our principles, and its precise import preserved; as " Light is a body *of it moves with great celerity;*" the clause " it moves with great celerity," is conceived by the mind as having the force of an abstract substantive, and is connected with the antecedent body by the preposition *of*, answering to the termination of the genitive case. This abstract substantive thus connected expresses a quality of the body light. But by this example Mr Harris's doctrine is not exhibited in all its absurdity; it may be proper to try it by another.

Let us suppose that the following assertion is true; " Charles XII. was the only monarch who conquered kingdoms to bestow them on his friends." Here it is evident there is but one proposition, of which the predicate is expressed by the words, " only monarch who conquered kingdoms to bestow them on his friends;" so that the relative clause is a necessary part of the predicate, and has, like an abstract noun in the genitive case, the effect of modifying the general term monarch. Resolve this sentence on Mr Harris's principles, and you have two propositions of which the first is a notorious falsehood: " Charles XII. was the *only monarch, and he* conquered kingdoms to bestow them on his friends." But instead of *and* substitute *of*, thus, " Charles XII. was the only monarch *of he conquered kingdoms to bestow them on his friends*," and you preserve the true import of the expression.[1]

Are there no cases, then, in which the relative may be resolved into the connective *and* with a prepositive pronoun? Undoubtedly there are, and we shall now endeavour to ascertain them.

Adjectives in language have two different effects upon the substantives to which they belong, according to the nature of the attribute which they express. If the attribute expressed by the adjective be competent to all the species of which the substantive is the specific name, it is plain that the adjective does not modify or limit the substantive, for this obvious reason, that nothing can modify which is not discriminative. Thus, when Horace says, *Prata canis albicant pruinis*, the adjective *canis* denotes a quality common to all hoarfrost; and therefore cannot modify the substantive, because it adds nothing to the conception of which that substantive is the name. But when the attribute expressed by the adjective is competent to some individuals only of the species of which the substantive is the name, the adjective has then the effect of modifying or limiting the substantive. Thus when one says *vir bonus*, he makes use of an adjective which modifies the substantive, *vir*, because it expresses a quality or attribute which does not belong to all men.

The clause of a sentence, in which there is a relative, as it is in every other respect, so is it in this, equivalent to an adjective; it either modifies, or does not modify, the antecedent, according as the attribute which it expresses is or is not characteristic of the *species* to which the antecedent belongs. Thus, when it is said, " Man, who is born of woman, is of few days and full of trouble," the relative clause " who is born of woman," expresses an attribute common to all men, and therefore cannot modify. In like manner, when we say, " SOCRATES, who taught moral philosophy, was virtuous," the clause, " who taught moral philosophy," does not modify. In both these instances the relative clause might be omitted; and it might be said with equal truth, " Man is of few days and full of trouble," and " SOCRATES was virtuous."

But if it be said, *vir sapit qui pauca loquitur*, the relative clause, *qui pauca loquitur*, modifies the antecedent *vir*; for it is not affirmed of every man that he is wise, but only of such men as speak little. So " Charles XII. was the only monarch who conquered kingdoms to bestow them on his friends;" and, " the man that endureth to the end shall be saved;" with many more examples that will occur to every reader.

Now it will be found that it is only when the relative clause expresses such a property or circumstance of the antecedent as does not limit its signification, that the relative pronoun can be resolved into a prepositive pronoun with the conjunction *and*, and that in these cases the relative clause itself is of very little importance. Thus in the assertion, " Charles XII. was the only monarch who conquered kingdoms to bestow them on his friends," where the relative clause is restrictive, the *who* cannot be resolved into *and he* consistently with truth or common sense. But in the expression, " Man, who is born of woman, is of few days and full of trouble," the relative *who* may be so resolved, at least without violating truth, thus, " man is of few days and full of trouble, and he is born of a woman." The only difference between the sentence with the relative *who*, and the same sentence thus resolved, is, that, in the former case, it contains but one predication; in the latter two, and these but loosely connected.

Thus, then, it appears that the general analysis of the relative pronoun is into the particle *of*, and a prepositive pronoun; but that there are also occasions on which it may be resolved into a prepositive pronoun and the particle *and*, without materially altering the sense. Now, what is the reason of this distinction?

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[1] Mr Harris was probably led into his opinion, from considering the Latin *qui* or *quis* as compounded of *que* and *is* (See *Hermes*, p. 81, 82, third edit.). But the notion of *Perizonius* is perhaps better founded, who, in his notes to the *Minerva* of Sanctius, considers it as immediately taken from the Greek *τις*, which in the Doric is made *κις*, and in the Latin *quis*. For it seems highly probable, as some ingenious writers have endeavoured to show, that the Latin is a dialect of the Greek. Of this at least we may be certain, that many words in the former are immediately adopted from the latter.

If the relative clause be equivalent to an adjective, or to an abstract substantive in the genitive case, it is easy to see that the relative itself may, in every instance, be resolved into another pronoun and the particle *of*; but it will not perhaps be quite so evident how it should in any instance be resolved by *and*. This last analysis has its foundation in the nature of the particles *of* and *and*; or, to speak more properly, in the nature of the attribute which the relative clause expresses. Both the particles *of* and *and* are used to link or join conceptions together; but with this difference, that *of* has the effect of making the conceptions it connects figure in the mind as one object; whereas the conceptions connected by *and* are still conceived separately as before. To explain ourselves by an example: suppose we take two words, *man* and *virtue*, which denote two distinct ideas or conceptions, and join them together by the particle *of*, saying *man of virtue*; the mind no longer views them separately as significant of two conceptions, but of one. Take the same words, and join them together by the particle *and*, saying *man and virtue*; the conceptions denoted by *man* and *virtue* are still viewed separately as *two*, and notice is only given that they are collaterally connected.

This being the case, it follows, that when the relative modifies the antecedent, or, in other words, when the relative clause and the antecedent denote but one conception, the relative must then be resolved by *of*, in order to preserve this unity of conception. But when the relative does not modify the antecedent; that is, when its clause does not express any necessary part of a complex conception, then the conceptions or ideas denoted by the relative clause and the antecedent may be viewed separately as two; and therefore the relative may be resolved into the corresponding prepositive pronoun and the particle *and*.

To state this reasoning in a light somewhat different. As every relative clause, which expresses an attribute that is not applicable to a whole genus or species, must necessarily modify some general term, that is, restrict its signification; and as that general term must belong either to the subject or to the predicate of a proposition; it is evident, that every such relative clause is a necessary part of that subject or predicate in which its antecedent stands. If therefore a relative clause, which modifies, be taken away either from the subject or the predicate of a proposition; or if that connection, in consequence of which it modifies, be dissolved, which is always done when the relative is resolved by *and*; then the proposition itself will not hold true. The reason is, that the subject or the predicate becomes then too general; for, in the one case, something is predicated of a whole genus or species, which can be predicated only of some individuals of that genus or species; and in the other, a general predication is made where only a particular one can be applied. Thus, if it be said, "all men who transgress the laws are deserving of punishment;" the subject of the proposition is expressed by the words, "all men who transgress the laws." Take away the clause of the relative "who transgress the laws," and say, "all men are deserving of punishment;" and you have a proposition which is not true, because that is affirmed of the whole species which can be affirmed only of some individuals. Retaining now the clause of the relative, but resolving it by *and*, you have the same proposition as before; and together with it, in this instance, another which is equally false, namely, "all men, *and they* transgress the laws, are deserving of punishment;" that is, "*all men* are deserving of punishment, and *all men* transgress the laws."

But when the attribute expressed by the clause of the relative is characteristic of the genus or species of the antecedent, and consequently applicable to every individual which that genus or species comprehends, the relative clause may be entirely omitted without affecting the truth of the proposition, which is already as general as it can be. As in this case the import of the relative clause is not restrictive of the signification of the antecedent, it is of little consequence whether the attribute be represented by the connective part of the relative, as *of* the antecedent, or be affirmed to belong to the antecedent in a separate assertion. Thus it matters not much, whether we say, "man, who is subject to death, ought not to be too much elated," that is, according to our analysis, "man *of he is subject to death*, ought not to be too much elated;" or whether, forming the relative clause into a separate assertion, and connecting the two by the particle *and*, we say "man, and he is subject to death, ought not to be too much elated." In the one sentence, indeed, the reason is implied why man should not be too much elated, his being subject to death; and in the other, no reason is assigned for this; we only affirm that man is subject to death, and likewise that he should not be too much elated; but as both affirmations are equally true and evident, it is of little consequence, in such a case as this, whether the reason upon which either is founded be implied or not.

From the whole of this investigation, the following conclusions may be deduced as sufficiently established: 1*st*, That the relative pronoun contains in itself the united powers of a connective and another pronoun. 2*dly*, That *of* is the connective of which, together with another pronoun, it contains the powers, as in every possible instance it may be resolved into these constituent parts, and the import of the sentence in which it has place remain unaltered. 3*dly*, That in the ancient languages the relative clause of a sentence has the import of an abstract substantive in the *genitive case*; in English, with the particle *of* prefixed. 4*thly*, That the relative pronoun is of necessary use only where there is a deficiency of adjectives or substantives to denote some complex attribute, by which we want to limit a general term or expression; but that where such adjectives or substantives exist in language, we may use the *relative* or not at pleasure. And, 5*thly*, That though, in cases where the relative clause does not limit a general term, the relative pronoun may, without violating truth, be analysed by *and*; yet such analysis is never proper, as it gives two predicates to the same subject, which, in the original proposition, had but one predicate.

If the clause of the relative be equivalent to an adjective, as in every instance it seems to be, it will naturally occur, that in the ancient languages, the relative should agree with its antecedent in gender, number, and case. They do agree for the most part in gender and number; in case they cannot often, because the very intention of introducing a relative into language is to represent the antecedent in a different case. Whenever we have occasion to use a substantive or noun in a clause of a sentence, and afterwards to express by another clause, in which there is a verb, an attribute of the object denoted by that substantive, we then employ the relative pronoun. Now it seldom happens that the two clauses admit of the same regimen; and hence the case of the relative is often necessarily different from that of the antecedent, as the case of each must be accommodated to the clause in which it is found. Thus we cannot say, "Deus *qui* colimus bonus est;" but, "Deus *quem* colimus bonus est;" because the regimen of the verb *colo* is always the accusative.

This shows the necessity of introducing a relative into those languages which give inflexions to their nouns. Were all the nouns of a language indeclinable, there would be little occasion for a relative; and accordingly in English it is often omitted. Examples are frequent in our best authors. Suffice it to quote the following.

> For I have *business would employ* an age.—*Rowe.*
> I had several *men died* in my ship of calentures.—*Swift.*
> They affect to guess at the *object they* cannot see.—*Bolingbroke.*

We are not ignorant that our most eminent grammarians consider such expressions as chargeable with impropriety; and we are far from recommending them in any dignified or solemn composition. But in the instances adduced there is not the smallest degree of obscurity; at least there is none occasioned by the omission of the relative. The reason seems to be, that the mind can easily, by an effort of its own, make the antecedent unite, first with the one clause, and then with the other. Thus, when it is said, "I have business would employ an age," the mind can, without any difficulty, as the word business has no inflexions, consider it first as the objective case after *have*, and then as the nominative to *would employ*; but this cannot be so easily done in the ancient languages, where the termination of the noun is changed by the variation of its cases.

Both in the learned and in the living languages the relative has different forms, corresponding to the different genders of nouns; and by these it gives notice whether it is applied to persons, or to things without life. Thus in the English language we say, The man or the woman *who* went to Rome; The tree *which* stands on yonder plain. It admits likewise, when applied to males or females, a variation of cases similar to that of the personal pronouns. Thus we say, The man *whose* book is now before me; The man or woman *whom* I saw yesterday; but the neuter admits of no such distinction,[1] as we say, The tree *which* I saw, as well as The tree *which* stands on yonder plain. In modern languages the relative admits not of any distinction to denote number; for we say, The *man* or the *men* who came yesterday; The *man* or the *men* of whom I speak.

In English, the word *that*, which by some has been called a demonstrative pronoun, by others a pronominal article, and by us a definite article, is often used instead of the relative, as in the following examples: "He is the same man *that* I saw yesterday; he was the ablest prince *that* ever filled a throne." With regard to the principle upon which this acceptation of the word *that* depends, we beg to offer the following conjecture.

In English, from the phlegmatic arrangement of the language, occasioned by the want of inflexions and conjugations, the place of every part of a sentence is almost uniformly determined, and very little variety is allowed in the collocation of the words. The adjective is almost always placed in apposition with its substantive, and the nominative with its verb. In consequence of this uniformity in the collocation of the words, the mind acquires a habit of connecting in idea any kind of word with the place in which it is used to stand; and is naturally led to consider every word which stands in such a place as belonging to such a class. Hence it is, we imagine, that the definitive *that* passes into the nature of the relative pronoun; as in those instances in which it occupies the place of the relative, it was natural to consider it as having the same import. Yet the word *that* has undoubtedly in itself no more the force of the relative pronoun than *the* or *this*, or any other definitive whatever. In such expressions as the foregoing, it is not improbable that originally the clause of the definitive *that*, which we now call the *relative* clause, was thrown in as a kind of modifying circumstance, thus, "The book (I read that) is elegant," where the speaker, finding the word book too general for his purpose, throws in a clause to qualify and restrict it, or to confine his affirmation to that particular book which he is then reading. We can easily suppose that through time the definitive *that* in such an expression might be transposed or removed from its own place to that of the relative; so that the expression would run thus, "The book *that* I read is elegant;" which would be considered as precisely equivalent to "The book *which* I read is elegant." This opinion is not a little confirmed by a similar use of the article in Greek, which, though undoubtedly a definitive like the English *the*, is often used instead of the relative pronoun. Numberless examples may be found in Homer and Herodotus, especially in the latter, who seldom uses what is properly called the relative. We shall produce one instance from each.

> Εισεαι Ατρειδην Αγαμεμνονα, ΤΟΝ περι παντων
> Ζευς ενηκε πόνοισι διαμπερὲς.—*Homer.*
>
> Ορκιοισι γαρ μεγαλοισι κατειχοντο (*scil.* Αθηναιοι) δεκα
> ετεα χρησεσθαι νομοισι ΤΟΥΣ αν σφισι Σολων θηται.—*Herodot.*

We have said that the interrogative pronouns, as they are called, *who*, *which*, *what*, are intimately connected with relatives; we now affirm, that the two first of these words are nothing but relatives, and that the last contains in itself the united powers of a relative and a definitive. With respect to cases, number, and gender, the words *who* and *which*, when employed as interrogatives, differ not from the same words when employed as relatives; and we hold it as a maxim, without which science could not be applied to the subject of language, that the same word has always the same radical import, in whatever different situations it may be placed. To understand this, it is necessary to observe, that all men have a natural propensity to communicate their thoughts in the fewest words possible: hence it follows, that words are often omitted which are necessary to complete the construction of the sentence; and this nowhere happens more frequently than in the use of *who* and *which*. In sentences where these words are confessedly relatives, we often find them without an antecedent; as,

> *Who* steals my purse steals trash.—*Shakspeare.*
> Which *who* would learn, as soon may tell, &c.—*Dryden.*
> Qui *Bavium non odit, amet tua carmina, Mævi.*—*Virg.*

That is, "*He* who steals my purse;" "Which *he* who would learn, as soon may tell;" and "Ille *qui Bavium non odit*," &c. Such abbreviations occasion no obscurity, because from previous circumstances the hearer knows the mind of the speaker and the persons to whom he refers. But it is not with respect to the relative and antecedent only that such abbreviations have place; in sentences of a different form, whole clauses are sometimes omitted, whilst the meaning of the speaker is made sufficiently plain. Thus, when King Richard III. having lost his horse in battle, exclaims,

> A horse! a horse! my kingdom for a horse!

there is no complete thought expressed; but the circumstances in which the king then was, enabled those about him to understand that he *wanted a horse*. Accordingly Catesby answers him,

> Withdraw, my lord; I'll help you to a horse.

In like manner, when a person asks a question, his expression is frequently incomplete; but the tone of his voice, or some other circumstance, enables us to ascertain his meaning, and to supply, if we please, the words that are omitted. Thus when it is said, *An fecisti?* nothing more is expressed than *If you did it*, the Latin *an* being nothing else but the Greek αν, *si*; but some circumstance enables the person who hears it to know that the meaning is, "Say

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[1] "*Whose* is by some authors made the possessive case of *which*, and applied to things as well as persons; I think, improperly.—*Lowth.*

"if you did it." Let us apply these observations to the words *who* and *which*. If these words be relatives, and if our analysis of the relative be just, it is obvious, that no complete meaning can be contained in the clause, "Who is your principal friend?" for that clause contains nothing more than the circumstance of being your principal friend predicated of some unknown person; "of he is your principal friend." That this is indeed the case, every man may be convinced, by asking himself what he means by the interrogative *who* in such a sentence; for he will find it impossible to affix to it any meaning without supplying an antecedent clause, by which that which is called an interrogative will be immediately converted into the relative pronoun. The custom, however, of language, and the tone of voice with which the relative clause is uttered, intimates, without the help of the antecedent, the wish of the speaker to be informed by the person addressed of the name and designation of his principal friend; and we know that the sentence when completed is, "Tell me the name and designation of the person who is your principal friend." Again, when the prophet says, "Who is this that cometh from Edom, with dyed garments from Bozrah?" he utters but part of a sentence, which when completed will run thus: "*Describe the person* who cometh from Edom (this is that *person*), with dyed garments from Bozrah." He sees a person coming from Edom, of whose name and designation he is ignorant; he calls upon some one for information concerning these particulars; and that there may be no mistake, he describes the unknown person as having "dyed garments from Bozrah;" but lest even that description should not be sufficiently accurate, he throws in the definitive clause, "this is that person," pointing at him, we may suppose, with his finger. *Which*, used as an interrogative, indicates a wish of knowing a particular person or thing out of more than one mentioned; as, "Which of the two did it?" that is, "*Tell me the one* of the two which did it?" for, in old English, *which* as a relative is often used, where in modern English we should say *who*; and that mode of speech is still retained when the antecedent is omitted, and the relative clause employed to indicate such a wish as that before us. *What* includes in itself the signification of a definitive and a relative pronoun; as, "from *what* has gone before, *what* follows may easily be guessed;" where the word *what* is equivalent to *that which*. When therefore we say, "What rude fellow is that?" our meaning is, "*Describe* that *person* who is that rude fellow." Upon the whole, then, it is evident, that the words called interrogatives are merely relative pronouns; and that interrogative sentences are relative clauses uttered in such circumstances as to enable the hearer to supply the antecedents necessary to complete the meaning.

In fine, we have seen that substantives are either primary or secondary; or, in other words, nouns or pronouns. Nouns denote substances, and those either natural, artificial, or abstract. They moreover denote things either general, or special, or particular; and a general or specific name is made to denote an individual by means of words called articles or definitives. Pronouns are the substitutes of nouns, and are either prepositive or subjunctive. The prepositive is distinguished into three orders, called the first, the second, and the third person. The subjunctive, otherwise called the relative, includes the powers of all those three, having superadded as of its own the peculiar force of a connective.

IV. *Of Verbs.*

The words which we have hitherto considered are commonly called substantives primary or secondary, and definitives; because nouns are significant of substances; pronouns are the substitutes of nouns; and the article serves to ascertain the extent of the noun, and to determine whether on any occasion it be significant of a whole class of substances, or only of one individual. But substances are of importance to mankind only on account of their various qualities or attributes; for their internal texture is a thing of which we are profoundly ignorant, and with which we have no manner of concern. Thus, experience teaches us that certain vegetables are pleasant to the taste, and wholesome food; whilst others are unpleasant and poisonous. The former kinds are valuable only for their qualities or attributes; and they are the qualities or attributes of the latter that make them worthless or hurtful. A horse is strong, and swift, and docile, and may be trained to carry a man on a journey, or to drag a plough. It is for his strength, swiftness, and docility, that he is the most valuable of all quadrupeds. One man is brave, another learned, and another eloquent; and by possessing these different qualities or attributes, each is fitted for a different station in society. It is plain, therefore, that in contemplating substances, our attention must be principally bestowed upon their qualities, and that the words which serve to denote these qualities must be an essential part of language. Such words are in general called attributives, and are of three sorts, verbs, participles, and adjectives.

Of all the constituent parts of speech, none has given the grammarians greater trouble than the verb. The vast variety of circumstances which it blends together in one word throws very considerable difficulties in the way of him who attempts to analyse it and ascertain its nature; at the same time that, by its eminent use in language, it is entitled to all the attention which can be bestowed upon it. To the discussion of the verb, Mr Harris, whose notions of this as of the other parts of speech have been generally adopted by the subsequent writers on grammar, has dedicated a large proportion of his book, in which he has thrown out many excellent observations, mixed, as it appears to us, with several errors. We have already observed, that no man is ignorant when he uses what is called a *verb* and when a *noun*. Every schoolboy knows that the words *is*, *loveth*, *walketh*, *standeth*, in English, and *est*, *amat*, *amatur*, *ambulat*, *stat*, in Latin, are verbs; he knows likewise that they are of different kinds, that some of them are said to be active, some passive, and some neuter. But it should seem that the first object of our investigation ought to be the characteristic of the verb, or that which all these words have in common, and which constitutes them *verbs*, distinguishing them from every other species of words. Now it is obvious to the slightest attention, that every verb, whether active, passive, or neuter, may be resolved into the substantive verb IS, and another *attributive*; for *loveth* is of the same import with IS *loving*; *walketh*, with IS *walking*; and *amat*, with *amans est*. But *loving*, *walking*, and *amans*, are not verbs; and hence it follows, that the characteristic of the verb, that which constitutes it what it is, and cannot be expressed by other words, must be that which is signified by the word IS; and to us that appears to be neither more nor less than assertion.

Assertion, therefore, or predication, is certainly the very essence of the verb, as being that part of its office, and that part only, which cannot be discharged by other kinds of words.[1] Every other circumstance which the verb includes, such as attribute, mode, time, it may be possible to express by adjectives, participles, and adverbs;

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[1] Hence a common noun, or even a proper name, may be converted into a verb by being rendered assertive or predicative. Thus, in the indignant rebuke addressed by Rob Roy to Rashleigh Osbaldistone, "Don't Mr or *Campbell* me, sir; my foot is on my native heath, and my name is Macgregor;" the proper name "*Campbell*," being that which Rob usually assumed in his lowland and southern expeditions, is converted into a verb, and great force thereby given to the exclamation. (*Dr Hunter.*)

but without a verb it is impossible to predicate, to affirm or deny, any one thing of any other thing. The office of the verb, then, when stript of all accidental circumstances, seems to be merely this: "To join together the subject and predicate of a proposition." Its powers are analogous to those of the sign + in algebra, which does not affect the separate value of the quantities between which it is placed, but only indicates their union or coalescence. To explain by an example: When we say, *Cicero eloquens, Cicero wise:* these are imperfect sentences, though they denote a substance and an attribute. The reason is, that they want an assertion, to show that such an attribute appertains to such a substance. But when we insert the word *was*, we join the substance and attribute together; we give notice that the *wisdom* and *eloquence* are applied to *Cicero*, and we do nothing more; we neither increase the wisdom nor diminish it, we neither make it real nor imaginary; for it was supposed in all its extent when the words *Cicero* and *wise* stood independent of each other. We may indeed use the verb in a form which implies not an assertion only, but likewise an attribute; as when we say, *George writeth*, or *George walketh*. But as whiteness or any other particular colour is not of the essence of a horse, an animal which is found of all colours; so, in the phrases quoted, the attribute, though implied, is not of the essence of the verb; for it may be equally well expressed by other words, as *George* IS *writing*, and *George* IS *walking*, which are phrases of the very same import with *George writeth* and *George walketh.*

In resolving every verb, whether active, passive, or neuter, into the substantive verb IS and another attributive, we have the honour to agree with all the grammarians; but to the word IS itself the learned author of *Hermes* has given a meaning which, as a verb, it does not admit. He observes, that before any thing can be the subject of a proposition, it must exist; that all existence is either absolute or qualified, mutable or immutable; that the verb IS can by itself express absolute existence, but never the qualified, without subjoining the particular form; and that it signifies both mutable and immutable existence, having in these cases different meanings, although the sentences which he gives as examples are evidently constructed in the same manner, and consist of the same parts of speech. His examples are: Of absolute existence, B IS: of qualified, B IS *an animal*; of mutable, *This orange* IS *ripe*; of immutable, *The diagonal of the square* IS *incommensurable with its sides.* But if predication be the essence of verb, all this is nothing to the purpose, and part of it is not true. It is not true that the verb IS ever varies its signification; for it has as verb no connection with existence of any kind. All such circumstances are superadded to its verbal nature; or, to speak more accurately, we infer such circumstances from our previous knowledge of the objects concerning which the predication is made. When we say, "*This* orange IS ripe," we do indeed mean, as Mr Harris observes, that it *is* so now at this *present* in opposition to past and future time; but it is not the verb IS, but the definitive *this*, which fixes the time of maturity, as well as the place, of the orange. If we had said, Oranges ARE ripe, we might have been properly asked, When and where are they ripe? although the same verb is used in both sentences. Even in the sentence B IS, absolute existence, the most simple of all, is inferred, and not expressed, by the verb; and the inference is made from this obvious principle, that when one utters a mark of predication, we naturally conclude that he means to predicate something of the subject. If he adds no specific predication, as B IS ROUND, we apply to B the most general that we can; and what other species is so general as existence?

That the idea of existence, considered as mutable or immutable, is not contained in the verb IS itself, but is derived from our knowledge of the objects concerning which the predication is made, appears manifestly from this, that if a person be supposed ignorant of the meaning of the words GOD and MAN, whilst he knows that of IS, the uttering of the two propositions, *God is happy*, and *This man is happy*, will give him no notice of existence considered as mutable or immutable, temporary or eternal.[1] His conclusion with respect to these modes of existence, if any such conclusion be drawn at all, must be derived entirely from his previous knowledge of the nature of God and the nature of man.

Some of our readers may possibly think this notion of verb too abstract and metaphysical; yet what other circumstance than mere predication is essential to that species of words? We say *essential*; for we are inquiring, not what is expressed by each individual verb, but what it is which is equally expressed by all verbs, and which distinguishes them from the other parts of speech. And if it be true, that every thing which the verb implies, predication alone excepted, may be expressed by other parts of speech, and that no other parts of speech can predicate, then we think ourselves warranted to affirm, that simple predication is the essential characteristic of *verb*; that every word which predicates is a VERB; and that nothing is so which does not predicate.

It must not, however, be concealed, that a doctrine very different from this has been maintained by a writer of distinguished abilities. "We have *energy* expressed," says Dr Gregory,[2] "and of course a verb constituted without affirmation, when we wish or command; without command, when we affirm or wish; without wish, when we command or affirm; yet in all these cases we have equally and indisputably a verb."

That in all these cases we have a verb, is indeed indisputable; but we hold it to be equally indisputable, that in all these cases we have affirmation. The ingenious author has given no direct example of a wish or command uttered without affirmation; and a feeling or sentiment which is not uttered has nothing to do with language; but he has given a sentence in which there are three verbs, that in his opinion denote no affirmation, but a very plain supposition. If a supposition can be expressed without affirmation, we shall very readily allow that a wish or command may be so expressed likewise. The doctor's supposition is thus expressed: "*Had* any punishment ever overtaken you for your broken vows; *were* but one of your teeth growing black, or even *were* but one of your nails growing less beautiful, I should believe you." It is almost superfluous to observe, that to every verb not in the infinitive mode there must be a nominative, and to every active verb an object, whatever be the arrangement of the sentence in which such verbs are found. These are truths known to every schoolboy; the reasons of them shall be afterwards given. It is likewise undeniable, that in the sentence before us the nominative to "had" is "any punishment;" to the first "were," "one of your teeth;" and to the second, "one of your nails." But the sentence arranged in grammatical order, with the several nominatives before their respective verbs, is evidently elliptical; and the conjunction *if* must be supplied as well to complete the construction as to make sense of the passage. "*If* any punishment had ever overtaken you; *if* but one of your teeth were growing black, or even *if* but one of your nails were growing less beautiful, I should believe you." Now it has been proved, by such evidence as leaves no room for doubt, that *if*, though called a conjunction, is in fact a verb in the imperative mode, of the same import with *give;* so that we may substitute the one for the other without in the smallest degree altering the sense. The sentence will then run thus: "*Give* any punishment had ever overtaken you; *give* but one of your teeth were growing black, &c. I should believe you." It is therefore so far from being true, that *had* and *were*, when the sentence is completed, express no affirmation; that it is only upon granting the truth of the affirmation which they denote that the speaker says, "I should believe you." "Any punishment had ever overtaken you," is plainly an affirmation; *if, give* that affirmation, *admit its truth*, "I should believe you." But it cannot be supposed that *had* and *were* change their significations by a mere change of place, or that by being removed from the middle to the beginning of a clause they lose their original import, and come to denote something entirely different. Were this the case, every attempt to ascertain and fix the general principles of grammar would be as ridiculous as an attempt to arrest the course of time. For what purpose, then, it may be asked, if the verb always denotes affirmation, is it removed from the middle to the beginning of the clause, when supposition is implied, as in the present instance? We answer, that supposition is neither more nor less than conditional affirmation; that when such affirmation is completely expressed, the verb is not removed to the beginning of the clause; and that such removal takes place only when the clause is elliptical, being merely an artificial contrivance in language, to show the reader or hearer that some such word as *if*, demanding the truth of the affirmation, is omitted for the sake of dispatch. This is evident; for when the word requiring the affirmation to be granted is supplied, the verb must be restored to its place in the middle of the clause. Such abbreviations, and such contrivances to mark them, are frequent in all languages, as will be seen more clearly when we come to treat of modes or moods. Upon the whole, then, we are compelled reluctantly to differ from this writer, and still to think that simple predication is the essence of the verb.

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[1] The truth of this observation may be proved by experiment, as, for instance, by uttering to a man of good common sense these two propositions, taking care to express the words *God* and *man* in a language which he does not understand. Thus, *Deus* is *happy*, and *hic homo* is *happy*, uttered to a man totally unacquainted with the Latin tongue, will contain no notice of existence considered as mutable or immutable.

[2] *Theory of the Moods of Verbs*, published in vol. ii. of the Transactions of the Royal Society of Edinburgh.

Should we be required to exemplify our theory by language, and to produce instances of this simplified verb in practice, we might answer, that the not being able to produce such instances would be no good argument against the truth of our principles. It is the nature of language to express many circumstances by the same word, all of which, however, are not essential to distinguish the species to which that word belongs from the other species of words; and it is the nature of man to infer from discourse many things which are not actually expressed. Perhaps, however, something very nearly approaching to an exemplification of our idea of a simple verb will be found in the proposition, "The three angles of every plane triangle *are* equal to two right angles." What other office the verb *are* here performs than simply to join the subject and predicate, it is difficult to perceive. It does not give notice of time; or such notice, if given, is an imperfection; for the truth of the proposition is independent of time. Neither ought it to imply existence; for the proposition would be true were there neither a triangle nor a right angle in nature.

This idea of verb, when well considered, will be found just; but should any of our readers suspect it of novelty, and on that account be disposed to condemn it, we have only to request that he will restrain his censure till he has examined the writings of others, and nicely observed the several states of his own mind in discourse; for meditation may perhaps show him that our theory is not false, and inquiry will satisfy him that it is not novel.[1]

But although it is certain that assertion, and assertion only, is essential to the verb, yet the greater part of that species of words which grammarians call *verbs* are used to denote an attribute as well as an assertion; or, in the language of logic, they express both the copula and the predicate of a proposition; thus, *he liveth, he writeth, he walketh*, are phrases equivalent in all respects to *he is living, he is writing, he is walking.* Now, of attributes, some have their essence in motion, as *walking;* some in the privation of motion, as *resting;* and *others* have nothing to do with either motion or its privation, as *white* and *black.* But all motion and all privation of motion imply *time* as their concomitant; and a substance may have an attribute to-day which it had not yesterday, and will not have to-morrow. This is self-evident; for a man may be at rest to-day who yesterday was walking, and to-morrow will be on horseback; and a sheet of paper may have been white yesterday which to-day is black, and at some future time will be of a different colour. As, therefore, all motions and their privations imply time; and as a proposition may be true at one time which is not true at another, all *verbs*, as well those which denote both an attribute and an assertion, as those which denote an assertion only, come to denote *time* also. Hence the origin and use of *tenses*, which are so many different forms assigned to each verb, to show, without altering its principal signification, the various *times* in which the assertion expressed by it may be true. Whether these various forms of the verb be essential to language, it is vain to dispute. They have place in every language with which we are acquainted; and as the use of the verb is to affirm one thing of another, it is absolutely necessary that the *time* when such or such an affirmation is true be marked by *tenses*, or some other contrivance. Concerning tenses, therefore, we shall throw together some observations, which, *mutatis mutandis*, are applicable to every language, premising only a general remark or two which seem necessary in order to proceed with precision.

Time, although its essence consists in succession continued and unbroken, may yet be considered by the mind as divided into an infinite number of parts. There is, however, one grand division which necessarily occurs, and to which the different *tenses* of verbs are in all languages adapted. Computing from some portion conceived to be

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[1] "Besides words, which are names of ideas in the mind, there are a great many others that are made use of to signify the connection that the mind gives to ideas or propositions one with another. The mind, in communicating its thoughts to others, does not only need signs of the ideas it has then before it, but others also to show or intimate some particular action of its own at that time relating to those ideas. This it does several ways; as IS and IS NOT are the general marks of the mind affirming or denying." (Locke on *Human Understanding.*) "Verbum est pars orationis variabilis, aliquid de re aliqua dici seu affirmari significans. Vulgaris verbi definitio est, quod, sit pars orationis, quæ agere, pati, aut esse significet. Sed nostra accuratior, magisque ex ipsa verbi cujusvis natura petita videtur. Cæterum *το affirmari* laxiore hic sensu accipimus, pro eo quod prædicari dialectici appellent, quo non modo affirmationes strictius sic dictæ, sed negationes etiam interrogationesque includuntur." (Ruddiman, *Grammaticæ Institutiones;* see also Beattie's *Theory of Language.*)

present, all time is either *past* or to *come*. Hence the tenses of verbs are threefold; some denoting time *present*, some time *past*, and others time *future*.

Again, from the very nature of time, it must be obvious that all its parts are relative; or, in other words, that no portion of it can be ascertained by any thing *inherent in itself*, but only by referring it to some other portion, with respect to which it is past, present, or to come. In this respect time is perfectly analogous to space; for as the space in which any object exists cannot be described but by stating its relation to some other space, so neither can the time of any attribute or action be determined, but by stating its relation to some other time. When, therefore, we would mark the time of any action or event, we must previously fix upon some point to which we may refer it. If this point be known, the time referred to it will also be known; but if the former be not known, neither will the latter.

Lastly, in contemplating an *action*, we may have occasion to consider it as *going on*, or as *finished*. This distinction is likewise denoted by the different tenses of verbs. In treating, therefore, of the tenses, there are two things to which attention ought principally to be turned;—the *relation* which the several tenses have to one another in respect of time; and the notice which they give of an action's being *completed* or *not completed*.

Having premised these remarks, we proceed now to the tenses themselves; of which Mr Harris has enumerated no fewer than twelve. Of this enumeration we can by no means approve; for, without entering into a minute examination of it, nothing can be more obvious, than that his inceptive present, *I am going to write*, is a *future* tense; and his completive present, *I have written*, a *past* tense. But, as was before observed of the classification of words, we cannot help being of opinion, that to take the tenses as they are commonly received, and endeavour to ascertain their nature and their differences, is a much more useful exercise, as well as more proper for a work of this kind, than to raise, as might easily be done, new and hypothetical theories on the subject.

It has already been observed that all the tenses must necessarily mark *relative time*. In one sense this is extremely obvious. The present tense is used in contradistinction to both the past and future, and marks an attribute or action as existing in neither. The past and the future are in like manner used in contradistinction to the present, and mark an attribute or action which exists not now, but which in the one case has existed formerly, and in the other will exist at some time coming. But besides this relation of contradistinction subsisting among the tenses, there is another of co-existence, as we may call it, to which it is of great consequence to attend, especially in examining the nature of the present.

The present tense refers not only to something which is past or future, but also to something with which the attribute or action of the verb is contemporary. This reference is necessarily implied in its very name; for we cannot say of any thing that it is present, without implying at the same time that there is something else with which it is present. Hence it appears with how little reason Mr Harris and others have given us an aorist of the present, as marking present time indefinitely in contradistinction to *other* presents, which have been called *inceptive, extended*, and *completive presents*. For from what has been said, it follows, that the present tense is necessarily and from its very nature perfectly indefinite, and can of itself give notice of no precise or determinate portion or point of time whatever. A thing may have been present fifty years ago, may be present now, or at any future period. This tense implies the relation of co-existence between two or more things; but without some auxiliary circumstance, it cannot in any language mark the particular portion of time in which those things exist. The indefinite nature of this tense is indeed most clearly seen in that use of it in which Mr Harris has styled it the aorist of the present; that is, in cases where it is employed to denote the repetition of an action which the agent is accustomed frequently to perform, or to express propositions of which the truth is evinced by general experience; as in the following examples:—

> Hypocrisy......the only evil that *walks*
> Invisible, except to God alone.
>
> *Ad pœnitendum* properat *qui cito judicat.*

In these instances it is plain that there is no particular time pointed out; the propositions are *true*, or apprehended as true, at all times. Although the actions, therefore, of "walking" and "hastening" are expressed as present, it is impossible from the expressions to determine any precise point of time when they are present.

But if the *present tense* be thus indefinite, how, it may be asked, are we to ascertain the particular time which is intended? We answer, it is to be ascertained, either by stating the action of the verb as existing in some time already known, or by inference. If, for example, we say, "Millions of spiritual creatures *walk* the earth unseen," the proposition is general, and the time of walking undetermined. But if we add, "both *when* we *wake* and *when* we *sleep*," the *time* is by this addition ascertained and specified; for if the time when men wake and sleep be known, the time when these spirits walk the earth is also known. When no specifying clause is given by which to determine the time of the present tense, it is very commonly determined by inference. Thus, if one use such an expression as "He *sleeps* while I am *speaking to him*," the time of his sleeping is ascertained by the subsequent clause of the sentence; but if it be said simply, "he sleeps," without assigning any data from which it may be concluded when his sleeping is present, we very naturally infer that it is at the instant when we receive the information of his sleeping. Such inferences as this are common in language. The mind is desirous to obtain complete information on every subject, and therefore frequently supplies to itself what is not expressed in the speech of others.

Both these ways of ascertaining the precise time of the present tense are excellently illustrated by the use of the word present as applied to space. Take a familiar example: "His brother and he were *present* when I read the letter." It is at first sight evident that this expression is perfectly indefinite. But if it be said, "His brother and he were *present at your house* when I read the letter," the place of action is then determined by being referred to a portion of space which is known. If no such reference be made, the person who hears the speech uttered must either remain ignorant of the place intended, or he must ascertain it to himself by inference; and he will probably infer it to be that in which the speaker is at the time of his uttering the indefinite sentence. This leads us to observe, that such inferences are not often made without sufficient foundation. Various circumstances may assist the reader or hearer in making them, and prevent all danger of mistake. He may have the evidence of sense, or of something preceding in the discourse, and a number of other particulars, to warrant his conclusion. Thus, if, when sitting by a large fire, any one pronounce the words "I am too warm," those to whom he addresses his speech are authorized to conclude that he is too warm at the time of speaking, unless he expressly prevent the drawing of that conclusion by adding some such clause as "when I wear a great coat."

It is strictly demonstrable, and has been in fact demonstrated by Mr Harris, that there is no such thing as present time. Yet do we not only conceive time as present and existing, but frequently as extended to a very great degree. We speak not only of the present instant, or the present day, but also of the present year, and even of the present century. This manner of conceiving time is indeed loose and unphilosophical, but it is sufficient for the ordinary purposes of language. To express time as it really is, we ought to say, the passing day, the passing year, and the passing century; but in common discourse we denominate any portion of time present, in which the present now or instant is included, although it is obvious that part of that portion is past, and the remainder of it future. From the very nature of time thus conceived to be present, the tense now under consideration must represent the action of the verb as commenced, and not finished; for as time is in continued succession, and accompanies every action, when any action is *not* commenced, it exists not in any time, although it may exist hereafter in time which is now future; and when it is finished, it exists no longer in time present, but in *time past.* Hence the absurdity of introducing into a theory of the tenses an inceptive present and a completive present; for these terms imply each a direct contradiction.

After having said so much respecting the present tense, we shall have but little to say of the *præter-imperfect.* It states an action in regard to time as *past;* and in respect of progress, as *unfinished. Legebam*, I was reading at some time, but my reading was then incomplete; I had not finished the book or the letter. We must here observe, however, as we did with respect to the present tense, that although the præter-imperfect represents the action as past, it does not inform us in what precise portion of past time the unfinished action was going on; this circumstance must either be given in separate words, or be inferred by the hearer. If one say simply, *Legebam*, the person to whom he addresses his speech will conclude that the time of his reading is past with respect to the present time of his speaking. But if he say *Legebam antequam venisti*, he expressly states the action of reading as past with respect to the time in which his hearer came to the place where they both are at the time of speaking. The time of the præter-imperfect is always past with respect to the present instant when the imperfect is used, and of this the tense itself gives notice; but it may also be past with respect to some other time, and of this it conveys no information.

If we join two præter-imperfects together, the expression will state the co-existence of two progressive actions, both of which were going on at a time *past* in respect of some determinate time given or supposed. *Cum tu scribebas ego legebam;* "when you were writing I was reading." Hence the præter-imperfect has by some grammarians been called the relative present; a name which, however, is by no means exclusively applicable to this tense. When the præter-imperfect is by the conjunction *and* joined in the same sentence with a plusquam-perfect, the two tenses express two actions, both prior to the time of speaking; but the one as having continued after the other was finished. Thus Æneas, speaking of the destruction of Troy, says, that after having escaped with his father and followers, he returned to the city in quest of his wife, and went directly to his own house; but there, continues he, *Irruerant* Danai, et tectum omne *tenebant*, "the Greeks *had rushed in*," that action was over and completed *before his arrival*; but the act of "possessing the whole house," *tenebant*, was not over, but still continuing.

But it is necessary that the verb should denote actions which were complete or perfect in past time, as well as those which were incomplete or imperfect. For this purpose Greek and English verbs have an aorist, a præter-perfect, and a plusquam-perfect. Of these the Latin has only the two last. The præter-perfect in that language sustains a twofold character; it performs the office of the Greek and English aorist, as well as that of the præter-perfect properly so called; that is, it denotes a finished action at some indefinite past time. as well as at some time which is both past and definite.

In attempting to analyse the signification of complex terms, by which we here mean words that include in their signification a variety of particulars, it is of great advantage to have these particulars separately expressed by different words in another language. Now the English has resolved the tenses, which in the Greek and Latin languages are denominated the aorist and the præter-perfect, by means of what are commonly called auxiliary verbs, expressing the former by the verb *did*, and the latter by the verb *have.* In examining therefore the aorist and præter-perfect, it will be of use to inquire into the import of these verbs.

Did is evidently the aorist of the verb *to do;* a verb of the most general signification, as it denotes action of every kind. It expresses the finished performance of some action, the completion of which must of course have taken place in some portion of *past time:* "*I* DID *write*, or *I wrote* (these expressions being equivalent) yesterday, a month, a year ago." But the import of *did* being so very general, it can convey no determinate meaning without being limited by the addition of some particular action; and this addition, however expressed, is to be considered in the same light as an accusative case, governed by the active verb *did;* for it produces exactly the same effect. 'Εγραψα, *scripsi*, I *did* WRITE; that is, "at some past time I performed the *action* of *writing*, and *finished it.*"

The verb *have*, which is included in the præter-perfect, is plainly a verb of the present tense denoting possession, But a man may possess one thing as well as another; and therefore *have* requires limitation, for the very same reason that *did* requires it, namely, because its signification is perfectly general. Now this limitation, whatever it is, must be conceived as the thing possessed; and in instances where *have* is limited by a noun, this is obvious, and universally acknowledged. "I *have* a gold watch," means "I *possess* a gold watch." But to annex the same meaning to the word *have*, when used as an auxiliary verb, is an idea we believe not common, and which may perhaps be thought whimsical; yet what other meaning can be affixed to it? To suppose that words have not each a radical and determinate signification, is to suppose language a subject incapable of philosophical investigation; and to suppose, with Mr Harris, that there are words entirely devoid of signification, is at once to render all inquiries into the principles of grammar nugatory and ridiculous. We conceive, then, that each of the phrases, *γεγραφα ἐπιστολην, scripsi epistolam*, I HAVE *written a letter*, is equivalent to the phrase, "I *possess* at present the *finished action* of writing a letter." Such an expression may sound harsh to the ear, because it is not in use; but we often employ expressions, to the precise and proper meaning of which we do not attend; and if the above be attentively considered, however awkward it may at first appear, nothing will be found in it either improper or absurd.

The aorist, then, we conceive to state an action as performed and finished in some past portion of time; whilst the præter-perfect represents the past performance and completion of that action as *now* possessed. And here we may hazard a conjecture why *have*, when used as an auxiliary verb, is always joined with a past participle; whereas *did* is joined to a word expressing the simple action of the verb, or, as it is called, present infinitive. Of the expression, "I *have* WRITTEN a letter," *one* part, namely, the verb *have*, denotes *present time;* the other part, viz. *written*, must denote past time, to give notice that the action is performed and finished. *Did*, on the other hand, implying past time, has no occasion for the past part of another verb to give notice of this circumstance; for "I *did* WRITE a letter," is equivalent to, "at some past time I performed and finished the simple action of writing a letter."

The principal distinction in practice between the aorist and præter-perfect (for the difference seems little in their real import) consists in the time by which the performance of the action admits of being particularly specified. The præter-perfect is always joined with a portion of time which includes the present *now* or *instant;* for otherwise it could not signify, as it always does, the present possession of the finishing of an action. But the aorist, which signifies no such possession, is as constantly joined with a portion of past time which excludes the present *now* or *instant.* Thus we not only say, "I *have written* a letter *this* day, *this* week," but "I *wrote* a letter *yesterday*, last week;" and to interchange these expressions of time in Greek and English, where the aorist and præter-perfect have different forms, would be improper. In Latin, indeed, where they have but one form, the impropriety does not appear.

Besides the tenses already examined, which are expressive of past time, in most languages the verb has another tense called the *plusquam-perfect*, in which, however, no difficulty occurs to detain our attention. What the præter-imperfect is to the present tense, that the plusquam-perfect is to the præter-perfect. The verb *had*, by which it is resolved in English, being evidently the past time of *have*, sufficiently explains its meaning and relation to the other tenses. "I *had* written a letter," is equivalent to the phrase, "I *possessed* at some *past time* the finished action of writing a letter." It is justly observed by Dr Beattie, that the imperfect and plusquam-perfect are very useful, and may be the sources of much elegant expression; and that if one were not taught to distinguish, in respect of meaning as well as of form, these tenses from each other, and the præterite from both, one could not pretend to understand, far less to translate, any good classic author.

Having considered the tenses which imply present and past time, it now remains that we examine the import of those which are expressive of time *future.* In Latin and English there are two tenses for this purpose, of which the first represents an action in point of time as *not yet existing*, but as about to exist at some period to come; but it does not bring the completion of the action into view. The other asserts the *futurity* of an action together with its completion. *Scribam*, "I shall be writing," denotes *future* time and *incomplete action;* for it does not say whether I am to write for a long or for a short time, or whether I shall finish what I promise to begin. This part of the verb, therefore, to which the Greek γραψω corresponds, is an imperfect future, or, in other words, indefinite. The futurity of any action, it should seem, may always be computed from the time of speaking; for every action must be future with respect to the time at which its futurity is declared: but the time of its futurity may be more precisely specified by fixing upon some other future time to which to refer it: "I shall be writing after he shall have departed." *Shall* or *will* refers to future time indefinitely; and *write* or *writing* refers to an action which is indeed to *begin* and so far to proceed, but of which nothing is said concerning the completion.

On the other hand, *scripsero*, "I shall have written," is a perfect future denoting complete action; for *shall* denotes future time; *written*, finished action; and *have*, present possession. So that the meaning of the whole assertion is, that "at some future period of time I shall possess the finished action of writing." The completion of the action, together with the possession of it, is always future with respect to the time of assertion; but, with respect to some other time expressed or understood, the completion of the action is to be past: *Promittis te scripturum si rogavero*, "you promise to write if I shall have asked you." In this sentence the action of asking is future with relation to the time of promising, but it is past with relation to that of writing. This tense the Latin grammarians call the future of the subjunctive mode, but very improperly. The notice which it communicates respects not the power or liberty of acting, which, as will be seen by and by, is the characteristic of that mode; but only the action itself. It ought, therefore, to be ranked among the tenses of the indicative mode; for *scripsero* is, in every sense, as really indicative as *scribam* or *scripturus ero.*

These are all the tenses, essentially different from each other, which have place in the indicative mode (or mood) of any language with which we are acquainted;[1] but as there are tenses in the mode called *subjunctive*, which bear the same names with those already examined, and which have yet a different import, it will be necessary to consider them before we dismiss the subject of tenses. Of *modes* in general something will be said hereafter; at present we shall only observe, that the mode with which we are now concerned is not very properly distinguished by the name assigned to it by the Latin grammarians. They call it the *subjunctive*, because it is often subjoined to another verb, and forms the secondary clause of a sentence; but the mode called *indicative* frequently appears in the same circumstances. The difference between these two modes appears to us to consist in this, that the indicative asserts something directly concerning the action, and the subjunctive, something concerning the power or liberty of the agent to perform it; for that the latter asserts as well as the former, admits not of dispute.

The present tense of the *subjunctive mode*, in the learned languages, answers to the English auxiliaries *may* and *can.* Let us consider these a little. *May* is evidently a verb of the present tense denoting *liberty.* When I assert that I MAY *write*, I give notice that I am under no *compulsion* to *abstain* from writing; that there is no impediment from without by which I am restrained from writing. *Can* is also a verb of the present tense, expressive of internal power or skill. "I *can* write" is equivalent to such an expression as this: "There is nothing in myself which incapacitates me for performing the operation of writing." This verb seems originally to have denoted knowledge or skill, and to have been afterwards extended to signify power or ability of any kind. There is little doubt of its being the same with the old English verb *to con*, which signifies *to know*. The difference between the import of these two verbs, *may* and *can*, will be best perceived in a familiar example. Suppose we say to any one, "You *may* write a treatise on grammar," to which he returns for answer, "I *cannot;*" our assertion evidently supposes him at liberty to write the treatise; his answer implies that he is unable or unskilled to do it. We may conclude, then, that the present tense of this mode contains a declaration of present liberty, ability, or skill; and its other tenses will be found to have reference to the same capacities.

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[1] "It will perhaps occur," says an elegant and ingenious writer, "that there are two Greek tenses of which I have given no account; namely, the *second aorist* and the *second future.* The truth is, that I consider them as unnecessary. Their place, for any thing I know to the contrary, might at all times be supplied by the *first aorist* and the *first future.* Some grammarians are of opinion that the first aorist signifies time past in general, and the second indefinite time past; and that the first future denotes a nearer, and the second a more remote, futurity. But this, I apprehend, is mere conjecture, unsupported by proof; and therefore I incline rather to the sentiments of those who teach that the second future and the second aorist have no meaning different from the first future and the first aorist; and that they are the present and imperfect of some obsolete theme of the verb: and when the other theme came into use, happened to be retained for the sake of variety perhaps, or by accident, with a preterite and future signification. Be this as it will, as these tenses are peculiar to the Greek, and have nothing corresponding to them in other tongues, we need not scruple to overlook them as superfluous." (Beattie on the *Theory of Language*, part ii. chap. 2.) To these judicious observations we have nothing to add, except that they acquire no small degree of confirmation from the circumstance that there are many Greek verbs which have no second future, and which are yet employed to denote every possible modification of future time. Of the *paulo-post-futurum* of the Greeks we have taken no notice, because it is found only in the passive voice; to which, if it were necessary, it is obvious that it would be necessary in *all* voices, as a man may be about to *act* as well as to *suffer* immediately.

The observation is here to be repeated which was enlarged upon when treating of the present of the indicative. The liberty or ability signified by this tense is always represented as present, but the time of this presence is indefinite. If no particular time be specified, we generally refer it to the time of speaking; but another point may be given from which we are to compute. "When he shall have finished, you *may* then proceed as you propose." Here the liberty of proceeding is stated as present, not at the time of speaking, but at the time of his finishing, which is future to the time of speaking. But though the liberty, ability, or skill, denoted by this tense, be represented as present, the action itself is stated as *contingent*; for it is not necessary that a man should perform an action because he has the capacity to perform it.

From this idea of the present of the subjunctive some of its most peculiar uses seem capable of being explained. And, in the first place, it appears to have a near affinity with the future of the indicative, insomuch that in many instances they may be used promiscuously. Without materially altering the effect of the expression, we may say, "Dico me facturum esse quæ *imperet*," or "quæ *imperabit*." The reason of this, perhaps, may be, that with respect to us, *futurity* and *contingency* are in most cases nearly the same, both being involved in equal obscurity; and therefore it is often of little consequence which mode of expression we employ.

Secondly, the present of the subjunctive is used to denote the right of which a person is possessed. "*I may*, or I *can*, sell this book." This application, which Dr Priestley considers as the primary signification of the tense, is easily deduced, or rather it follows immediately from the foregoing account of its import. For if one be under no restraint, either external or internal, to prevent him from performing an action, he has surely a right to perform it.

Thirdly, the present of the subjunctive is often used to signify command or request; as when one says, "You *may give* my compliments to such a person." This use of the tense under consideration seems to have arisen from a desire to soften the harshness of a command, by avoiding the appearance of claiming superiority. When a man utters the above sentence, he certainly utters no command, but only asserts that the person to whom he speaks has liberty or power to do him a favour. This assertion, however, may contain no new information; and therefore the person addressed, reflecting upon the intention of the speaker in making it, infers that it indicates a *wish* or *desire* that his compliments should be made to such a person.

Of the subjunctive as well as of the indicative, the præter-imperfect is evidently the past time of the present. As the latter asserts liberty or ability to perform some action, as existing at present, the former asserts the same liberty or ability to have existed in time past; but the precise portion of time past in which these capacities existed must be specified by other words, or it will remain unknown. Thus, in the following sentence, "Dixi me facturum esse quæ *imperaret*," the time of *imperaret* is referred to that of *dixi;* the person having the right to command is supposed to have had it at the time when the other said that he would obey. This tense, as well as the present, states the action as going on and incomplete; and also as future with respect to the liberty or ability to perform it. It is rendered into English by the verbs *could* or *might*, of which the first is the past time of *can*, and the second of *may*. From the near affinity which the present of the subjunctive has to the future of the indicative, the tense now under consideration appears in many instances as the past time of the latter as well as the former. Thus, *Dixi me facturum quæ imperaret*, may be rendered "I said that I would do whatever he might, or whatever he *should*, command."

Of the præter-perfect it is sufficient to observe, that as the present states the agent as at *liberty* to be performing an unfinished action, so this tense states him as at liberty to perform the action considered as finished. "I *may be writing* a letter when you come;" that is, "I *am at liberty to be writing* a letter when you come." "I *may have written* a letter when you come;" that is, "I *am at liberty to be in possession of the finished action* of writing a letter when you come." It is a common mode of expression to say, "I may have done such or such a thing in my time," when he who speaks can have little doubt whether he has done the thing or not. In that case, the words *may have done*, cannot be considered as the præter-perfect of the subjunctive of the verb *do;* for it is nonsense to talk of liberty with respect to the performance of an action, which at the time of speaking is supposed to be past and completed. What, then, is the import of the phrase? We are persuaded that it is elliptical, and that the word *say* or *affirm* is understood: "I may (say that I) have done such or such a thing in my time;" for liberty or contingency can relate to actions only as they are conceived to be present or future.

Of all the tenses, the most complex is the plusquamperfect of this mode. It combines a past and a future time with a finished action. It may be considered as the past time both of the perfect future and the præter-perfect of the *subjunctive;* for it represents an action, future and contingent at some *past time*, as *finished before* another *period specified;* which period, therefore, though past at the time of speaking, was itself future with respect to the time when the futurity or contingency of the action existed. "Promisisti te scripturum fuisse si *rogassem;*" "You promised that you would write, if I should have asked you." Here the futurity of the action of *asking*, which is represented as complete and finished, is stated as *co-existing* with the *past promise;* but the action itself must be *posterior* to that promise. It is however supposed to be past with respect to the action of writing, which is also posterior to the promise.

Before we dismiss the subject of tenses, it may not be improper just to mention number and person; for these have place in every tense of the verb in the learned languages, and in many tenses even of the English verb. They cannot, however, be deemed essential to the verb; for affirmation is the same, whether it be made by you, by me, or by a third person, or whether it be made by one man or by a thousand. The most that can be said is, that verbs in the more elegant languages are provided with a variety of terminations which respect the number and person of every substantive, that we may know with more precision, in a complex sentence, each particular substance, with its attendant verbal attributes. The same may be said of sex with respect to adjectives. They have terminations which vary as they respect beings male or female, though it is past dispute that substances alone are susceptible of sex. We therefore pass over these matters, and all of like kind, as being rather amongst the elegancies of particular languages, and therefore to be learned from the particular grammar of each tongue, than amongst the essentials of language; which essentials alone are the subject of inquiry in a treatise on universal grammar.

Besides tenses, number, and person, in every tongue with which we are acquainted, verbs are subject to another variation, which grammarians have agreed to call *modes* or *moods*. Of modes, as of tenses, it has been warmly disputed whether or not they be essential to language. The truth seems to be, that the only part of the verb absolutely necessary for the purpose of communicating thought is the indicative mode; for all the others, as has been well observed by Dr Gregory, are resolvable, by means of additional verbs and a word denoting the action of the primary verb, into circuitous expressions which fully convey their meaning.[1] But such expressions continually repeated would make language very prolix and wholly devoid of animation; and for this reason the import of each of the commonly received modes is a subject worthy of the philologist's investigation. About the number of modes, whether necessary or only expedient, as well as about the import of each, the writers on grammar have differed in opinion. Mr Harris, one of the most celebrated of those writers, has enumerated four modes of the verb, besides the infinitive: viz. the *indicative* or *declarative*, to assert what we think certain; the *potential* or *subjunctive*, for the purposes of whatever we think contingent; the *interrogative*, when we are doubtful, to procure us information; and the *requisitive*, to assist us in the gratification of our volitions. The requisitive, too, according to him, appears under two distinct species; either as it is *imperative* to inferiors, or *precative* to superiors. For establishing such a variety of modes as this, there appears to be no sort of foundation whatever. The same reasoning which induced the author to give us an interrogative and requisitive mode, might have made him give us a hortative, a dissuasive, a volitive, and innumerable other modes, with which no language is acquainted. But besides perplexing his reader with useless distinctions, we cannot help thinking that Mr Harris has fallen into some mistakes with regard to the import of those modes which are universally acknowledged. According to him, *assertion* is the characteristic of the indicative, and that which distinguishes it from the subjunctive or potential; but this is certainly not true, for, without an assertion, the verb cannot be used in any mode. Of this the learned author indeed seems to have been aware, when he observed respecting the subjunctive mode, that it is employed "when we do not *strictly* assert," and that "it implies but a *dubious* and *conjectural* assertion." The truth is, that the assertion implied in this mode, though it is not concerning the same thing, is equally positive and absolute with that conveyed by the indicative. An example quoted by himself should have set him right as to this matter:

> Sed tacitus pasci si posset corvus, *haberet*
> Plus dapis.

Who does not feel that the assertion contained in *haberet* is as absolute and positive as any assertion whatever?

Perhaps we may be asked to define what we mean by a mode. We know not that we can define it to the satisfaction of all. Thus much, however, seems to be obvious, that those variations which are called modes do not imply *different modifications* of the *action* of the verb. *Amo*, *Amem*, *Ama*, do not signify modes of *loving;* for modes of loving are, loving *much*, loving *little*, loving *long*, loving *short*, and the like. Shall we then get over the difficulty by saying, with Mr Harris, that "modes exhibit some way or other the *soul* and its *affections?*" This is certainly true, but it is nothing to the purpose; for it does not distinguish the meaning of mode from the object of language in general, all languages being intended to exhibit the soul and its affections.

Grammatical modes of verbs have been defined by Dr Gregory to be "concise modes of expressing some of those combinations of thoughts which occur most frequently, and are most important and striking." This is a just observation; but perhaps he would have given a more complete definition had he said, that grammatical modes of verbs are concise modes of expressing some of those combinations of thoughts which occur most frequently, and of which *assertion* is an essential part.[2] This indeed seems to be the real account of the matter, especially if our notion of the nature of verb be well founded, that its essence consists in affirmation. And in this opinion we are the more confirmed, from a conviction that no man ever employs language on any occasion but for the purpose of affirming something. The speaker may affirm something directly of the action itself, something of the agent's power or capacity to perform it, or something of his own desire that it should be performed, but still he must affirm. If this be so, then are all the modes equally indicative. Some may be indicative of perceptions, and others of volitions; but still they all contain *indications*. On this idea the three foregoing modes of *amo* will be thus distinguished: When a man indicates his present *feeling* of the passion of love, he uses the first; when he indicates his present *capacity* of feeling it, he uses the second; and when he indicates his present *desire* that the person to whom he is speaking would entertain that passion, he uses the third.

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[1] The imperative, for instance, may be resolved into a verb of commanding in the first person of the present of the indicative, and a word denoting the action of the primary verb, commonly called the infinitive mode of that verb. Thus, *I nunc et versus tecum meditare canoros*, and *Jubeo te nunc ire et tecum meditari*, &c. are sentences of the very same import. The subjunctive may be resolved in the same manner by means of a verb denoting power or capacity; for *credam*, and *possum credere*, may often be used indifferently. The indicative mode, however, is not thus convertible with another verb of affirming in the first person of the present of the indicative, and a word denoting the action of the primary verb; for *Titius scribit*, "Titius writes," is not of the same import with *dico Titium scribere, quod Titius scribat*, "I say that Titius writes." The first of these sentences, as has already been shown, contains but one assertion; the second obviously contains two. *Titius writes*, is equivalent to *Titius* IS *writing; I say that Titius writes*, is equivalent to *I* AM *saying that Titius* IS *writing*. The reason why the imperative and subjunctive are resolvable into expressions into which the *indicative* cannot be resolved, will be seen when the import of each of those modes is ascertained.

[2] Every verb, except the simple verb *am*, *art*, *is*, &c. expresses without modes a combination of thoughts, namely, affirmation and an attribute. The affirmation, however, is alone essential to the verb, for the attribute may be expressed by other words. It is indeed extremely probable, that in the earliest ages of the world, the affirmation and attribute were always expressed by different words; and that afterwards, for the sake of conciseness, one word, compounded perhaps of these two, was made to express both the affirmation and the attribute; hence arose the various classes of verbs, *active*, *passive*, and *neuter*. Of a process of this kind there are evident signs in the Greek and some other tongues. But the improvers of language stopped not here. The same love of conciseness induced them to modify the compound verb itself, that it might express various combinations of thought still more complex; but in all these combinations *assertion* was of necessity included; for if the word had ceased to assert, it would have ceased to be a verb of any kind.

As to what Mr Harris calls the interrogative mode, he observes that it has a near affinity to the indicative. It has in fact not only a near affinity to it, but, as far as language is concerned, there is not between the one and the other the slightest difference. For, in written language, take away the mark of interrogation, and, in spoken language, the peculiar tone of voice, and the interrogative and indicative modes appear precisely the same. That such should be the case is extremely natural. To illustrate this, let us for once speak in the singular number, and conceive one of our readers to be present. "I assert a thing, taking the truth of it for granted; but if you know me to be wrong, I presume that you will set me right." In this case, assertion produces the same effect as interrogation. Instances of the same kind perpetually occur in common conversation. An acquaintance says to me, "You took a ride this morning." I answer yes or no, according to the case; and the same effect is produced as if he had said, "Did you take a ride this morning?" In this way simple assertions would at first be employed to procure information wanted. *Fecisti*, you *did* such a thing; *fecisti ne*, you did it *not;* either would produce the proper reply, and the information wanted would be gained.[1] This being observed as language improved, men would accompany such a sentence with a peculiar tone of voice, or other marks, to signify more unequivocally that they wanted information, or that such information was the only object of their speech. Further progress in refinement would lead them to alter the position of the words of a sentence when they meant to ask a question, as we do in English, saying, when we *assert*, "*You have* read Euripides," and when we *interrogate*, "*Have you* read Euripides?"

In Greek and Latin, questions are asked commonly enough by the particles ἐι and *an*. These particles we know to be exactly equivalent to the English particle *if*, at least to the sense in which that particle is commonly taken. *An fecisti*, is "*If* you did it;" and the sentence may either be an abbreviation for *dic an fecisti*, "tell me if you did it;" or *an* may perhaps be, as *if* certainly is, the imperative mode of some obsolete verb equivalent to *give;* and in that case, *an fecisti* will be a complete interrogative sentence, signifying, "you did it, *give that*." But of the interrogative mode of Mr Harris we have said enough; perhaps our readers will think too much, since it is a useless distinction not found in any language. It will, however, be proper to say something of his precative mode, as far as it is the same with the optative mode of the Greek grammarians.

And nothing, we think, can be clearer, than that the Greek optative constitutes no distinct mode of the verb, whatever meaning be annexed to the word mode. The different tenses of the optative are evidently nothing but the past tenses of the corresponding tenses of the subjunctive. Thus, pres. subj. τυπτω, I *may* strike; pres. optat. τυπτοιμι, I *might* strike, &c. This is proved to be indubitably the case by the uniform practice of the Greek writers. Examples might be found without number were one to read in search of them. The following sentence will illustrate our meaning: 'Ερχονται 'Αθηναιοι ἱνα βοηθωσι τοις Αργειοις, "The Athenians *come* that they *may assist* the Argives." Here the leading verb ἐρχονται being of the present tense, the dependent verb βοηθωσι is the present subjunctive. But change the former to the *past time*, and the latter must also be changed. 'Ηρχοντο 'Αθηναιοι ἱνα βοηθοιεν τοις 'Αργειοις, "The Athenians *came* that they *might assist* the Argives." Here it is plain that βοηθοιεν, the present of the optative, is the past time of βοηθωσι, the present of the subjunctive; and the same holds in other instances.

It is almost unnecessary to add, that when this mode is employed to denote a wish, the wish is not expressed by the verb, but is understood. Such abbreviated expressions to denote a wish are common in all languages. Thus, in Greek,

> 'Υμιν μεν θεοι δοιεν, ὀλυμπια δωματ' ἐχοντες
> 'Εκπερσαι Πριαμοιο πολιν, κ. τ. λ.

signifies, "The gods might give you (or, as we say in English, *changing* the position of the verb, *might the gods give you*) to destroy," &c. So in Latin, *Ut te omnes dii deæque perdant*, "That all the gods and goddesses may destroy you." Again, in English, "O that my head were waters, and my eyes a fountain of tears." In all these, and such like sentences, words equivalent to *I wish, I pray*, are understood. In Greek a wish is sometimes introduced by the particle ἐι or ἐιτε, *if;* as in Homer,

> 'Ειθ' ὀφελες τ' ἀγονος τ' ἐμεναι, ἀγαμος τ' ἀπολεσθαι.

"*If* it had been your fate not to be born, or to die unmarried." The supplement is, "It would have been fortunate for your country," or some such thing. In like manner, a poor person not uncommonly entreats a favour by saying, "Sir, *if* you would be so good." Here he stops; but the completion of his sentence is, "it would make me happy." In all these cases a wish is not formally expressed by the speaker, but inferred by the hearer. They are therefore instances of that tendency which mankind universally discover to abbreviate their language, especially in cases where the passions or feelings are interested.

The interrogative and optative modes being set aside as superfluous, it would appear from our investigation, that the real distinct modes of the verb, which are found in the most copious and varied language, are only three; the *indicative*, the *subjunctive*, and the *imperative:* And these are all that can be considered as *necessary;* the first to indicate the speaker's feeling or acting, the second to indicate his capacity of feeling or acting, and the third to indicate his desire that the person to whom he speaks should feel or act.

Here again we have the misfortune to differ in opinion from Dr Gregory, who seems to think that a greater number of modes, if not absolutely necessary, would, at any rate, be highly useful. His words are, "All languages, I believe, are defective in respect of that variety and accuracy of combination and of distinction, which we know with infallible certainty take place in thought. Nor do I know of any particular in which language is more deficient than in the expressing of those energies or modifications of thought; some of which always are, and all of which might be, expressed by the grammatical moods of verbs. Of this there cannot be a clearer proof than the well-known fact, that we are obliged to express by the same mood very different modifications or energies of thought. As, for instance, in the case of the grammatical mood called the imperative, by which we express occasionally prayer to God, command to a slave, request to a superior, advice to an equal or to any one, order as from an officer to his subaltern, supplication to one whom we cannot resist." If these be, as the author calls them, specific differences of thought, he will not surely object to their being all ranked under one genus, which may be called *desire.* That the internal feelings which prompt us to pray to God, to command a slave, to request a superior, to advise an equal, to give an order to an inferior, and to supplicate one whom we cannot resist, are all different in degree, cannot be denied. Each of them, however, is desire; and the predication by which the desire is made known to the person whom we address, is the same in all, when we utter a prayer as when we utter a command, when we request as when we supplicate. But predication alone is that which constitutes the verb; for desire by itself, however modified, can be expressed only by an abstract noun; and the mere energy of desire, when not applied to a particular agent, can be expressed only by a *participle,* or by what is commonly, though improperly, called the infinitive mode. Now it is certainly conceivable that a few shades of meaning, or a few degrees of one general energy, might be marked by corresponding variations of such verbs as combine energy with predication;[1] and there could be no great impropriety in calling those variations modes, or rather modes of modes; but that such a multiplication of modes would be an improvement in language, is by no means evident. The verb, with the modes and tenses which it has in all languages, is already a very complex part of speech, which few are able, and still fewer inclined, to analyse; and it would surely be of no advantage to make it more complex by the introduction of new modes, especially when those degrees of energy which could be marked by them are with equal and perhaps greater precision marked, in the living speech, by the different tones of voice adapted to them by nature; and, in written language, by the reader's general knowledge of the subject, and of the persons who may be occasionally introduced. If there be any particular delicacy of sentiment or energy which cannot thus be made known, it is better to express it by a name appropriated to itself, together with the simple and original verb of affirmation, than to clog the compound verb with such a multiplicity of variations as would render the acquisition of every language as difficult as is said to be that of the Chinese written characters. The indicative, subjunctive, and imperative, are therefore all the modes of the verb which to us appear to be in any degree necessary or expedient; and they are in fact all the modes that are really found in any language with which we are acquainted.

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[1] Of a question put in the form of an assertion we have a remarkable instance in the gospel of St Matthew. When Christ stood before Pilate, the governor asked him, saying, Συ ἐι ὁ βασιλευς των Ιουδαιων, "Thou art the king of the Jews." That this sentence was pronounced with a view to obtain some answer, is evident from the context; yet it is as plainly *an affirmation*, though uttered probably in a scoffing tone, as the serious confession of Nathaniel, Συ ἐι ὁ βασιλευς του Ισραηλ, "Thou art the king of Israel." Had not the question been put in this form, which *asserts* Christ to be the king of the Jews, the reply could not have been Συ λεγεις, "Thou sayest;" for without an assertion the governor would have said nothing. (See Dr Campbell's *Translation of the Gospels*, where the form used in the original is with great propriety retained in the version.)

For the *infinitive,* as has already been observed, seems on every account to be improperly styled a mode. To that name it has no title which we can perceive, except that its termination sometimes (for even this is not universally true) differs in the learned languages from the terminations of the other parts of the verb. Nay, if affirmation be, as it has been proved to be, the very essence of verb, it will follow that the infinitive is no part of the verb at all; for it expresses no affirmation. It forms no complete sentence by itself, nor even when joined to a noun, unless it be aided by some real part of a verb either expressed or understood. *Scribo, scribebam, scripsi, scripseram, scribam, scripsero,* "I am writing, I was writing, I have written, I had written, I shall write, I shall have written," contain each of them an *affirmation,* and constitute a complete sentence; but *scribere* "to write," *scripsisse* "to have written," affirm nothing, and are not more applicable to any one person than to another. In a word, the *infinitive* is nothing more than an *abstract noun,*[2] denoting the simple

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[1] Dr Gregory seems to think, that not merely a few, but a vast number, of these energies might be so marked. "*Affirming, denying, testifying,* foretelling, asking, answering, *wishing, hoping, expecting,* believing, knowing, doubting, supposing, stipulating, being able, commanding, *praying,* requesting, *supplicating,* loving, hating, fearing, despairing, being accustomed, wondering, admiring, wavering, swearing, *advising, refusing, exhorting, dissuading, encouraging,* promising, threatening, &c." says he, "all admit very readily of being combined with the general import of a verb." And he adds, that "if every one of them had been expressed in all languages by variations as striking as those of τυπτω, τυπτοιμι, and τυπτε, they must have been acknowledged as distinct moods of the verb."

If all these words denote different energies of thought, which, however, may be doubted, and if all those different energies, with many others for which, as the author justly observes, it is not easy to find names, could, like capacity and desire, be combined with the general action or energy of one verb; and if those combinations could be marked by corresponding variations of that verb; we should indeed acknowledge such variations to be distinct modes, or modes of modes, of the verb. But we doubt much if all this be possible. We are certain that it would be no improvement; for it seems to be evident, either that, in some of the modes, the radical letters of the original verb must be changed, and then it would cease to be the same verb; or that many of the modes must be expressed by words of very unmanageable length; not to mention, that the additional complication introduced by so many minute distinctions into a part of speech already exceedingly complex, would render the import of the verb absolutely unintelligible to nine tenths even of those who are justly styled the learned.

[2] In our idea of the infinitive, we have the good fortune to agree with the learned Ruddiman, whose words are, "Non inepte hic modus a veteribus quibusdam *verbi nomen* est appellatum. Est enim, si non vere ac semper, quod nonnulli volunt, nomen substantivum, significatione certe ei maxime affinis; ejusque vices sustinet per omnes casus. Et quidem manifeste substantivum videtur, cum adjectivum ei additur neutri generis; ut, Cic. *Att.* xiii. 28, *Cum vivere ipsum turpe sit nobis.* Pers. v. 53, *Velle suum cuique est.* Cic. *Fin.* i. 1, *Totum hoc displicet philosophari.* Petron. c. 52, *Meum intelligere nulla pecunia vendo.* Item, absque adjectivo, ut Ovid. *Met.* ii. 483, *Posse loqui eripitur,* id est, *potestas loquendi.* Plaut. *Bacch.* i. 2. 50, *Hic vereri perdidit,* id est, *verecundiam.* Cic. *Tusc.* v. 38, *Loquor de docto homine et erudito, cui vivere est cogitare,* id est, *cujus vita est cogitatio.*" See *Grammaticæ Latinæ Institutiones,* pars secunda, lib. i. cap. 2, where the reader will find examples of the infinitive used by the best Roman writers as a substantive noun in every case.

This opinion of Ruddiman and the ancient grammarians has been controverted with much ingenuity by Dr Gregory, who seems to think that in the infinitive alone we should look for the essence of the verb divested of every accidental circumstance, time only excepted. If this be indeed the case, almost every thing which we have said of the verb, its tenses, and its modes, is erroneous; and he who takes his principles of grammar from the Encyclopædia Britannica will fill his head with a farrago of absurdities. But it may without much difficulty be shown, that the error does not attach to the doctrine respecting the infinitive, which has been stated and illustrated in this article, but to the strange inversion of all recognised principle involved in the notion which Dr Gregory has espoused, apparently by reason of its novelty alone.

The Doctor acknowledges (*Transactions of the Royal Society of Edinburgh,* vol. ii. liter. class, p. 195), that the infinitive is most improperly called a mode, and on that account he thinks we ought to turn our thoughts exclusively to it, "when we endeavour to investigate the general import of the verb, with a view to ascertain the accident which it denotes, and be led, step by step, to form a distinct notion of what is common in the accidents of all verbs, and what is peculiar in the accidents of the several classes of them, and thereby be enabled to give good definitions, specifying the *essence* of the verb," &c. It may be true, that to the infinitive exclusively we should turn our attention when we wish to ascertain the accident denoted by a particular verb or class of verbs; that is, the kind of action, passion, or state of being, of which, superadded to affirmation, that verb or class of verbs is expressive; but in accidents of this kind it may be doubted if there be any thing that with propriety can be said to be common to all verbs. There seems indeed to be nothing common to all verbs but that which is essential to them, and by which they are distinguished from every other part of speech; but every kind of action, passion, and state of being, may be completely expressed by participles and abstract nouns, and therefore *energy* of the verb, in conjunction with time; and is not a mode as far as we can conceive of any thing. Thus, *Scire tuum nihil est*, is the same with *Scientia tua nihil est;* and "*Death* is certain," is identical with "*To die* is certain."

Before we dismiss the subject of modes, it may not be improper to take notice of the connection which Mr Harris, after Apollonius, has found between commanding and futurity. "Intreating and commanding," he says, "have a necessary respect to the future only. For what have they to do with the present and the past, the natures of which are immutable and necessary?" This is surely con-

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in such accidents we cannot find the essence of the verb, because such accidents distinguish it not from other parts of speech. Were a man called upon to specify the essence of verse or metre, he would not say that it consists in the meaning of the words, or in the using of these words according to the rules of syntax. In every kind of verse where words are used, they have indeed a meaning, and in all good verses they are grammatically constructed; but this is likewise the case in prose, and therefore it cannot be the essence of verse. The essence of verse must consist in something which is not to be found in prose, namely, a certain harmonic succession of sounds and number of syllables; and the essence of the verb must likewise consist in something which is not to be found in any other part of speech, and that is nothing but affirmation. But if affirmation be the very essence of the verb, it would surely be improper, when we endeavour to ascertain the general import of that part of speech, to turn our thoughts exclusively to a word which implies no affirmation; for what does not affirm, cannot in strictness of truth be either a verb or the mode of a verb.

In the same page it is said that "the infinitive denotes that kind of thought or combination of thoughts which is common to all the other modes." In what sense this is true we are unable to conceive; it denotes indeed the same accident, but certainly not the same thought or combination of thoughts. In the examples quoted, *Non est* VIVERE, *sed* VALERE *vita*, the infinitives have evidently the effect of abstract nouns, and not of verbs; for though *vivere* and *valere* express the same states of being with *vivo* and *valeo*, they by no means express the same combination of thoughts. *Vivo* and *valeo* affirm that *I* AM *living*, and that *I* AM *well;* and he who utters these words must think not of life and health in the abstract, but of life and health as belonging to himself. *Vivere* and *valere*, on the other hand, affirm nothing; and he who utters them thinks only of the states of living and of being in health, without applying them to any particular person.

The learned author of *The Origin and Progress of Language* having said that the infinitive is used either as a noun, or that it serves to connect the verb with another verb or noun, and so is useful in syntax, the doctor combats this opinion, and infers that the infinitive is truly a *verb*, because "the thought expressed by means of it may be expressed in synonymous and convertible phrases, in different languages, by means of other parts or moods of the verb." Of these synonymous and convertible phrases he gives several examples, the first of which is taken from Hamlet's soliloquy. "*To be* or *not to be*, that is the question," he thinks equivalent in meaning to, "The question is, *whether we shall be or shall not be*." But we are persuaded he is mistaken. "Whether we shall be or shall not be," involves a question, whether we shall exist at some future and indefinite time; but the subject of Hamlet's debate with himself was not, whether, if his conscious existence should be interrupted, it would be afterwards at some future and indefinite time restored, but whether it was to continue uninterrupted by his exit from this world. This, we think, must be self-evident to every reader of the soliloquy. It is likewise obvious that the word "question" in this sentence does not signify interrogatory, but *subject of debate*, or *matter to be examined;* and that the word "that" serves no other purpose than to complete the verse, and give additional emphasis, perhaps, to an inquiry so important. "*To be* or *not to be*, that is the question," is therefore equivalent in all respects to "The continuance or non-continuance of my existence is the matter to be examined;" and the infinitive is here indisputably used as an abstract noun in the nominative case. Should it be said that the doctor may have taken the sentence by itself, unconnected with the subject of Hamlet's soliloquy, we reply, that the supposition is impossible; for, independently of the circumstances with which they are connected, the words "*To be* or *not to be*" have no perfect meaning. Were it not for the subject of the soliloquy, from which every reader supplies what is wanting to complete the sense, it might be asked, "*To be* or *not to be*"—*what?* A coward, a murderer, a king, or a corpse? Questions all equally reasonable, and which in that case could not be answered.

With the same view, to prove that the infinitive is truly a *verb*, the doctor proceeds to remark upon the following phrases, *Dico, credo, puto, Titium existere, valere, jacere, cecidisse, procubuisse, projecisse Mævium, projectum fuisse a Mævio;* which, he says, have the very same meaning with *dico, quod Titius existat, quod jaceat, quod ceciderit*, &c. He adds, that "the infinitives, as thus used, acquire not any further meaning, in addition to the radical import of the verb with tense, like the proper moods; but the subjunctives after *quod* lose their peculiar meaning as moods, and signify no more than bare infinitives." In the sense in which this observation is made by the author, the very reverse of it seems to be the truth. The infinitives, as thus used, acquire, at least in the mind of the reader, something like the power of affirmation, which they certainly have not when standing by themselves; whereas the subjunctives neither lose nor acquire any meaning by being placed after *quod. Dico, credo, puto, Titium existere, valere, jacere*, &c. when translated literally, signify, *I say, believe, think, Titius to exist, to be well, to lie along;* a mode of speaking which, though now not elegant, was common with the best writers in the days of Shakspeare, and is frequently to be found in the writings of Warburton at a much later period. *Dico, credo, puto, quod Titius existat, quod jaceat*, &c. signifies literally, *I say, believe, think, that Titius may exist, may lie along*, &c. Remove the verbs in the indicative mode from the former set of phrases, and it will be found that the infinitives had acquired a meaning, when conjoined with them, which they have not when left by themselves; for *Titium existere, jacere*, "Titius to exist, to lie along," have no complete meaning, because they affirm nothing. On the other hand, when the indicative verbs are removed, together with the wonder-working *quod*, from the latter set of phrases, the meaning of the subjunctives remains in all respects as it was before the removal; for *Titius existat, jaceat*, &c. signify, *Titius may exist, may lie along*, as well when they stand by themselves as when they form the final clauses of a compound sentence. Every one knows that *quod*, though often called a conjunction, is always in fact the relative pronoun. *Dico, credo, puto, quod Titius existat*, must therefore be construed thus: *Titius existat (est id) quod dico, credo*, &c. "Titius may exist—is that thing, that proposition, which I say, believe, think." In the former set of phrases, the infinitives are used as abstract nouns in the accusative case, denoting, in conjunction with *Titium*, one complex conception, the *existence*, &c. *of Titius: Dico, credo, puto*, "I say, believe, think;" and the object of my speech, belief, thought, is *Titium existere*, "the existence of Titus."

In confirmation of the same idea, that the infinitive is truly a *verb*, Dr Gregory quotes from Horace a passage, which, had we thought quotations necessary, we should have urged in support of our own opinion:

Nec quicquam tibi prodest
Aërias *tentasse* domos, animoque rotundum
Percurrisse polum, morituro.

To our apprehension, nothing can be clearer than that *tentasse* and *percurrisse* are here used as nouns; for if they be not, where shall we find a nominative to the verb *prodest?* It was certainly what was signified by TENTASSE *aërias domos, animoque rotundum* PERCURRISSE *polum*, that is said to have been no advantage to Archytas at his death. This, indeed, if there could be any doubt about it, would be made evident by the two prose versions which the professor subjoins to these beautiful lines. The first of them is as follows: *Nec quicquam tibi prodest quod aërias domos* TENTAVERIS, *et animo* PERCURRERIS *polum;* which must be thus constructed: TENTAVERIS *aërias domos, et* PERCURRERIS *animo polum (est id) quod nec quicquam tibi prodest.* This version, however, is not perfectly accurate; for it contains two propositions, whereas Horace's lines contain but one. The second, which, though it may be a crabbed and inelegant sentence, expresses the poet's sense with more precision, is in these words: *Nec quicquam tibi prodest morituro tua* TENTATIO *domuum aëriarum, et* CURSUS *tuus circa polum.* Having observed, with truth, that this sentence has the very same meaning with the lines of Horace, Dr Gregory asks, "why are not *tentatio* and *cursus* reckoned verbs as well as *tentasse* and *percurrisse?*" Let those answer this question who believe that any of these words are truly verbs; for they are surely, as he adds, all very near akin; indeed so near, that the mind, when contemplating the import of each, cannot perceive the difference. Meanwhile, we beg leave in founding commands with the execution of commands. But the learned writer proceeds to inform us, that "it is from the connection of futurity with commands that the future of the indicative is sometimes used for the imperative mode." The connection of which he speaks appears to us entirely imaginary; for futurity has nothing to do with commands, though it may with the execution of them. The present time is the time of commanding, the future of obeying. But supposing the connection real, it would not account for the future tenses being used imperatively. For although it were true, as it is evidently false, that commands are future, it would not follow that the relation is convertible, or that employing the future should imply a command. The principle upon which such expressions as, *Thou shalt not kill*, come to have the force of a command, seems to be this: When a person, especially one possessed of authority, asserts that an action depending on the will of a free agent, and therefore in its own nature contingent, shall or shall not actually take place; what are we to conclude from such an assertion? Why, surely it is natural to conclude that it is his will, his command, that his assertion be verified. The English word *shall*, if we be well informed, denoted originally obligation; a sense in which its past tense *should* is still commonly employed. In English, therefore, the foregoing process of inferring a command from an assertion of futurity seems to have been reversed; and the word *shall*, from denoting a command or obligation, has come to denote futurity simply.

Having considered the verb in its essence, its tenses, and its modes, we might seem to have exhausted the subject; but there is still something more to be done. Grammarians have distinguished verbs into several species; and it remains with us to inquire upon what principle in nature this distinction is made, and how far it proceeds. Now it must be obvious, that if predication be the essence of verbs, all verbs as such must be of the same species; for predication is the same in every proposition, under every possible circumstance, and by whomsoever it is made. But the greater part of verbs contain the predicate as well as the predication of a proposition; or, to speak in common language, they denote an attribute as well as an affirmation. Thus, *lego* is "I am *reading*," *ambulo*, "I am *walking*," *sto*, "I am *standing*," *verbero*, "I am *striking*," *verberor*, "I am *stricken*." But the attributes expressed by these verbs are evidently of different kinds; some consisting in action, some in suffering, and some in a state of being which is neither active nor passive. Hence the distinction of verbs, according to the attributes which they denote, into *active*, *passive*, and *neuter*. *Lego*, which is an assertion that I am employed in the act of reading, is an active verb; *verberor*, which is an assertion that I am suffering under the rod, is a passive verb, because it denotes a passion; and *sto*, which is an assertion that I am standing still, is said to be a neuter verb, because it denotes neither action nor passion. But it is self-evident that there cannot be action without an agent, nor passion without a passive being; neither can we make a predication of any kind, though it denote neither action nor passion, without predicating of something. All verbs, therefore, whether active, passive, or neuter, have a necessary reference to some noun expressive of the substance of which the attribute denoted by the verb is predicated. This noun, which in all languages must be in the nominative case, is said to be the nominative of the verb; and in those languages in which the verb has person and number, it must in these respects agree with its nominative.

Of action, and consequently of verbs denoting action, there are obviously two kinds. There is an action which passes from the agent to some subject upon which he is employed, and there is an action which respects no object beyond the agent himself. Thus *lego* and *ambulo* are verbs which equally denote action; but the action of *lego* refers to some external object as well as to the agent; for when a man is reading, he must be reading something, a book, a newspaper, or a letter, whereas the action of *ambulo* is confined wholly to the agent; for when a man is walking he is employed upon nothing beyond himself, his action produces no effect upon any thing external. These two species of verbs have been denominated transitive and intransitive; a designation extremely proper, as the distinction which gave rise to it is philosophically just. Verbs of both species are active; but the action of those only which are called transitive respects an external object; and therefore in those languages of which the nouns have cases, it is only after verbs which are transitive as well as active, that the noun denoting the subject of the action is put in the accusative or objective case. Verbs which are intransitive, though they be really active, are in the structure of sentences considered as neuter, and govern no case.

So much, then, for that most important of all words, the verb. We proceed now to the consideration of participles, adjectives, and adverbs, which, as they have a near relation to one another, we shall treat of under one head or division.

V.—*Of Participles, Adjectives, and Adverbs.*

1. *Of Participles.*

The nature of verbs being understood, that of *participles* is not of difficult comprehension. Every verb, except that which is called the substantive verb, is expressive of an attribute, of time, and of an assertion. Now if we take away the assertion, and thus destroy the verb, there will remain the attribute and the time; and these combined make the essence of that species of words called *participles*. Thus, take away the assertion from the verb *γϱαφει*, *writeth*, and there remains the participle *γϱαφων*, *writing*, which, without the assertion, denotes the same attribute and the same time. In the same manner, by withdrawing the assertion, we discover *γϱαψας*, *written*, in *εγϱαψε*, *wrote*; *γϱαψων*, *about to write*, in *γϱαψει*, *shall be writing*. This is the doctrine of Mr Harris respecting participles; and, in our opinion, it is equally elegant, perspicuous, and just. But as it has been controverted by an author of some note in the republic of letters, we should perhaps be wanting in duty to our readers were we to pass his objections wholly unnoticed.

It is acknowledged by Dr Beattie, the writer to whom we allude, that the view which we have taken is the most convenient in which the participle can be considered in universal grammar; but he affirms that present participles do not always express present time, nor preterite participles past time; nay, that participles have often no connection with time at all. He thus exemplifies his assertion in Greek, in Latin, and in English:

"When Cebes says, *Ετυγχανομεν πεϱιπατουντες ἐν τῳ του Κϱονου ἱεϱῳ*, 'We *were walking* in the temple of Saturn,' the participle of the present *walking* is, by means of the verb

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our turn to ask, Why are not *tentasse* and *percurrisse* reckoned abstract nouns as well as *tentatio* and *cursus*? To this question it is not easy to conceive what answer can be returned upon the doctor's principles. In his theory there is nothing satisfactory; and what has not been done by himself, we need scarcely expect from any of his followers. On the other hand, our principles furnish a very obvious reason for excluding *tentatio* and *cursus* from the class of verbs; it is, because these words express no predication. *Tentasse* and *percurrisse* indeed denote predication no more than *tentatio* and *cursus*; and therefore upon the same principle we exclude them likewise from a class to which, if words are to be arranged according to their import, they certainly do not belong.

were, applied to time past, and therefore of itself cannot be understood to signify any sort of time." Again, after observing, that in English we have but two simple participles, such as *writing* and *written*, of which the former is generally considered as the present and the latter as the past, the doctor adds, but "the participle *writing*, joined to a verb of different tenses, may denote either past or future action; for we may say not only, *I* AM *writing*, but also, *I* WAS *writing* yesterday, and *I* SHALL BE *writing* to-morrow;" and hence he infers that *no time whatever* is denoted by the present participle. But this is obviously a hasty inference, drawn from the doctrine of absolute time and a definite present, which we have already shown to be groundless and contradictory. When we speak simply of an action as present, we must mean that it is present with respect to something besides itself, or we speak a jargon which is unintelligible; but we do not ascertain the time of its presence. From the very nature of time, an action may be present now, it may have been present formerly, or it may be present at some future period; but the precise time of its presence cannot be ascertained even by the present of the indicative of the verb itself; yet who ever supposed that the present of the indicative denotes no time? The participle of the present represents the action of the verb as going on; but an action cannot be going on without being present in time with something. When, therefore, Cebes says, "We were walking in the temple of Saturn," he represents the action of the verb walking as present with something; but by using the verb expressive of his assertion in a past tense, he gives us to understand that the action was not present with any thing at the period of his speaking, but at some portion of time prior to that period; and what that portion of time was, must be collected from the subsequent parts of his discourse. The same thing may also be said of the phrases *I was writing yesterday*, and *I shall be writing to-morrow*. They indicate that the action of the verb *write* was present with me yesterday, and will again be present with me to-morrow. The action and the time of action are denoted by the participle; that action is affirmed to belong to me by means of the verb; and the time at which it belonged to me is pointed out by the tenses of that verb, *am*, *was*, and *shall be*. All this is so plain, that it could not have escaped Dr Beattie's penetration, if he had not hastily adopted the absurd and contradictory notion of a definite present.

Of the truth of his assertion respecting past participles he gives a Greek and a Latin example. The former is taken from St Mark, viz. *ὁ πιστευσας σωθησεται*; and the latter is that which is commonly called the perfect future of the passive verb *amor*, *amatus fuero*. In the first instance, he says that the participle, though belonging to the aorist of the past time, must be rendered either by the indefinite present, "he who *believeth*;" or by the *future*, "he who *will* believe;" and the reason which he gives for this rendering of the word is, that "the believing here spoken of is considered as posterior in time to the enunciation of the promise." This is indeed true, but it is not to the purpose; for with the enunciation of the promise the time of the participle has no manner of concern. The time of *πιστευσας* depends entirely upon the time of *σωθησεται*, with respect to which it must undeniably be past. Our Lord is not here asserting, that he who shall believe at the day of final retribution shall be saved, but that he who shall on that day be found to *have believed* in time past shall be saved; and if the participle had not been expressive of a finished action and a past time, the whole sentence would have conveyed a meaning not friendly to the interests of the gospel. In like manner, the time of *amatus* is referred, not to the time of speaking, but to the time of *fuero*, with respect to which, who sees not that it is past? The two words, taken together, contain a declaration, that he who utters them shall, at some time posterior to that of speaking, *have* BEEN *loved;* the expression *shall have been loved* denotes two times, both future with respect to the time of speaking; but when the time denoted by *shall have* comes to be present, that of the participle *loved* must be *past*, for it is declared that the action of it shall *then* be complete and finished.

We conclude, then, that it is essential to a participle to express both an attribute and time; and that such words as denote no time, though they may be in the *form* of participles, as *doctus*, "learned," *eloquens*, "eloquent," &c. belong to another part of speech, which we now proceed to consider.

2. *Of Adjectives.*

The nature of verbs and participles being understood, that of *adjectives* becomes easy. A verb implies, as we have said, an attribute, time, and an assertion; a participle implies only an attribute and time; and an *adjective* implies only an attribute as belonging to some substance. In other words, an *adjective* has no assertion, and it denotes only such an attribute as has not its essence either in motion or its privation. Thus, in general, the attributes of quantity, quality, and relation, such as *many*, *few*, *great*, *little*, *black*, *white*, *good*, *bad*, *double*, *treble*, and the like, are all denoted by *adjectives*.

To understand the import and the use of this species of words, it must be observed that every adjective is resolvable into a substantive and an expression of connection equivalent to *of*. Thus, a *good man* is a *man of goodness;* where we see the attribute denoted by the adjective fully expressed by an abstract noun. But it is evident that the noun *goodness* does not express the *whole meaning* of the adjective *good;* for every adjective expresses not only an attribute, but also the connection between the attribute and its substance; whereas in the abstract noun, the attribute is considered as a substance unconnected with any other substance.

In the next place, it is to be observed, that the connection expressed by adjectives, like that expressed by *of*, is of a nature so general and indefinite, that the particular kind of connection must, in some languages, be inferred from our previous knowledge of the objects between which it subsists, or it will for ever remain unknown. This might be proved by a variety of examples, but will perhaps be sufficiently evident from the following: *Color salubris* signifies colour that *indicates* health; *exercitatio salubris*, exercise that *preserves* health; *victus salubris*, food that *improves* health; *medicina salubris*, medicine that *restores* health. In all these examples the connection expressed by the adjective form of *salubris* is different; and though it may be known from previous experience, there is nothing in any of the expressions themselves by which it can be ascertained. Thus, adjectives are each significant of an attribute and connection; but the particular kind of connection is ascertained by experience. The usual effect of adjectives in language, is to modify or particularize a general term, by adding some quality or circumstance which may distinguish the object meant by that term, from the other objects of the same species. I have occasion, for example, to speak of a particular man, of whose name I am ignorant. The word *man* is too general for my purpose, it being applicable to every individual of the human species. In what way then do I proceed, in order to particularize it, so as to make it denote that very man whom I mean to specify? I annex or conjoin to it such words as are significant of objects and qualities with which he is connected, and which are not equally applicable to others from whom I mean to distinguish him. Thus I can say, *a man of prudence* or a *prudent man*, a *wise man*, a *good man*, a *brave man*, and so on. By means of these additions the general term *man* is limited or modified, and can be applied only to certain men to whom belong the attributes expressed by the adjectives *prudent*, *wise*, *good*, and *brave*. If it be still too general for my purpose, I can add to it other qualities and circumstances, till I make it so particular as to be applicable to but one individual man in the universe.

This is the way in which adjectives are commonly used, but this is not the only way. Instead of being employed to modify a substantive, they sometimes appear as the principal words in the sentence, when the sole use of the substantive seems to be to modify the abstract noun, contained under the adjective to which that substantive is joined. In order to understand this, it will be necessary to attend to the following observations.

It may be laid down as a general proposition, that when any term or any phrase is employed to denote a complex conception, the mind has a power of considering, in what order it pleases, the simple ideas of which the complex conception is composed. To illustrate this observation by an example: The word *eques* in Latin denotes a complex conception, of which the constituent simple ideas are those of a man and a horse; with this connection subsisting between them, that the man is conceived as on the back of the horse. In the use of this word, it is well known that the idea first in order, as being the principal subject of the proposition, is commonly the *man* on the back of the horse; but it is not always so, for the mind may consider the *horse* as the principal object. Thus, when Virgil says,

> Fræna Pelethronii Lapithæ gyrosque dedere,
> Impositi dorso; atque *equitem* docuere sub armis
> *Insultare solo*, et *gressus glomerare superbos*—

the energies attributed to the object signified by *equitem* make it evident that the horse, and not the man, is meant; for it is not the property of a man, *insultare solo, et gressus glomerare superbos.*

The same observation holds true where the *complex object* is denoted by two or more words; an adjective, for instance, and a substantive. Thus in the phrase *summus mons se inter nubila condit*, the words *summus mons* represent a complex conception, of which the constituent ideas are those of *height* and *mountain*, connected together by the adjective form of *summus*. Either of these ideas may be the subject of the proposition; and the expression will accordingly admit of two different significations. If *mons* be made the subject of the proposition, the meaning will be, "the highest mountain hides itself amongst the clouds." If the substantive included in the radical part of *summus* be made the subject of the proposition, the expression will signify, "the summit, or highest part, of the mountain, hides itself amongst the clouds." The latter is the true import of the sentence.

From these observations and examples, we shall be enabled to understand the two uses of the adjective. It is either employed, as has been already observed, to restrict or modify a general term; or the abstract substantive contained in the adjective is modified by the noun, with which, in the concrete or adjective form, that abstract substantive is joined. The first may be called the *direct*, the second the *inverse*, acceptation of adjectives.

The inverse acceptation of adjectives and participles, for both are used in the same manner, has scarcely been noticed by any grammarian excepting Dr Hunter of St Andrews; yet the principle is of great extent in language. In order to explain it, we shall produce a few examples, which on any other principle it is impossible to understand. Livy, speaking of the abolition of the regal authority at Rome, says, *Regnatum est Romæ ab* URBE CONDITA *ad* LIBERATAM *annos ducentos quadraginta quatuor*, "Monarchy subsisted at Rome (*not* from the *city built*, which would convey no meaning, but) from the *building of the city* to its *deliverance*." Both the participles *condita* and *liberatam* are here used inversely; that is, the abstract substantives contained in *condita* and *liberatam* are modified or restricted by the substantives *urbe* and *urbem*, with which they unite. Again, Ovid, speaking of the contest between Ajax and Ulysses for the arms of Achilles, has these lines:

> Qui, licet eloquio fidum quoque Nestora vincat,
> Haud tamen efficiet, *desertum* ut *Nestora crimen*
> Nullum esse rear.———

Here also the adjective or participle *desertum* is taken inversely, and the general notion of *desertion* contained in it is modified or rendered particular by being joined with the substantive *Nestora*. The meaning of the passage is, "I will never be induced to believe that the *desertion of Nestor* was not a crime." Were *desertum* to be taken directly as an adjective modifying its substantive, the sentence must be translated, "I cannot believe that *Nestor deserted* was not a crime." But it is evident that this is nonsense; as *Nestor*, whether deserted or not deserted, could not be a crime.

It were easy to produce many more examples of adjectives taken inversely; but these may suffice to illustrate the general principle, and to show, that without attending to it, it is impossible to understand the ancient authors. We shall produce one instance of it from Shakspeare, to evince that it is not confined to the ancient languages, though in these it is certainly more frequent than in the modern:

> Freeze, freeze, thou bitter sky,
> Thou canst not bite so nigh
> As *benefits forgot;*
> Though thou the waters warp,
> Thy sting is not so sharp
> As *friends remember'd not.*

Here it is evident that the adjective *forgot* is taken inversely; for it is not a benefit, but the *forgetting* of a benefit, which bites more than the bitter sky; and therefore, in this passage, the adjective serves not to modify the noun, but the noun *benefits* is employed to modify the abstract substantive contained in the adjective *forgot*, which is the subject of the proposition, and the principal word in the sentence.

Had Mr Harris attended to this principle, and reflected upon what he could not but know, that all adjectives denote substances; not indeed subsisting by themselves, as those expressed by nouns, but concretely, as the attributes of other substances; he would not have classed adjectives with verbs, or have passed so severe a censure upon the grammarians for classing them with nouns. It matters very little how adjectives are classed, provided their nature and effect be understood; but they have at least as good a title to be ranked with nouns as with verbs, and in our opinion a better. To adopt Mr Harris's language, they are homogeneous with respect to nouns, as both denote substances; they are heterogeneous with respect to verbs, as they never do denote assertion.

Besides original adjectives, there is another class, which is formed from substantives. Thus, when we say, *the party of Pompey, the style of Cicero, the philosophy of Socrates*; in these cases the *party*, the *style*, and the *philosophy* spoken of, receive a stamp and character from the persons whom they respect; and those persons, therefore, perform the part of attributes. Hence they actually pass into attributives, and assume as such the form of adjectives. It is thus we say, the *Pompeian party*, the *Ciceronian style*, and the *Socratic philosophy*. In like manner, for a trumpet *of brass*, we say a *brazen* trumpet, and for a crown *of gold*, a *golden* crown, &c. Even pronominal substantives admit a similar mutation. Thus, instead of saying the book *of me*, and *of thee*, we say *my* book, and *thy* book;

and instead of saying the country *of us* and *of you*, we say *our* country and *your* country. These words, *my, thy, our, your*, &c. have therefore been properly called pronominal adjectives.

It has been already observed, and must be obvious to all, that substances alone are susceptible of sex; and that therefore substantive nouns alone should have distinctions respecting gender. The same is true with respect to number and person. An *attribute* admits of no change in its nature, whether it belong to *you* or to *me*, to a *man* or a *woman*, to *one man* or to *many;* and therefore the words expressive of attributes ought on all occasions, and in every situation, to be fixed and invariable. For as the qualities *good* and *bad, black* and *white*, are the same, whether they be applied to a man or a woman, to many or to few; so the word which expresses any one of these attributes ought in strictness to admit of no alteration, with whatever substantive it may be joined. Such is the order of nature, and that order, on this as on other occasions, the English language most strictly observes; for we say equally, *a good man* or *a good woman; good men* or *good women; a good house* or *good houses.* In some languages, indeed, such as Greek and Latin, of which the nouns admit of cases, and the sentences of an inverted structure, it has been found necessary to endow adjectives with the threefold distinction of gender, number, and person; but as this is only an accidental variation, occasioned by particular circumstances, and not in the least essential to language, it belongs not to our subject, but to the particular grammars of these tongues.

There is, however, one variation of the adjective, which has place in all languages, is founded in the nature of things, and properly belongs to universal grammar. It is occasioned by comparing the attribute of one substance with a similar attribute of another, and falls naturally to be explained under the next section.

3. *Of Adverbs, and the Comparison of Adjectives.*

As adjectives denote the attributes of substances, so there is an inferior class of words which denote the modifications of these attributes. Thus, when we say, "Cicero and Pliny were both of them *eloquent;* Statius and Virgil both of them *wrote;*" the attributes expressed by the words *eloquent* and *wrote* are immediately referred to Cicero, Virgil, &c.; and as denoting the attributes of substances, these words, the one an adjective, and the other a verb, have been both called *attributives of the first order*. But when we say, "Pliny was *moderately* eloquent, but Cicero *exceedingly* eloquent; Statius wrote *indifferently*, but Virgil wrote *admirably;*" the words *moderately, exceedingly, indifferently*, and *admirably*, are not referrible to substantives, but to other attributes; that is, to the words *eloquent* and *wrote*, the signification of which they modify. Such words, therefore, having the same effect upon adjectives that adjectives have upon substantives, have been called *attributives of the second order.* By grammarians they have been called *adverbs;* and if we take the word *verb* in its most comprehensive signification,[1] as including not only verbs properly so called, but also every species of words which, whether essentially or accidentally, are significant of the attributes of substances, we shall find the name *adverb* to be a very just appellation, as denoting *a part of speech, the natural appendage of such verbs.* So great is this dependence in grammatical syntax, that an adverb can no more subsist without its verb, that is, without some word significant of an attribute, than a verb or adjective can subsist without its substantive. It is the same here as in certain natural subjects. Every colour, for its existence, as much requires a superficies, as the superficies for its existence requires a solid body.

Amongst the attributes of substance are reckoned quantity and quality; thus we say a *white garment*, a *high mountain*, and the like. Now some of these quantities and qualities are capable of intension or remission; or, in other words, one substance may have them in a greater or less degree than another. Thus we say, *a garment* EXCEEDINGLY *white, a mountain* TOLERABLY OF MODERATELY *high.* Hence, then, one copious source of secondary attributes or *adverbs* to denote these two, that is, intension and remission; such as *greatly, tolerably, vastly, extremely, indifferently.*

But where there are different intensions of the same attribute, they may be compared together. Thus, if the garment A be EXCEEDINGLY *white*, and the garment B be MODERATELY *white*, we may say, the garment A is MORE *white* than the garment B. This paper is *white*, and snow is *white;* but snow is MORE *white* than this paper. In these instances the adverb *more* not only denotes intension, but relative intension; nay, we stop not here, as we not only denote intension merely relative, but relative intension than which there is none greater. Thus we say, Sophocles was *wise*, Socrates was MORE *wise* than he, but *Solomon* was the MOST *wise* of men. Even verbs, properly so called, which denote an attribute as well as an assertion, must admit both of simple and of comparative intensions; but the simple verb *to be* admits of neither the one nor the other. Thus, in the following example, *Fame he* LOVETH MORE *than riches, but virtue of all things he* LOVETH MOST; the words *more* and *most* denote the different comparative intensions of the attribute included under the verb *loveth;* but the assertion itself, which is the essential part of the verb, admits neither of intension nor remission, and is the same in all possible propositions.

From this circumstance of quantities and qualities being capable of intension and remission, arise the *comparison* of adjectives, and its different *degrees*, which cannot well be more than the two species above mentioned; one to denote simple excess, and one to denote superlative. Were we indeed to introduce more degrees than these, we ought perhaps to introduce an infinite number, which is absurd. For why stop at a limited number, when in all subjects susceptible of intension, the intermediate excesses are in a manner infinite? Between the first simple *white* and the superlative *whitest* there are infinite degrees of *more white;* and the same may be said of *more* great, *more* strong, *more* minute, and so on. The doctrine of grammarians about *three* such degrees of comparison, which they call the *positive*, the *comparative*, and the *superlative*, must be absurd; both because in their positive there is no comparison at all, and because their superlative is a comparative as much as their comparative itself. Examples to evince this may be met with everywhere. *Socrates was the* MOST WISE *of all the Athenians; Homer was the* MOST SUBLIME *of all poets.* In this sentence Socrates is evidently compared with the Athenians, and Homer with all other poets. Again, if it be said that *Socrates was* MORE WISE *than any other Athenian, but that Solomon was the* MOST WISE *of men*, is not a comparison of Solomon with mankind in general, as plainly implied in the last clause of the sentence, as a comparison of Socrates with the other Athenians in the first?

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[1] Aristotle and his followers called every word a verb which denotes the predicate of a proposition. This classification was certainly absurd; for it confounds not only adjectives and participles, but even substantives, with *verbs;* but the authority of Aristotle was great; and hence the name of adverb, though that word attaches itself only to an adjective or participle, or a verb significant of an attribute, and does not attach itself to the pure verb.

But if both imply comparison, it may be asked, in what consists the difference between the comparative and superlative? Does the superlative always express a greater excess than the comparative? It does not; for though Socrates was the *most* wise of the Athenians, yet is Solomon affirmed to have been *more* wise than he; so that here a higher superiority is denoted by the comparative *more* than by the superlative *most.* Is this then the difference between these two degrees, that the superlative implies a comparison of *one with many,* whilst the *comparative* implies only a comparison of *one with one?* No, this is not always the case neither. The Psalmist says, that "he is *wiser* (or *more wise*) than all his teachers;" where, though the comparative is used, there is a comparison of one with many.

The real difference between these two degrees of comparison may be explained thus:—When we use the superlative, it is in consequence of having compared individuals with the species to which they belong, or one or more species with the genus under which they are comprehended. Thus *Socrates was the* MOST WISE *of the Athenians, and the Athenians were the* MOST ENLIGHTENED *of ancient nations.* In the first clause of this sentence, Socrates, although compared with the Athenians, is at the same time considered as one of them; and in the last the Athenians, although compared with ancient nations, are yet considered as one of those nations. Hence it is that in English the superlative is followed by the preposition *of,* and in Greek and Latin by the genitive case of the plural number; to show that the object which has the pre-eminence is considered as belonging to that class of things with which it is compared. But when we use the comparative degree, the objects compared are set in direct opposition; and the one is considered not as a part of the other, or as comprehended under it, but as something altogether distinct and belonging to a different class. Thus, were any one to say, "Cicero was *more eloquent* than the Romans," he would speak absurdly; because every body knows, that of the class of men expressed by the word *Romans,* Cicero was one, and such a sentence would affirm that orator to have been more eloquent than himself. But when it is said that "Cicero was *more eloquent* than all the *other* Romans, or than *any other* Roman," the language is proper, and the affirmation true; for though the persons spoken of were all of the same class or city, yet Cicero is here set in contradistinction to the rest of his countrymen, and is not considered as one of the persons with whom he is compared. It is for this reason that in English the comparative degree is followed by a noun governed by the word of contradistinction *than,* and in Latin by a noun in the ablative case governed by the preposition *præ*[1] either expressed or understood. We have already observed, that the ablative case denotes concomitancy; and therefore when an adjective in the comparative degree is prefixed to a noun, that noun is put in the ablative case, to denote that two things are compared together in company; but by means of the preposition, expressed or understood, that which is denoted by the comparative adjective is seen to be preferred before that which is denoted by the noun.

We have hitherto considered the comparative as expressed by the words *more* and *most;* but the authors or improvers of language have contrived a method of retrenching the use of these adverbs, by expressing their force by an inflexion of the adjective. Thus, instead of *more fair,* they say *fairer;* instead of *most fair, fairest;* and the same method of comparison takes place both in the Greek and Latin languages; with this difference, however, between the genius of these languages and ours, that we are at liberty to form the comparison either in the one method or in the other; whereas in those languages the comparison is seldom or never formed by the assistance of the adverb, but always by the inflexion of the adjective. Hence this inflexion is by the Greek and Latin grammarians considered as a necessary accident of the adjective; but it has reached no further than to adjectives, and participles sharing the nature of adjectives. The attributes expressed by verbs are as susceptible of comparison as those expressed by adjectives; but they are always compared by means of adverbs, the verb being too much diversified already to admit of more variations without perplexity.

It must be confessed, that comparatives, as well the simple as the superlative, seem sometimes to part with their relative nature, and to retain only their intensive. Thus in the degree denoting simple excess,

> *Tristior,* et lacrymis oculos suffusa nitentes.—*Virg.*

Tristior means nothing more than that Venus was very sad. In the degree called the superlative this is more usual. Phrases extremely common are, *Vir doctissimus, vir fortissimus,* "a most learned man, a most brave man;" that is, not the bravest and most learned man that ever existed, but a man possessing those qualities in an eminent degree. In English, when we intimate that a certain quality is possessed in an eminent degree, without making any direct comparison between it and a similar quality, we do it by the intensive word *very,* more commonly than by *most;* as, Cicero was *very* eloquent, the mind of Johnson was *very* vigorous. This mode of expression has been called the superlative of eminence, to distinguish it from the other superlative, which is superlative upon comparison. Yet it may be said, that even in the superlative of eminence something of comparison must be remotely or indirectly intimated, as we cannot reasonably call a man *very* eloquent, without comparing his eloquence with the eloquence of other men. This is indeed true; but we cannot therefore affirm that comparison is more clearly intimated in this superlative than in the simple adjective *eloquent;* for when we say that a man is eloquent, we mark between his eloquence and that of other men a distinction of the same kind, though not in the same degree, as when we say that he is very eloquent.

In English we distinguish the two superlatives, by prefixing to the one the definite article *the,* to show that something is predicated of the object expressed by it, which cannot be predicated of any other object; and by subjoining the preposition *of,* to show that the objects with which it is compared are of the same class with itself; as, "Solomon was *the* wisest *of* men; Hector was *the* most valiant *of* the Trojans." To the other superlative[2] we only prefix the indefinite article *a;* as, "he was *a very* good man; he was *a most* valiant soldier."

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[1] See Ruddiman, *Grammaticæ Institutiones,* pars secunda, lib. i. cap. 2. Although it is certainly true, that when we use the superlative, we ought in propriety to consider the things compared as of the same class; and when we use the comparative, as of different classes; yet this distinction is not always attended to by the best writers in any language. In Latin and Greek the comparative is sometimes used, where in English we should use the superlative; as *dextra est fortior manuum;* and in the Gospel it is said, that "a grain of mustard-seed is the *smaller* (μικροτερος) of all seeds, but when grown up it is the *greater* (μειζων) of herbs." Even in English, the custom of the language permits us not to say, "he is the *tallest* of the two," it must be the *taller* of the two; but we cannot say "he is the *taller* of the *three,*" it must be the *tallest.* For these and other deviations from the general rule no reason is to be found in the nature of things; they are errors made proper by use.

[2] In English, the termination *est* is peculiar to the superlative of comparison, to which the definite article is prefixed. Thus we may say, "Homer was the *sublimest* of poets;" but we cannot say, "Homer was a sublimest poet." Again, we may say, "Homer was *a very* sublime poet;" but not, "Homer was *the very* sublime poet."

As there are some qualities which admit of comparison, so there are others which admit of none; such, for example, are those which denote that quality of bodies arising from their figure, as when we say, a *circular* table, a *quadrangular* court, a *conical* piece of metal, and the like. The reason is, that a million of things participating the same figure, participate it equally, if they do it at all. To say, therefore, that whilst A and B are both quadrangular, A is *more* or *less* quadrangular than B, is absurd. The same holds true in all attributives denoting definite quantities of whatsoever nature; for as there can be no comparison without intension or remission, and as there can be no intension or remission in things always definite, therefore these attributives can admit of no comparison. By the same method of reasoning, we discover the cause why no substantive is susceptible of these degrees of comparison. A mountain cannot be said *more to be* or *to exist* than a mole-hill; but the *more* or *less* must be sought for in their quantities. In like manner, when we refer many individuals to one species, the lion A cannot be called *more* a lion than the lion B;[1] but if more any thing, he is *more* fierce, *more* swift, or exceeding in some such attribute. So, again, in referring many species to one genus, a crocodile is not *more* an animal than a lizard; nor a tiger more than a cat; but, if any thing, the crocodile and tiger are *more* bulky, *more* strong, &c. than the animals with which they are compared; the excess, as before, being derived from their attributes.

Of the adverbs or secondary attributives already mentioned, those denoting intension and remission may be called *adverbs of quantity continuous,* as *greatly, vastly, tolerably,* &c.; *once, twice, thrice,* &c.[2] are *adverbs of quantity discrete;* as *more* and *most, less* and *least,* to which may be added *equally, proportionally,* &c. are *adverbs of relation.* There are others of *quality;* as when we say, *honestly* industrious, *prudently* brave; they fought *bravely,* he painted *finely.*

And here it may be worth while to observe, how the same thing, participating the same essence, assumes different grammatical forms from its different relations. For example, suppose it should be asked, How differ *honest, honestly,* and *honesty?* The answer is, they are in essence the same; but they differ in as much as *honest* is the attributive of a noun; *honestly,* of a verb or adjective; and *honesty* being divested of these its attributive relations, assumes the power of a noun or substantive, so as to stand by itself.

The adverbs hitherto mentioned are common to verbs of every species; but there are some which are confined to verbs properly so called, that is, to such verbs as denote motions or energies with their privations. All motion and rest imply time and place as a kind of necessary coincidence. Hence, when we would express the place or time of either, we have recourse to adverbs formed for this purpose; of *place,* as when we say, he stood *there,* he went *hence,* he came *hither;* of time, as when we say, he stood *then,* he went *afterwards,* he travelled *formerly.* To these may be added the adverbs which denote the intensions and remissions peculiar to *motion,* such as *speedily, hastily, swiftly, slowly,* &c.; as also adverbs of place made out of prepositions, such as *upwards* and *downwards,* from *up* and *down.* It may, however, be doubted whether some of these words, as well as many others, which do not so properly modify attributes, as mark some remote circumstance attending an attribute or our way of conceiving it, are truly adverbs, though so called by the grammarians. The simple affirmative and negative *yes* and *no* are called adverbs, though they surely do not signify that which we hold to be the very essence of the adverb, a modification of attributes. "Is he learned? No." "Is he brave? Yes." Here the two adverbs, as they are called, signify not any modification of the attributes *brave* and *learned,* but a total negation of the attribute in the one case, and in the other a declaration that the attribute belongs to the person spoken of.

Adverbs are indeed applied to many purposes; and their general nature may be better understood by reading a list of them, and attending to their etymology, than by any general description or definition. Many of them seem to have been introduced into language in order to express by one word the meaning of two or three, and are mere abbreviations of nouns, verbs, and adjectives. Thus, the import of the phrase, *in what place,* is expressed by the single word *where;* to what place, by *whither;* from this place, by *hence;* in a direction ascending, by *upwards;* at the present time, by *now;* at what time, by *when;* at that time, by *then;* many times, by *often;* not many times, by *seldom;* and so of others.

Mr Horne Tooke has, with great industry and accuracy, traced many of the English adverbs from their origin in the ancient Saxon and other northern tongues, and shown them to be either corruptions of other words or abbreviations of phrases and sentences. He observes, "that all adverbs ending in *ly,* the most prolific branch of the family, are sufficiently understood; the termination being only the word *like* corrupted, and the corruption so much the more easily and certainly discovered, as the termination remains more pure and distinguishable in the other sister languages, in which it is written *lick, lyh, lig, ligen.*" He might have added, that in Scotland the word *like* is, at this day, frequently used instead of the English termination *ly;* as for a *goodly figure,* the common people say a *good-like* figure. Upon this principle the greater part of adverbs are resolved into those parts of speech which we have already considered, as *honestly* into *honest-like, vastly,* into *vast-like,* &c.; so that when we say of a man he is *honestly industrious,* we affirm that he is *honest-like industrious,* or that his industry has the appearance of being honest. Adverbs of a different termination the same acute writer resolves thus; *aghast* into the past participle *agazed;*

> The French exclaimed, the Devil was in arms.
> All the whole army stood *agazed* on him.—*Shaksp.*

Ago, into the past participle *agone* or *gone.* *Asunder* he derives from *asundered,* separated; the past participle of the Anglo-Saxon verb *asundrien,* a word which, in all its varieties, is to be found in all the northern tongues, and comes originally from *sond,* that is, sand. *To wit,* from *wittan,* to know; as *videlicet* and *scilicet,* in Latin, are abbreviations of *videre-licet* and *scire-licet.* *Needs,* he resolves into *need is,* used parenthetically; as, "I must *needs* do such a thing." "I must (need is) do such a thing;" that is, "I *must* do it, there *is need* of it." *Anon,* which our old authors use for *immediately, instantly,* means, he says, *in one,* that is, *in one instant, moment, minute.* As,

> And right *anon* withouten more abode.
> *Anon* in all the haste I can.

Alone and *only* are resolved into *all one,* and *one-like.* In the Dutch, *een* is one; and *all een* alone; and *all-een-like,* only, anciently *alonely.* *Alive* is on live, or in life. Thus, in Chaucer,

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[1] When Pope says of a certain person, that he is "a tradesman, meek, and *much a liar,*" the last phrase is the same with *much given* to lying, the word *liar* having the effect of an attributive.

[2] These words were anciently written *one's, twie's, thrie's,* and are merely the genitives of *one, two, three,* the substantive *time* or *turn* being omitted. Thus, *How often did you write?* Answer, *Once,* that is, *one's time.* (See Horne Tooke's *Diversions of Purley*).

Christ eterne *on live.*

Aught or *ought; a whit* or *o whit; o* being formerly written for the article *a*, or for the numeral *one;* and *whit* or *hwit*, in Saxon, signifying a small thing, as a *point* or *jot*. *Awhile*, which is usually classed with adverbs, is evidently a noun with the indefinite article prefixed; *a while*, that is, *a time*. *Whilst*, anciently and more properly *whiles*, is plainly the Saxon *hwilees, time that*. *Aloft* was formerly written *on-loft*. As, in Chaucer,

> And ye, my mother, my sovereigne pleasance
> Over al thing, *out take* Christ *on lofte.*

Now, says Mr Horne Tooke, *lyft*, in the Anglo-Saxon, is the air or the clouds, as, *in lyfte cummende*, coming in the clouds (St Luke). In the Danish, *luft* is air; and "at spronge i *luften*," to blow up into the air, or *aloft*. So in the Dutch, *de loef hebben*, to sail before the wind; *loeven*, to ply to windward; *loef*, the weather gage, &c. From the same root are our other words, *Loft, lofty*, to *luff, lee, leeward, lift*, &c. It would be needless, as the ingenious author observes, to notice such adverbs as, *afoot, adays, ashore, astray, aslope, aright, abed, aback, abreast, afloat, aloud, aside, afield, aground, aland*, &c. These are at first view seen for what they are. Nor shall we follow him through the analysis which he has given of many other adverbs, of which the origin is not so obvious as of these. Of the truth of his principles we are satisfied; and have not a doubt, but that upon those principles a man conversant with our earliest writers, and thoroughly skilled in the present languages, may trace every English adverb[1] to its source, and show that it is no part of speech separate from those which we have already considered. The adverbs, however, of affirmation and negation, are of too much importance to be thus passed over; and as we have never seen an account of them at all satisfactory, except that which has been given by Mr Horne Tooke, we shall transcribe the substance of what he says concerning *aye, yea, yes*, and *no*. To us these words have always appeared improperly classed with adverbs, upon every definition which has been given of that part of speech. Accordingly, our author says, that *aye* or *yea* is the imperative of a verb of northern extraction; and means *have, possess, enjoy*. And *yes* is a contraction of *ay-es*, have, possess, enjoy, *that*. Thus, when it is asked whether a man be learned, if the answer be by the word *yes*, it is equivalent to *have that, enjoy that* belief or that proposition.

The northern verb of which *yea* is the imperative, is in Danish *ejer*, to possess, have, enjoy. *Eja*, aye or yea; *eje*, possession; *ejer*, possessor. In Swedish it is *ega*, to possess, of which the imperative is *ja*, aye, yea; *egare*, possessor. In German, *ja* signifies aye or yea; *eigener*, possessor, owner; *eigen*, own. In Dutch, *eigenen* is to possess; *ja*, yea. Greenwood derives *not* and its abbreviate *no* from the Latin; Minshow, from the Hebrew; and Junius, from the Greek. Our author very properly observes, that the inhabitants of the north could not wait for a word expressive of dissent till the establishment of those nations and languages; and adds, that we need not be inquisitive nor doubtful concerning the origin and signification of *not* and *no;* since we find that, in the Danish *nodig*, in the Swedish *nodig*, and in the Dutch, *noode, node*, and *no*, mean averse, unwilling. So that when it is asked whether a man be brave, if the answer be *no*, it is a declaration that he who makes it is averse from or unwilling to admit that proposition.

Most writers on grammar have mentioned a species of adverbs, which they call adverbs of interrogation, such as *where, whence, whither, how*, &c. But the truth is, that there is no part of speech which, of itself, denotes interrogation. A question is never asked otherwise than by abbreviation, by a single word, whether that word be a noun, a pronoun, a verb, or an adverb. The word *where* is equivalent to in what place; *whence*, to from what place; and *how*, to in what manner, &c. In these phrases, *in* what place, *from* what place, and *in* what manner, the only word that can be supposed to have the force of an interrogative, is *what*, which is resolvable into *that which*. But we have already explained, under the head of Pronouns, the principles upon which the relative is made to denote interrogation; and the same reasoning will account for the adverbs *where, whence, whither, how*, &c. being employed as interrogatives. When we say, "Where were you yesterday? whence have you come? whither are you going? how do you perform your journey?" we merely use so many abbreviations for the following sentences: "Tell us, or describe to us, *the place where* (or in which) you were yesterday; *the place whence* (or from which) you have come; *the place to which* you are going; *the manner in which* you perform your journey? And so much for adverbs. We now proceed to those parts of speech which are usually called prepositions and conjunctions, and of which the use is to connect the other words of a sentence, and to combine two or more simple sentences into one compound sentence.

VI.—*Of Prepositions, Conjunctions, and Interjections.*

It has been observed, that a man whilst awake is conscious of a continued train of perceptions and ideas passing in his mind, which depends little upon his own will; that he cannot to the train add a new idea; and that he can but very seldom break its connection. To the slightest reflection these truths must be apparent. Our first ideas are those which we derive from external objects making impressions on the senses; but all the external objects which fall under our observation are linked together in such a manner as indicates them to be parts of one great and regular system. When we take a view of the things by which we are surrounded, and which are the archetypes of our ideas, their inherent qualities are not more remarkable than the various relations by which they are connected. Cause and effect, contiguity in time or place, high and low, prior and posterior, resemblance and contrariety, with a thousand other relations, connect things together without end. There is not a single thing which appears solitary and altogether devoid of connection. The only difference is, that some are intimately and some slightly connected, some nearly and some at a distance. That the relations by which external objects are thus linked together must have great influence in directing the train of human thought, so that not one perception or idea can appear to the mind wholly unconnected with all other perceptions or ideas, will be admitted by every man who believes that his senses and intellect represent things as they are.

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[1] The same resolution might probably be made of the Greek and Latin adverbs, were we as intimately acquainted with the sources of those tongues as Mr Horne Tooke is with the sources of the English language. "Many of the Latin adverbs," says Ruddiman, "are nothing else but adjective nouns or pronouns, having the preposition and substantive understood; as *quo, eo, eodem*, for *ad quæ, ea, eadem* (*loca*) or *cui, ei, eidem* (*loco*); for of old these datives ended in *o*. Thus, *qua, hac, illac*, &c. are plainly adjectives in the ablative singular feminine, the word *via*, "a way," and the preposition *in*, being understood. Many of them are compounds; as, *quomodo*, i. e. *quo modo; quemadmodum*, i. e. *ad quem modum; quamobrem*, i. e. *ob quam rem; quare*, i. e. (*pro*) *qua re; quorsum*, i. e. *versus quem* (*locum*); *scilicet*, i. e. *scire licet; videlicet*, i. e. *videre licet; ilicet*, i. e. *ire licet; illico*, i. e. *in loco; magnopere*, i. e. *magno opere; nimirum*, i. e. *ni* (*est*) *mirum; hodie*, i. e. *hoc die; postridie*, i. e. *postero die; pridie*, i. e. *præ die*. *Perfecto, certe, sane, male, bene, plane*, are obviously adjectives. *Forte* is the ablative of *fors;* and if we had leisure to pursue the subject, and were masters of all the languages from which the Latin is derived, we doubt not but we should be able to resolve every adverb into a substantive or adjective.

This being the case, it is necessary, if the purpose of language be to communicate thought, that the speaker be furnished with words, not only to express the ideas of substances and attributes which he may have in his mind, but also to indicate the order in which he views them, and to point out the various relations by which they are connected. In many instances all this may be done by the parts of speech which we have already considered. The closest connection which we can conceive, is that which subsists between a substance and its qualities; and in every language with which we are acquainted, that connection is indicated by the immediate coalescence of the adjective with the substantive; as we say, *a good man*, *a learned man; vir bonus, vir doctus.* Again, there is a connection equally intimate, though not so permanent, between an agent and his action; for the action is really an attribute of the agent; and therefore we say, the *boy reads*, the *man writes;* the noun coalescing with the verb so naturally, that no other word is requisite to unite them. Moreover, an action and that which is acted upon being contiguous in nature, and mutually affecting each other, the words which denote them should in language be mutually attractive, and capable of coalescing without external aid; as, he *reads a book*, he *builds a house*, he *breaks a stone.* Further, because an attribute and its modifications are inseparably united, an adjective or a verb is naturally connected with the adverb which illustrates or modifies its signification; and therefore, when we say, he *walks slowly*, he is *prudently brave*, it is plain that no other word is necessary to promote the coalescence of the attributes "walking" and "bravery" with their modifications of "slowness" and "prudence." The agreement between the terms of any proposition which constitutes truth is absolutely perfect; but as either of the terms may agree with many other things besides its correlate, some word is requisite in every proposition to connect the particular predicate with the particular subject; and that is the office of the simple verb *to be;* as, the three angles of every triangle *are* equal to two right angles.

Thus we see that many of the relations subsisting between our ideas may be clearly expressed by means of nouns, adjectives, verbs, and adverbs; and in those languages of which the nouns have cases, there is perhaps no relation of much importance which might not be thus pointed out, without being under the necessity of employing the aid of any additional part of speech. In English, however, the case is otherwise; for were we to say, "He rode Edinburgh, went the parliament-house, walked his counsel the court met," we should speak unintelligibly; as in these expressions there is either a total want of connection, or such a connection as produces falsehood and nonsense. In order to give meaning to the passage, the several gaps must be filled up by words significant of the various relations by which the different ideas are connected in the mind; as, "He rode *to* Edinburgh, went *to* the parliament-house, *and* walked *with* his counsel *till* the court met." Of these *connecting* words, *to* and *with* are called *prepositions, and* and *till* are usually called *conjunctions.* Although these prepositions and conjunctions are not so absolutely necessary in Greek and Latin as they are in English, yet as there is no language wholly without them, nor any language in which it is not of importance to understand their force, they well deserve a place in universal grammar.

The sole use of conjunctions and prepositions in language is to connect either sentences or other words; but the theory of these connectives themselves has certainly never been understood, unless Mr Horne Tooke has at last hit upon the truth. Mr Harris writes about them and about them, quoting passages from Greek and Latin authors, and produces at last no information. His definitions of both, as parts of speech void of signification, are highly absurd; and even the principal distinction which he makes between them seems not to be well founded. Prepositions and conjunctions denote the relations subsisting between the ideas expressed by those words or sentences which they serve to connect; and as relations are contemplated by the mind as well as positive ideas themselves, the words which denote these relations cannot be insignificant. The essential difference between the conjunction and preposition, according to the same author, consists in this, that the former connects sentences, and the latter words; but the fact is often otherwise. An obvious example occurs where the conjunction *and* connects not sentences but words. "A man of wisdom *and* virtue is a perfect character." Here it is not meant to be asserted, "that the man of *wisdom* is a perfect character, *and* that the man of *virtue* is a perfect character;" for both these assertions would be false. This sentence therefore (and many such will occur) is not resolvable into two; whence it follows, that the conjunction *and* does not always connect sentences; and the same is frequently the case with other conjunctions.

Mr Horne Tooke's idea of prepositions and conjunctions is, that they do not form distinct classes of words, but are merely abbreviations of nouns and verbs; and, with respect to the English language, he has been remarkably successful in proving his position. But though such be undeniably the case in English, it would be rash to conclude *a priori* that it is so in all other tongues. To establish this general conclusion would require a long and tedious deduction in each particular language; and how much language, leisure, industry, and acuteness, such an undertaking would require, even in one tongue, it is not easy to determine. In the languages with which we are best acquainted, many conjunctions, and most prepositions, have the appearance at least of original words; and though this most acute grammarian, from his knowledge of the northern tongues, has been able to trace the most important of those in English to very plausible sources, the same thing would be difficult in other languages of which the sources are obscure, and absolutely impossible in those of which they are wholly unknown. It is, however, a strong presumption in favour of his opinion, that grammarians have never been able to assign any general characteristic of those species of words, which, did they constitute distinct parts of speech, one would think could not have so long remained undiscovered. It is a further presumption in his favour, that many words in Greek and Latin, as well as in English, which have been called conjunctions, are obviously resolvable upon his principles, and indeed discover their meaning and origin upon mere inspection. We shall therefore content ourselves with retailing the common doctrine respecting these parts of speech so far as it is intelligible, subjoining at the bottom of the page the analysis given by Mr Horne Tooke, of the most important English conjunctions and prepositions; and requesting our readers, who would understand the subject, to attend more to the relations between their various ideas, than to the frivolous distinctions which, in compliance with custom, we are compelled to lay before them. We shall treat first of the *conjunction.*

1. *Of Conjunctions.*

A conjunction is a part of speech of which, as its name indicates, the use is to connect either two or more words in a sentence, or to make of two simple sentences one compound sentence. It is usually said that conjunctions never connect words, but sentences only, and that this is the circumstance which distinguishes them from *prepositions.* We have already given one example which proves this distinction to be ill founded; we shall now give from Mr Horne Tooke one or two more, which will place its absurdity in a still clearer light: Two *and* two are four; John *and* Jane are a handsome couple; AB *and* BC *and* CA form a triangle. Are *two four?* Is *John* a *couple* and *Jane* a *couple?* Does *one straight line* form a *triangle?* It appears indeed that *and* may connect any two things which can be connected, as it signifies addition.[1]

Conjunctions connecting sentences sometimes connect their meaning, and sometimes not. For example, let us take these two sentences, "Rome was enslaved, Cæsar was ambitious," and connect them together by the conjunction *because;* "Rome was enslaved *because* Cæsar was ambitious." Here the meanings, as well as the sentences, appear to be connected by that natural relation which subsists between an effect and its cause; for the enslaving of Rome was the effect of Cæsar's ambition. That particular relation therefore is that which is denoted by the conjunction *because*,[2] which would be improperly used to connect two sentences between which the relation of an effect to its cause exists not. But if it be said, "manners must be reformed, *or* liberty will be lost;" here the conjunction *or*, though it joins the sentences, yet as to their meaning is a perfect disjunctive. Between the reformation of manners and the loss of liberty there is certainly a natural relation; but it is not the relation of contiguity or similitude, or of cause and effect, but of contrariety. The relation of contrariety therefore is the signification of the word *or*.[3] And thus it appears, that though all conjunctions may combine sentences, yet, with respect to the sense, some are *conjunctive* and others *disjunctive.*

Those conjunctions which conjoin both sentences and their meanings are either *copulatives* or *continuatives.* The principal copulative in English is *and*, which we have already considered. The continuatives are much more numerous; *if, an, because, therefore, wherefore, hence,* &c. The difference between them is this: The copulative does no more than barely couple words or sentences, and is therefore applicable to all subjects of which the natures are not incompatible.[4] The relation which it denotes is that of juxtaposition, or of one thing added to another. Continuatives, on the contrary, by a more intimate connection, consolidate sentences into one continuous whole; and are therefore applicable only to subjects which have an essential relation to each other, such as that of an effect to its cause, or of a cause to its effect. For example, it is no way improper to say, "Lysippus was a statuary, *and* Priscian a grammarian; the sun shineth, *and* the sky is clear;" because these are things that can co-exist, and yet imply no absurdity. But it would be absurd to say, "Lysippus was a statuary *because* Priscian was a grammarian;" though not to say, "the sun shineth *because* the sky is clear." With respect to the first, the reason is, that the word *because* denotes the relation which an effect bears to its cause; but the skill of Priscian in grammar could not possibly be the cause of Lysippus's skill in statuary; the coincidence between the skill of the one and that of the other, in arts so very different, was merely accidental. With respect to the shining of the sun and the clearness of the sky, the case is widely different; for the clearness of the sky is the *cause* of the sun's shining, at least so as to be seen by us.

As to the continuatives, they are either *suppositive*, such as *if, an;* or *positive*, such as *because, therefore, as,* &c. Take examples of each: "You will live happily *if* you live honestly; you live happily *because* you live honestly; you live honestly, *therefore* you live happily." The difference between these continuatives is this: The suppositives denote connection, but do not assert actual existence; the positives imply both the one and the other.[5]

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[1] *And* is a Saxon word, being, according to Mr Horne Tooke, an abbreviation of ANAD, the imperative of the verb ANANAD, *to add to* or *heap up.* So that when we say *two* AND *two are four*, we only declare that *two* ADDED TO *two are four.*

[2] *Because* is compounded of the Saxon BE, *by*, and *cause;* and by some of our most ancient authors it was written BY CAUSE. "*Rome was enslaved* BECAUSE *Cæsar was ambitious*," is therefore equivalent to, "*Rome was enslaved by the cause* CÆSAR WAS AMBITIOUS;" taking the phrase, "Cæsar was ambitious," as an abstract noun in concord with the other noun cause.

[3] *Or* seems to be a mere contraction of the Saxon ODER, which signifies *other*, that is, something different and often contrary. So that the conjunction *or* must always denote diversity, and very often contrariety.

[4] As *day* and *night*, *heat* and *cold;* for we cannot say of the same portion of time, *it is day* AND *it is night;* or of the same body, it is both *hot* AND *cold.*

[5] The reason of all this will be apparent from the analysis given by Mr Horne Tooke of those words which we have called suppositive conjunctions. *If* and *an* may be used mutually and indifferently to supply each other's place; for they are both verbs, and of the same import. *If* is merely the imperative of the Gothic and Anglo-Saxon verb GIFAN, *to give;* and in those languages, as well as in the English formerly, this supposed conjunction was pronounced and written as the common imperative GIF. Thus,

My largesse
Hath lotted her to be your brother's mistresse,
Gif shee can be reclaimed; *gif* not, his prey. *Sad Shepherd.*

Gawin Douglass almost always uses *gif* for *if*, as the common people in some counties of Scotland do even at this day; and it is obvious, that our *if* has always the signification of the English imperative *give*, and no other. So that the resolution of the construction in the sentence, "IF *you live honestly you will live happily*," is simply this, "GIVE *you live honestly* (taking *you live honestly* as an abstract noun) *you will live happily.*" Your living *happily* is declared to depend upon your living *honestly* as the *condition;* but *give that*, and your happiness is positively asserted. In like manner may such sentences be resolved as,

I wonder he can move! that he's not fixed!
IF THAT his feelings be the same with mine.

Thus, "His feelings be the same with mine, *give that*, I wonder he can move," &c. And here we cannot forbear giving our assent to the truth of Mr Horne Tooke's observation, that when the datum upon which any conclusion depends is a sentence, the article *that*, if not expressed, may always be inserted. We do not, however, think the insertion at all times absolutely necessary to complete the syntax; for active verbs govern whole sentences and clauses of sentences as well as substantive nouns. Instances of this occur so frequently in the Latin classics, that they can have escaped no man's notice who has ever read Horace or Virgil with attention. We agree likewise with this most ingenious author, that where the datum is not a sentence, but some noun governed by the verb *if* or *give*, the article *that* can never be inserted. For example, if we be asked how the weather will dispose of us to-morrow, we cannot say: "*If that* fair, it will send us abroad; *if that* foul, it will keep us at home;" but "*if* fair, it will send us abroad," &c. The reason is obvious. The verb in this case directly governs the noun; and the resolved construction is, "*give* fair weather, it will send us abroad; *give* foul weather, it will keep us at home."

An, the other suppositive conjunction mentioned, is nothing else than the imperative of the Anglo-Saxon verb ANAN, which likewise means *to give* or *to grant.* As, "*An* you had an eye behind you, you might see more detraction at your heels than fortune before you;" that is, "*Grant* you had an eye behind you, you might see," &c. This account of the two conditional conjunctions in English is so rational and satisfactory, that we are strongly inclined to believe that all those words which are so called, are in all languages to be accounted for in the same manner. Not indeed that they must all mean precisely *to give* or *grant*, but some word equivalent; such as, *be it, suppose, allow, permit;* which meaning is to be sought for in the particular etymology of each respective language.

The positives above mentioned are either *causal*, such as *because, since, as*, &c.;[1] or *collective*, such as *therefore, wherefore*, &c. The difference between them is this: The causals subjoin causes to effects; as, "the sun is in eclipse, *because* the moon intervenes:" the collectives subjoin effects to causes; as, "the moon intervenes, *therefore*[2] the sun is in eclipse." We therefore use causals in those instances where, the effect being conspicuous, we seek for its cause; and collectives, in demonstration and science, properly so called, where the cause being first known, by its help we discern effects.

As to causal conjunctions, we may further observe, that there is not one of the four species of causes which they are not capable of denoting. For example, the *material* cause; "The trumpet sounds *because* it is made of metal." The *formal;* "The trumpet sounds *because* it is long and hollow." The *efficient;* "The trumpet sounds *because* an artist blows it." The *final;* "The trumpet sounds *that* it may raise our courage." It is worth observing, that the first three causes are expressed by the strongest affirmation; because if the effect actually be, these must be also. But this is not the case with respect to the last, which is only affirmed as a thing that may happen. The reason is obvious; for whatever may be the end which set the artist first to work, that end it may still be beyond his power to obtain; as, like all other contingents, it may either happen or not. Hence also it is connected by a particular conjunction, *that*,[3] absolutely confined to this cause.

We come now to the *disjunctive conjunctions*, a species of words which bear this contradictory name, because whilst they *conjoin* the sentences, they *disjoin* the sense; or, to speak a language more intelligible, they denote relations of *diversity* or *opposition*.

That there should be such words, whether called conjunctions or not, is extremely natural. For as there is a principle of *union* diffused throughout all things, by which *this whole* is kept together and preserved from dissipation; so is there in like manner a principle of *diversity* diffused throughout all, the source of distinction, of number, and of order. Now it is to express in some degree the modifications of this diversity, that those words called *disjunctive conjunctions* are employed.

Of these disjunctives some are *simple* and some *adversative:* Simple, as when we say, "*either* it is day or it is night;" adversative, as when we say, "it is not day, *but* it is night." The difference between these is, that the simple express nothing more than a relation of *diversity;* the adversative express a relation not barely of diversity, but also of *opposition*. Add to this, that the adversatives are *definite*, the simple *indefinite*. Thus, when we say, "the number three is not an even number, *but*[4] an odd," we not only disjoin two opposite attributes, but we definitely af-

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[1] Of the causal conjunctions mentioned in the text, *because* has been already considered; and some account must be given of the two words *since* and *as*. The former of these, according to Mr Horne Tooke, is a very corrupt abbreviation, confounding together different words and different combinations of words. To us it appears to be compounded of SEAND, *seeing*, and ES, *that* or *it;* or of SIN, *seen*, and ES. *Seand* and *sin* are the present and past participles of the Anglo-Saxon verb SEON, *to see.* In modern English *since* is used four ways; two as a preposition affecting words, and two as a conjunction affecting sentences. When used as a preposition, it has always the signification of the past participle SEEN joined to THENCE (that is, *seen and thenceforward*), or else the signification of the past participle *seen* only. When used as a conjunction, it has sometimes the signification of the present participle *seeing*, or *seeing that;* and sometimes the signification of the past participle *seen*, or *seen that*. We shall give examples of all these significations. 1*st*, As a preposition signifying SEEN *and thenceforward:* "A more amiable sovereign than George III. has not swayed the English sceptre SINCE *the conquest*." That is, "*The conquest seen* (or at the completion of the sight of the conquest), and thenceforward, a more amiable sovereign than George III. has not swayed the English sceptre." *Since*, taken in this sense, seems rather to be a corruption of *siththan* or *sithence*, than a compound of *seand* and *es*. 2*dly*, As a preposition signifying SEEN simply: "Did George III. reign *before* or SINCE that example?" 3*dly*, As a conjunction, *since* means *seeing that:* as, "If I should labour for any other satisfaction but that of my own mind, it would be an effect of frenzy in me, not of hope; SINCE (or *seeing that*) it is not truth, but opinion, that can travel through the world without a passport." 4*thly*, It means *seen that* or *that seen;* as, "*Since* death in the end takes from all whatsoever fortune or force takes from any one, it were a foolish madness in the shipwreck of worldly things, when all sinks but the sorrow, to save that;" that is, "Death in the end takes from all whatsoever fortune or force takes from any one; *that seen*, it were a foolish madness," &c.

As, the other *causal* conjunction mentioned in the text, is an article meaning always *it*, or *that*, or *which*. Take the following example:

She glides away under the foamy seas
As swift AS darts or feather'd arrows fly.

That is, "She glides away (with) *that* swiftness (with) *which* darts or feathered arrows fly." In German, where *as* still retains its original signification and use, it is written *es*. *So* is another conjunction of the same import with *as*, being evidently the Gothic article *sa* or *so*, which signifies *it* or *that*.

[2] As Mr Harris has called *therefore, wherefore*, &c. collective conjunctions, we have retained the denomination, though perhaps a more proper one might be found. It is indeed of little consequence what name any class of words be called, provided the import of the words themselves be understood. *Wherefore* and *therefore* evidently denote the relation of a cause to its effects. They are compounds of the Saxon words HWÆR and THÆR with FOR or VOOR; and signify *for which, for those*, or *for that*. It is worthy of remark, that in some parts of Scotland the common people even at this day use *this* for *these*.

[3] We have already considered the word *that*, and seen that it is never a conjunction, but uniformly a definite article. "The trumpet sounds (for) *that* it may raise our courage;" taking the clause "it may raise our courage" as an abstract noun in concord with *that* and governed by *for*. Or the sentence may be resolved thus: "The trumpet may raise our courage (for) that (purpose) it sounds."

[4] Mr Horne Tooke has favoured us with some ingenious remarks on the two different derivations of the word BUT, when used in the two acceptations which are usually annexed to it, viz. that which it bears in the beginning of a sentence, and that which it has in the middle. He has given it as his opinion, that this word, when employed in the former way, is corruptly put for BOT, the imperative of the Saxon verb BOTAN, *to boot, to superadd, to supply*, &c. and that when used in the latter it is a contraction of BE-UTAN, the imperative of BEON-UTAN, *to be out.* Our ancient writers made the proper distinction between the orthography of the one word and that of the other. Gawin Douglass, in particular, although he frequently confounds the two words, and uses them improperly, does yet abound with many instances of their proper use; and so contrasted, as to awaken, says our author, the most inattentive reader. Of the many examples quoted by him, we shall content ourselves with the two following:

BOT thy worke shall endure in laude and glorie,
BUT spot or fault condigne eterne memorie.

BOT gif the fates, BUT pleid,
At my pleasure sufferit me life to leid.

If this derivation of the word BUT from BOTAN, *to superadd*, be just, the sentence in the text, "the number three is not an even number, BUT an odd," will be equivalent to "the number three is not an even number, superadd (it is) an odd number;" and if so, the opposition is not marked (at least directly) by the word *but*, but by the adjectives *even* and *odd*, which denote attributes in their own nature opposite. It is only when BUT has this sense that it answers to *sed* in Latin, or to *mais* in French. In the second line of the quotation from Gawin Douglass's Preface the word BUT is evidently a contraction of BE-UTAN, and has a sense very different from firm the one to belong to the subject, and deny the other. But when we say, "the number of the stars is *either*[1] even *or* odd," though we assert one attribute to be, and the other not to be, yet the alternative is notwithstanding left indefinite.

As to adversative disjunctives, it has been already said, after Mr Harris, that they imply *opposition;* but the truth seems to be, that they only unite in the same sentence words or phrases of opposite meanings. Now it is obvious, that opposite attributes cannot belong to the same subject; as when we say, "Nereus was beautiful," we cannot *superadd* to this sentence that he was ugly; we cannot say, "he was beautiful *but* ugly." When there is opposition, it must be either of the same attribute in different subjects; as when we say, "Brutus was a patriot, *but* Cæsar was not;" or of different attributes in the same subject, as when we say, "Gorgias was a sophist, *but* not a philosopher;" or of different attributes in different subjects, as when we say, "Plato was a philosopher, *but* Hippias was a sophist." The conjunctions used for all these purposes have been called absolute adversatives, we think improperly, as the opposition is not marked by the conjunctions, but by the words or sentences which they serve to connect. Mr Locke, speaking of the word *but*, says, that "it sometimes intimates a stop of the mind, in the course it was going, before it came to the end of it;" to which Mr Horne Tooke replies with truth, that *but* itself is the farthest of any word in the language from intimating a stop. On the contrary, it always intimates something to follow; insomuch that when any man in discourse finishes his words with *but*, instead of supposing him to have stopped, we always ask, *but* what?

Besides the adversatives already mentioned, there are two other species, of which the most important are *unless* and *although*. For example, "Troy will be taken, *unless* the palladium be preserved; Troy will be taken, *although* Hector defend it." The nature of these adversatives may thus be explained. As every event is naturally allied to its cause, so by parity of reason it is opposed to its preventive; and as every cause is either adequate or inadequate (inadequate when it endeavours without being effectual), so in like manner is every preventive. Now adequate preventives are expressed by such adversatives as *unless:* "Troy will be taken, *unless* the palladium be preserved;" that is, this alone is sufficient to prevent it. The inadequate are expressed by such adversatives as *although:* "Troy will be taken, *although* Hector defend it;" that is, Hector's defence will prove ineffectual. These may be called adversatives *adequate* and *inadequate*.

Such is the doctrine of Mr Harris, which, although we can discover in it no determinate meaning, we have ventured with others to retail, from respect to our readers, who may be more perspicacious than ourselves. The author was a man of great learning, and the subject, as he has treated it, appears to be intricate. But whatever sense or nonsense there may be in what he says of causes and preventives, adequate and inadequate, we have no hesitation in affirming that he has totally mistaken the import of the words *unless* and *although*. From these being called both preventives, the one adequate and the other inadequate, an unwary reader might be led to infer that they denote the same idea or the same relation; and that the whole difference between them is, that the expression of the one is more forcible than that of the other. Nothing, however, can be further than this from the truth. The meaning of *unless* is directly opposite to that of *although*. *Unless*[2] and *though* are both verbs in the imperative mode; the former signifying *take away* or *dismiss*, the latter *allow*, *permit*, *grant*, *yield*, *assent*. This being the case, "Troy will be taken *unless* the palladium be preserved," is a sentence equivalent to "*Remove* the palladium be preserved (taking *the palladium be preserved* as an abstract noun, *the preservation of the palladium*) Troy will be taken." Again, "Troy will be taken, *although* Hector defend it," is the same as "Troy will be taken *allow* Hector (to) defend it." The idea, therefore, expressed by *unless* is that of the *removal* of one thing to make way for another; the idea expressed by *although*[3] is that of *allow-*

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that of BOT in the preceding line. The meaning of the couplet is, "SUPERADD (to something said or supposed to be said before) thy worke shall endure in laude and glorie, BE OUT (id est, *without*) spot or fault." In the following passage from Donne, the word BUT, although written in the same manner, is used in both its meanings: "You must answer that she was brought very near the fire, and as good as thrown in; or else, that she was provoked to it by a divine inspiration. BUT that another divine inspiration moved the beholders to believe that she did therein a noble act, this act of her's might have been calumniated." That is, "You must answer that she was brought very near the fire," &c. "Superadd (to that answer) BE OUT (or *unless* or *without*, for, as will be seen by and by, all those words are of the same import) that another divine inspiration moved," &c. To these remarks and examples it may be worth while to add, that even now BUT is often used by the illiterate Scotch for WITHOUT; as nothing is more common than to hear a clown say, "He came from home *but* his breakfast."

Having mentioned *without* as a word of the same import with *but* when distinguished from *bot*, it may not be improper to consider that word here; for though in modern English it is entirely confined to the office of a preposition, it was formerly used indifferently either as a preposition or a conjunction. *Without*, then, is nothing but the imperative WYRTHAN-UTAN, from the Anglo-Saxon and Gothic verb WEORTHAN, WITHAN, which in the Anglo-Saxon language is incorporated with the verb BEON, *esse*. According to this derivation, which is Mr Horne Tooke's, the word *without*, whether called conjunction or preposition, is the same as *be out;* and such will be its import, should it after all be nothing more than a compound of *with*, which signifies to join, and sometimes to be, and *ute*, out.

[1] *Either* is nothing more than a distributive pronoun which every body understands, and *or* we have already explained.

[2] So low down as in the reign of Queen Elizabeth, says Mr Horne Tooke, this conjunction was sometimes written *oneles* or *onelesse;* but more anciently it was written *onles* and sometimes *onlesse*. Thus, in the trial of Sir John Oldcastle in 1413, "It was not impossible for them to make whole Christes cote without seme, *onlesse* certeyn great men were brought out of the way." So, in "The image of governance," by Sir T. Elliot, 1451, "Men do fere to approache unto their sovereigne Lord *oneles* they be called." So again, in "A necessary doctrine and erudition for any Christian man, set furthe by the king's majestie of England," 1543, "*Onles* ye believe, ye shall not understande." "No man shall be crowned, *onles* he lawfully fight." "The soul waxeth feeble, *onlesse* the same be cherished." "It cannot begynne, *onelesse* by the grace of God." Now ONLES is the imperative of the Anglo-Saxon verb ONLESAN, *to dismiss* or *remove*.

LES, the imperative of LESAN, which has the same meaning as ONLESAN, is likewise used sometimes by old writers instead of *unless*. Instances might be given in abundance from Gawin Douglass and Ben Jonson; but perhaps it may be of more importance to remark, that it is this same imperative LES which, placed at the end of nouns, and coalescing with them, has given to our language such adjectives as *hopeless*, *restless*, *deathless*, *motionless*, &c. that is, *dismiss* hope, rest, death, motion, &c.

Mr Horne Tooke observes, that all the languages which have a conjunction corresponding to *less* or *unless*, as well as the manner in which the place of these words is supplied in the languages which have not a conjunction correspondent to them, strongly justify his derivation which we have adopted. The Greek *ειμη*, the Latin *nisi*, the Italian *se non*, the Spanish *sino*, the French *si non*, all mean *be it not*. And in the same manner do we sometimes supply its place in English by *but*, *without*, *be it not*, *but if*, &c. It may be proper just to add, that, according to the same author, the conjunction *lest* is a contraction of *lesed*, the past participle of LESEN; and that *lest* with the article *that*, either expressed or understood, means no more than *hoc dimisso* or *quo dimisso*.

[3] *Although* is compounded of *al* or *all*, and *tho'*, *though*, *that*, or, as the vulgar more purely pronounce it, *thaf*, *thauf*, and *thof*. Now

Conjunctions.

ing one thing to *co-exist* with another, with which it is *apparently* incompatible.

Before we take leave of this subject, we might treat, as others have treated, of adverbial conjunctions, and conjunctions of various other denominations.[1] But of multiplying subdivisions there is no end; and systems in which they abound convey for the most part no information. The nature of conjunctions can be thoroughly understood only by tracing each to its original in some parent or cognate tongue; and when that shall be done in other languages with as much success as it has been done by Mr Horne Tooke in English, then, and not till then, may we hope to see a rational, comprehensive, and consistent theory of this part of speech. Then too shall we get rid of all that farrago of useless distinctions into conjunctive, adjunctive, disjunctive, subjunctive, copulative, continuative, subcontinuative, positive, suppositive, causal, collective, preventive, adequate and inadequate, adversative, conditional, illative, and the like, which explain nothing, and which serve only to veil ignorance and perplex sagacity.

That Mr Horne Tooke's principles will apply exactly to the conjunctions of every language both dead and living, is what our limited knowledge of these languages does not authorize us positively to affirm. It is, however, a strong presumption in favour of his opinion, that illiterate savages, the first cultivators of language, are little likely to have sent out their faculties in quest of words to denote the abstract relations subsisting among their ideas, when we have such evidence as his book affords, that the names of the most common substances and qualities could answer that and every other purpose, which in the ordinary intercourse of life can be answered by the faculty of speech. It is a further presumption in his favour, that in the rudest languages there are few if any conjunctions; and that even in others which are the most highly polished, such as Greek and Latin, as well as English, many of those words which have been called conjunctions are obviously resolvable into other parts of speech. Thus αλλα, translated *but*, is evidently the neuter gender of either the nominative or accusative plural of αλλος, *another;* and when used as a conjunction, it intimates that you are going to add something to what you have already said. *Cæterum* has the same meaning, and is nothing but και ἑτερον. Mais, *but*, in French, is the Latin *majus*; *ut*, *uti*, ὁτι, *quod*, is the relative pronoun. Of *quocirca*, *quia*, *præterea*, *antequam*, *quenquam*, *quemvis*, *quantumvis*, *quamlibet*, &c. the resolution is too obvious to require being mentioned. Where such resolutions as these can be made, or when the conjunctions of any particular tongue can be traced to their origin in any other, there needs be no dispute about their true import; but when the case is otherwise, and the conjunction either appears to be an original word, or is derived from a source to which it cannot be traced, we would advise such of our readers as wish to speak or write correctly, to dismiss from their minds all consideration of copulatives, continuatives, causals, and disjunctives, with the rest of that jargon which we have already mentioned; and to inquire diligently in what manner and for what purpose the conjunction in question is used by the best writers, both ancient and modern, of the particular language which they are studying. This will indeed be found a work of labour; but it appears to us to be the only means left of discovering the precise relations which such conjunctions were intended to express; and, by consequence, of knowing what words or sentences they are fitted to connect, so as to produce a style at once accurate and perspicuous.

Prepositions.

2. *Of Prepositions.*

By Mr Harris and his followers, a *preposition* is defined to be a part of speech devoid itself of signification, but so formed as to unite two words that are significant, and that refuse to coalesce or unite of themselves. We have already expressed our opinion of that theory which holds certain words to be devoid of signification; but its absurdity, in the present instance, is more than ever glaring. Concerning the number of *prepositions*, it is well known that hitherto authors have never been agreed. The ancient Greek grammarians admitted only eighteen, the ancient Latin grammarians above fifty; though the moderns, Sanctius, Scioppius, Perizonius, Vossius, and Ruddiman, have endeavoured to lessen the number without fixing it. Bishop

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thaf or *thauf* is evidently the imperative THAF or THAFIG of the verb THAFIAN or THAFIGAN, *to allow*, *permit*, *grant*, *yield*, *assent*; and THAFIG becomes *thah*, *though*, *thoug*, and *thoch*, as Gawin Douglass and other Scottish authors write it, by a transition of the same sort, and at least as easy as that by which HAFUC becomes *hawk*. It is no small confirmation of this etymology, that anciently they often used *all be*, *albeit*, *all had*, *all were*, *all give*, instead of ALTHOUGH; and that as the Latin SI (*if*) means *be it*, and NISI and SINE, *unless* and *without*, mean *be not*, so ETSI, *although*, means *and be it*.

[1] In a work of this kind, which professes to treat of universal grammar, it would be impertinent to waste our own and our reader's time on a minute analysis of each conjunction which may occur in any one particular language. We shall therefore pursue the subject no further; but shall subjoin Mr Horne Tooke's table of the English conjunctions, referring those who are desirous of fuller satisfaction to his ingenious work entitled *The Diversions of Purley.*

If	Are the Imperatives	Gif	Of their respective verbs	Gif	To give.
An		An		Anan	To grant.
Unless		Onles		Onlesan	To dismiss.
Eke		Eac		Eakan	To add.
Yet		Get		Getan	To get.
Still		Stell		Stellan	To put.
Else		Ales		Alesan	To diminish.
Though or Tho'		Thafig or Thaf		Thafigan or Thafian	To allow.
But		Bot		Botan	To boot, or superadd.
But		Be-utan		Beon-utan	To be out.
Without		Wyrth-utan		Wyrthan-utan	To be out.
And		An ad		Anan ad	Dare congeriem.

Lest is the participle LESED, of LESAN, to dismiss.

Since	Siththan Syne Seand-es Siththe or Sin-es	is the participle of Seon, to see.

That is the article or pronoun THAT.

As is ES, a German article, meaning *it*, *that*, or *which*. And

So is SA or SO, a Gothic article of the same import with AS.

Wilkins thinks that thirty-six are sufficient; and Girard says that the French language has done the business effectually with thirty-two. But if prepositions be words devoid of signification, why should there be disputes respecting their numbers? or why in any language should there be more than *one* preposition, since a single unmeaning mark of connection would certainly answer the purpose as well as a thousand? The cipher, which has no value of itself, and only serves, if we may use the language of grammarians, to connote and consignify, and to change the value of figures, is not several and various, but uniformly one and the same. That "the preposition is so formed as to unite two words which refuse to coalesce or unite of themselves," is indeed true; and this union it effects, not by having no signification of its own, but by signifying the relation by which the things expressed by the *united* words are connected in nature. Prepositions are to be accounted for in much the same manner as the cases of nouns. The necessity of this species of words, or of some equivalent invention, follows from the impossibility of having in language a distinct complex term for each distinct collection of ideas which we may have occasion to put together in discourse. The addition or subtraction of any one idea to or from a collection of ideas, makes it a different collection; and if, after either of these operations, it were to be expressed by the same word as before, nothing could ensue but misrepresentation and falsehood. Now, to use in language a different and distinct complex term for each different and distinct collection of ideas, is equally impossible as to use a distinct particular term for each particular and individual idea. To supply, therefore, the place of the complex terms which are wanting in a language, are the cases of nouns and prepositions employed; by the aid of which, complex and general terms are prevented from being infinite or too numerous, and are used only for those collections of ideas which we have most frequent occasion to mention in discourse. By means of prepositions this end is obtained in the most simple manner. For, having occasion to mention a collection of ideas, for which there is no single complex term in the language, we either take that complex term which includes the greatest number, though not all, of the ideas we would communicate; or else we take that complex term which includes all and the fewest ideas more than those we would communicate; and then, by the help of the preposition, we either make up the deficiency in the one case, or retrench the superfluity in the other. For instance, having occasion to mention a house of a particular description, and knowing that the term *house* is too general for our purpose, and that the building we have in view has no appropriate name, we say, perhaps, "a house *with* a party-wall," or a "house *without* a roof." In the first instance, the complex term *house* is deficient, and the preposition directs to add what is wanting; in the second instance, the complex term is redundant, as it denotes a complete house. The preposition, therefore, directs to take away what is superfluous.

Now, considering prepositions in this the most simple light, as serving only to limit or modify general terms, it is absolutely necessary that they should have meanings of their own; for otherwise, how could we, in the instance before us, make known by them our intention, whether of adding to, or retrenching from, the same general term *house*. If, to a disciple of Mr Harris, we should say, *a house* JOIN; he would reply *join what?* But he would not contend that *join* is an indeclinable word which has no meaning of its own, because he knows that it is the imperative of a verb, of which the other parts are still in use; and its own meaning is clear, though the sentence is not completed. If, instead of *join*, we should say to him, *a house* WITH, he would still ask the same question, *with what?* But if we were to discourse with him concerning the word *with*, he would probably tell us that *with* is a preposition, an indeclinable word, which is itself devoid of signification, but so formed as to unite two words that are significant. And yet it would be evident by his question, that he felt it had a meaning of its own; which is in reality the same as *join*.[1] Indeed, so far has always been plainly perceived, that *with* and *without* are directly opposite and contradictory; and it would puzzle the most acute philosopher to discover opposition and contradiction in two words where neither of them had any signification. Wilkins, therefore, has well expressed their meaning, where he says, that *with* is a preposition "relating to the notion of social, or circumstance of society *affirmed;* and that *without* is a preposition relating to the same notion of social, or circumstance of society *denied*."

But to denote the relations of adding and taking away, is not the only purpose for which prepositions are employed. They all indeed serve to modify some general term or general affirmation, but not precisely in the same way as *with* and *without*. It has already been observed, that words significant of those things which coincide in nature, coalesce with one another in syntax, without being beholden to any auxiliary tie. For instance, an adjective coalesces with its substantive, a verb with its nominative; a noun expressing an object acted upon, with a verb denoting action; and an adverb with its verb. Take the following example: "*The splendid sun genially warmeth the fertile earth.*" But suppose we were desirous to modify this affirmation by the addition of other substantives, *air*, for instance, and *beams;* how would these coincide with the other words of the sentence, or under what character could they be introduced? Not as nominatives or accusatives to the verb, for both these places are already filled; the nominative by the substance *sun*, which is certainly the agent in this operation; the accusative by the substance *earth*, which is as certainly the object acted upon. Not as qualities of the *sun* and *earth;* for qualities inhering in their substances can only be expressed by adjectives, and the words air and beams are both substantives. Here then we must have recourse to prepositions; but we can employ only such prepositions as point out the relations which the *air* and the *beams* have to the sun warming the earth. In English we should say, "the splendid sun *with* his beams genially warmeth *through* the air the fertile earth." The sentence, as before, remains entire and one; the substantives required are both introduced; and not a word which was there before is detruded from its proper place. The import of *with* we have already discovered; it directs to *unite* the beams to the sun, as *jointly* with him performing the operation. But the *air* has no other connection with this operation, than as the *medium* or *passage* between the *sun* and the *earth;* and therefore the preposition *through*[1] must denote that relation which subsists between an object in motion and the medium in which it moves; nor could a preposition of a different import have been employed, without altering the meaning of the whole sentence.[2]

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[1] This account of prepositions is taken from Mr Horne Tooke, who adds, that the only difference between the two words *with* and *join*, is, that the other parts of the Gothic and Anglo-Saxon verb WITHAN, *to join* (of which *with* is the imperative), have ceased to be employed in the language. As WITH means *join*, so the corresponding French preposition *avec* means, *and have that*, or *have that also.* But though *with*, as the imperative of WITHAN, means *join*, it has sometimes a very different signification. Mr Tyrwhit in his Glossary has truly observed, that *with* and *by* are often synonymous. They certainly are so; but then *with* seems to be an abbreviation of the imperative of WYRTHAN, *to be;* as *without* is of WYRTHAN-UTAN, *to be out.* This being the case, our two instances in the text will stand thus: *a house* JOIN *a party-wall; a house* BE-OUT *a roof.* Nor let any one be surprised that we make no difference between the conjunction *without* and the preposition *without.* The word is the same, whether it be employed to unite words or sentences. Prepositions were originally, and for a long time, classed with conjunctions; and when first separated from them, they were only distinguished by the name of prepositive conjunctions. They are generally used to unite words, but not always; for we may say indifferently, "I came after *his departure*," or "I came after *he departed*." By the greater part of grammarians indeed, *after*, when employed as in the first sentence, is classed with the prepositions; when employed as in the second, it is classed with the conjunctions. The word, however, is the same in both sentences; its meaning is the same, and its effect precisely the same. The only circumstance of discrimination is, that in the first example it is prefixed to a noun, "his departure;" in the second, it is prefixed to a nominative and a verb, "he departed." But even the nominative and the verb, thus applied, express no more than a specifying circumstance annexed to the other proposition, "I came;" and whenever they are rightly apprehended by the mind, they are stripped of their prepositionary form, and considered abstractedly under a new phasis, "his departure." Thus then the two sentences are synonymous in every respect, excepting the apparent grammatical nature of the words "his departure," and "he departed;" and even these are reduced to one grammatical form in the mind, whenever the import of the propositions is rightly apprehended. *Without*, and many other prepositions, especially in the learned languages, are used exactly as *after* is used in the two instances which we have given. Mr Horne Tooke quotes Lord Mansfield for saying, "It cannot be read *without* the attorney-general consents to it." This, in modern English, is not the common phraseology; but it offends not against any principle of grammar. The nominative and the verb are here, as in the former instance, considered as an abstract noun. "It cannot be read WITHOUT the consent of the attorney-general."

Mr Harris is of opinion that most, if not all, prepositions were originally formed to denote the relations of *place*. For this opinion we see not sufficient evidence. If indeed we could suppose the inventors or earliest improvers of language to have at all concerned themselves with relations as abstracted from the objects related, we must believe that those which first attracted their attention were the relations subsisting among themselves, and the various bodies with which they were surrounded. We must likewise agree with our author, that place is the grand relation which bodies or natural substances maintain at all times to one another; but we do not therefore think that it would attract the earliest notice of untaught barbarians. On the contrary, we are of opinion that mankind must have made very considerable progress in science before they attempted to abstract place from body; an attempt which, according to some of the most profound philosophers,[3] is not only difficult, but absolutely impracticable. But whatever be in this, the relations of cause and effect, of duration and motion, are in themselves as obvious, and as likely to arrest the attention and obtain names, as those of place. Amongst men totally illiterate they are evidently more so; for pain and pleasure would suggest some idea of cause and effect as matters of importance. There is, however, no probability that the inventors of any language had the least idea of abstract relations. They doubtless expressed complex conceptions by nouns and verbs, significant at once of the particular ideas and of the various relations by which they viewed those ideas as combined together in a complex conception. Afterwards, when men's minds became enlarged, and when, from the fluctuation inseparable from a living language, objects or ideas received new names, the old words, whether nouns or verbs, which were originally employed to express a particular complex conception, of which certain particular *relations* made a part, might be retained for the purpose of denoting those and all similar *relations;* and thus verbs and nouns would degenerate into particles bearing the names of prepositions and conjunctions. For instance, one Anglo-Saxon being desirous to communicate to another his own conception of a house with a party-wall, and having, we shall suppose, no such word in his tongue as a preposition, would naturally utter the word *house*, desiring his friend, at the same time, to add to that well-known sound another sound (uttering it) significant of the particular circumstance wanting to complete his complex conception, viz. a house *with* (that is *join*) a party-wall. The word *with*, as the imperative of a verb, denotes of course three ideas combined together, namely, a command or wish, an affirmation, and the idea of junction. But when the verb *withan* was dismissed from the English language, the imperative *with* was still retained; but losing its verbal and modal nature, it was thenceforth employed to denote only one of the three ideas for which it originally stood, viz. the idea of junction. And thus it is that verbs, and also nouns and adjectives, in passing from one language to another, may become prepositions[4] and conjunctions. Thus too it is that some of those prepositions come to denote the contiguous, and some the detached, relation of body. The contiguous, as when we say, "Caius walked *with* a staff;" that is, "Caius *join* a staff, walked;" "the statue stood *upon*[5] a pedestal;" that is, "the statue stood (the place of its standing) the *higher part* of a pedestal;" "the river ran

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[1] *Thorough*, *thourough*, *thorow*, *through*, or *thro'*, is no other, says Mr Horne Tooke, than the Gothic substantive DAURO, or the Teutonic substantive THURUH, and, like them, means *door*, *gate*, *passage*. So that the sentence in the text, resolved upon his principles, stands thus: "The splendid sun—*join* his beams—genially warmeth—PASSAGE *the air* (or, the air being the *passage* or *medium*)—the fertile earth." And in the same manner may we translate the preposition *through* in every instance where *through* is used in English, or its equivalent preposition in any language; as from the Latin and Italian word *porta*, in Spanish *puerta*, and in French *porte*, have come the Latin and Italian preposition *per*, the French *par*, and the Spanish *por*.

[2] If, for instance, we were to substitute *with* or *of* instead of *through*, we should in the one case alter the meaning, and in the other speak nonsense. "The sun warmeth *with* the air the fertile earth," is an affirmation that "the sun warmeth *both the air and the earth;*" whereas the original sentence affirmed nothing more than that "he warmeth the *earth*." "The sun warmeth *of* the air the fertile earth," is nonsense, as it makes the earth a *part*, or a *consequence*, of the air. So necessary is it that prepositions have a meaning, and that the meaning of each be attended to.

[3] Bishops Berkeley and Law, with Principal Campbell of Aberdeen. See *The Principles of Human Knowledge*, Law's *Notes* on King's *Origin of Evil*, and *The Philosophy of Rhetoric*.

[4] As the Italian substantive *casa*, a house, race, family, nation, &c. in passing to the French, becomes the preposition *chez*, to which there is not, so far as we know, a preposition of precisely the same import in any language. *Senza* or *senze*, in Italian, becomes *sans* in French, and means *absence*. Nor is it necessary that verbs and nouns should always pass from one language to another, in order to be converted into prepositions. The Greek preposition *χωρις* is evidently the corrupted imperative of *χωριζειν*, *to sever*, *to disjoin*, *to separate*. The Latin *sine* is *sit ne*, *be not*. The German *sonder* is the imperative of *sondern*, which has the same meaning as *χωριζειν*.

[5] *Up*, *upon*, *over*, *'bove*, *above*, have all, says Mr Horne Tooke, one common origin and signification. In the Anglo-Saxon, UFA, UFERA, UFEMÆST, are the adjectives *altus*, *altior*, *altissimus*. UFA or UFAN, *up;* comparative UFERA, OFERE, or OFER, *over* or *upper;* superlative UFEMÆST, *utmost* or *uppermost*. BEUFAN, BUFAN, ON BUFAN, *'bove*, *above*. If this be a just account of the origin of these words, the sentences in the text, where *upon*, *over*, and *above*, occur, will run thus: "The statue stood *on high* a pedestal;" "the river ran *higher* a sand;" "the sun is risen *on high* the hills." And here we may observe, that the mere relation between standing, running, &c. and place, is rather inferred from the verb itself, than expressed by a separate word. The reason is obvious. For if a statue stand, every one knows that it must stand on some thing as well as at some time. There is therefore no necessity, whatever elegance there may be in it, for employing any word to denote that relation, which is commonly believed to be signified by *on;* but it is

over a sand," that is, "the river ran (the place of its running) the *higher part* of a sand." The detached relation, as when we say, "He is going *to*[1] Italy," that is, "He is going, *the end* (of his journey) Italy;" "the sun is risen *above* the hills," that is, "the sun is risen (the place) *the top* of the hills;" "these figs came *from* Turkey," that is "these figs came *beginning* (their journey at) Turkey."

Besides the detached relation of body, Mr Harris is of opinion that the preposition *from* denotes two other relations not less different than those of motion and rest. Thus, if we say, "That lamp hangs *from* the ceiling," the preposition *from* assumes a character of quiescence. But if we say, "That lamp is falling *from* the ceiling," the preposition in such case assumes a character of motion. But this is evidently a mistake. The detached relation in the former instance of the *figs*, as well as the motion and rest in the present instances, are expressed not by the preposition, but by the verbs, *came*, *falls*, *hangs*. The word *from* has as clear, as precise, and at all times as uniform and unequivocal a meaning, as any word in the language. *From* means merely *beginning*, and nothing else. It is simply the Anglo-Saxon and Gothic noun FRUM, *beginning*, *origin*, *source*, *fountain*, *author*.[2] Now if this meaning be applied to Mr Harris's instances, *from* will speak clearly for itself, without the assistance of the interpreting verbs, which are supposed by him to *vary its character*.

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necessary to insert, between the verb and pedestal, a word significant of place, that pedestal may not be mistaken, by an ignorant person, for a portion of time, or any thing else connected with the standing of the statue.

[1] That *to* is significant of detached relation, is the language of Mr Harris, which, though it may be allowed in a loose and vulgar sense, is certainly not philosophically just. The preposition *to*, in Dutch written *toe* and *tot*, is the Gothic substantive TAUI or TAUHTS, signifying *act*, *effect*, *result*, or *consummation;* which Gothic substantive is itself no other than the past participle TAUID or TAUIDS of the verb TAUJAN, *agere*. And it is obvious that what is done is terminated, ended, finished. In the Teutonic this verb is written TUAN or TUON; whence the modern German THUN, and its preposition *tu*. In the Anglo-Saxon, the verb is TEOGAN, and the preposition *to*. *Do*, the auxiliary verb, as it has been called, is derived from the same root, and is indeed the same word as *to*. The difference between a T and a D is so very small, that an etymologist knows by the practice of languages, and an anatomist by the reason of that practice, that in the derivation of words it is scarcely worth regarding. To support this etymon of *to*, Mr Horne Tooke gives a similar instance in the Latin tongue. The preposition *ad*, he says, is merely the past participle of *agere*, which past participle is likewise employed as a Latin substantive. He exhibits the derivation of *ad* thus:

$$\textit{Agitum—agtum}\begin{cases}\text{AGDUM——AGD——AD}\\ \text{or} \qquad\quad \text{or} \qquad\quad \text{or}\\ \text{ACTUM——ACT——AT.}\end{cases}$$

The most superficial reader of Latin verse, he observes, knows how readily the Romans dropped their final *um*. And a little consideration of the organs and practice of speech will convince him how easily *agd* or *act* would become *ad* or *at;* as indeed this preposition was indifferently written either way by the ancients. By the later writers of Rome, the preposition was written *ad* with *d* only, in order to distinguish it from the other corrupt word called the conjunction *at;* which for the same reason was written with the *t* only, though that likewise had anciently been written, as the preposition, either *ad* or *at*. The preposition *to* and the conjunction *too* in English, are both in syntax and in meaning used exactly as the preposition *ad* and the conjunction *at* in Latin. From the specimens prefixed to Johnson's Dictionary, as a history of our language, it appears that, as late as the reign of Elizabeth, the preposition and conjunction were both written with one *o*. And it has been shown in the first volume of the Transactions of the Royal Society of Edinburgh, that *to* and *too*, as well as *ad* and *at*, are precisely of the same import. The only difference, in either language, between the preposition and the conjunction, is, that the former directs, as a modification of some previous proposition, the addition of some substantive or noun; the latter, sometimes a sentence or clause of a sentence considered abstractedly as a noun; and that, when the former is used, the preposition to which the modifying circumstance is to be added, is formally expressed, but omitted when the latter is employed. Thus Denham says,

Wisdom he has, and *to* his wisdom courage;
Temper *to* that, and *unto* all success.

In this example, every succeeding circumstance is by the preposition *to* marked as an addition to the preceding. "Wisdom he has, and courage *additional* to his wisdom." But Denham might with equal propriety have omitted the object which *to* governs, or to which it directs something to be *added*, though he must then, from the custom of the language, have employed the conjunction instead of the preposition. As,

Wisdom he has, and courage *too*.

That this mode of expression would have been more concise than, and as intelligible as, the other, "Wisdom he has, and courage *to* his wisdom," must be evident to every one.

Not only is the object governed by *to* omitted, when it is represented by a substantive in the context, but also when it is involved in a preposition; and then the conjunction, as it is called, is always used. Thus,

Let those eyes that view
The daring crime, behold the vengeance *too*.

So, "He made him prisoner, and killed him *too*." In the one example, the circumstance of beholding the vengeance is stated as an *addition* to the viewing of the crime; and in the other, the *killing him* is stated as an *addition* to the making him a prisoner. In both examples, the object governed by *too* is the amount of the preceding proposition taken abstractedly as a noun or substantive. Thus then it appears, that *to* and *too*, though classed the one with the prepositions, and the other with the conjunctions, are really one and the same word. The same is true of *ad* and *at*. Thus, "AD *hoc*, promissa barba et capilli efferaverant speciem oris," signifies "*Additional to this*, his long beard and hair had given a wildness to his aspect." But when the object governed by *ad* is not formally stated, *ad* itself is classed with the conjunctions, and written differently, *at*. Thus Terence, "*Ph.* Fac ita ut jussi, deducantur isti. *Pa.* Faciam. *Ph. At* diligenter. *Pa.* Fiet. *Ph. At* mature." By the means of *at*, the circumstances of *diligence* and *haste* are *superadded* to the action commanded. "*Ph.* It is not enough that you do it; you must do it carefully *too*. *Pa.* Well, it shall be carefully done. *Ph.* In good time *too*." *At*, taken in this sense, is most commonly employed, like the English *but*, to mark the unexpected union of incongruous objects; as, "Aulam tyranni frequentabat, *at* patriam amabat;" literally, "He frequented the court of the tyrant; joined *even to* that he loved his country." "He was a courtier and a patriot *too*." But if *ad* and *at* in Latin, and *to* and *too* in English, be derived from verbs which signify *to do* or *act*, it may be asked how they come themselves to denote *addition*. The answer is obvious. If a man should utter a sentence, and to the end of it subjoin the very general word *do*, the person to whom he spoke would naturally ask, *do* what? and this question would, of course, produce an additional sentence or clause of a sentence. Besides, it is to be observed, that *agere*, from which the Latin preposition is derived, as well as the Gothic verb, which is the source of the English particles, means not only *to do*, but also to adduce or bring; so that when we say, "he is going *to* Italy," we do nothing more than affirm that "he is going," and desire the person to whom we speak, "to *add* Italy to the journey."

From this derivation of the preposition *to*, it will be seen at once upon what principle it is employed to mark the infinitive mode. In the learned languages that mode is generally known by its termination; but in English it would be impossible, without the aid of *to*, or of some other word significant of action, to distinguish the verb *love* from the noun or substantive.

[2] This derivation is Mr Horne Tooke's; and he supports it by the following sentence: *Ne rædd ge se the on frumman worhte, he worhte wæpman and wifmen;* which is the Anglo-Saxon of St Matthew, xix. 4, "Annon legistis, quod qui eos *in principio* creavit, creavit eos marem et feminam?"

These figs *came* FROM Turkey.
That lamp *falls* FROM the ceiling.
That lamp *hangs* FROM the ceiling.

Came is a complex term for one species of motion; *falls* is a complex term for another species of motion; and *hangs* is a complex[1] term for a species of attachment. Have we occasion to communicate or mention the *commencement* or *beginning* of these motions, and of this attachment, and also the place where they commence or begin? To have complex terms for each occasion of this sort is absolutely impossible; and therefore nothing can be more natural or more simple than to add the signs of those ideas, viz. the word *beginning*, which will remain always the same, and the NAME of the *place*, which will perpetually vary. Thus,

These figs came—*BEGINNING Turkey.*
That lamp falls—*BEGINNING ceiling.*
That lamp hangs—*BEGINNING ceiling.*
That is,
Turkey the *place* of BEGINNING to come.
Ceiling the *place* of BEGINNING to fall.
Ceiling the *place* of BEGINNING to hang.

It has been said by no less a man than Bishop Wilkins, that *from* refers primarily to place, and secondarily to time. But the truth is, that *from* relates to every thing to which *beginning* relates, and to nothing else.

> *From* morn till night the eternal larum rang.

That is, the "larum rang *beginning* morning," or morning being the *time* of its *beginning*, till night.

As *from* always denotes beginning, so *to* and *till* always denote the end. There is, however, this difference between them, that *to* denotes the end of any thing; *till* the end only of time. We may say indifferently, "From morn *to* night," or "from morn *till* night, the eternal larum rang;" but we cannot say, "These figs came from Turkey *till* England." That *till* can, with propriety, be opposed to *from* only when we are talking of time, is evident; for it is a word compounded of *to* and *while*, that is, time. And as the coalescence of these two words *to-while* took place in the language long before the present superfluous use of the article *the*, the phrase, "From morn *till* night" is neither more nor less than "From morn *to time* night." When we say, "from morn *to* night," the word *time* is omitted as unnecessary.

Besides *from*, Mr Harris mentions *over* as significant sometimes of motion and sometimes of rest; and quotes as instances the two following passages from Milton:

> ....To support uneasy steps
> *Over* the burning marl.

Here, says he, *over* denotes *motion*. Again,

> ....He with looks of cordial love
> Hung *over* her enamoured.

Here *over* denotes rest. But the truth is, that *over* denotes neither motion nor rest in either of these passages. In the first quotation, indeed, *motion* is implied; but it is implied in the word *steps*, and not in *over*, which denotes only that the place of the steps was the top of the burning marl. In the second quotation, rest is implied, and that too a particular *species* of rest; but it is implied, or rather expressed, by the verb *hung*, and *over* denotes the place of that species of rest.

But though the original use of prepositions was to denote the relations of body, they could not be confined to this office only. They by degrees extended themselves to subjects incorporeal, and came to denote relations, as well intellectual as local. Thus, because in point of place he who is above has commonly the advantage of him who is below; hence we transfer *over* and *under*[2] to dominion and obedience. Of a king we say, "he ruled *over* his people;" and of a soldier, "he served *under* his general." So too we say, *with* thought; *without* attention; thinking *over* a subject; *under* anxiety; *from* fear; *through* jealousy, and the like. All which instances, with many others of a similar kind, show that the first words of men, like their first ideas, had an immediate reference to sensible objects; and that in after days, when they began to discern with their intellect, they took those words which they found already made, and transferred them by metaphor to intellectual conceptions.

Amongst the relations which may be considered rather as intellectual than corporeal, are those of cause and consequence; and for the denoting of these we have two prepositions, which sometimes *appear* in direct opposition to one another, and at other times may exchange places without injury to the sense.

"Well! 'tis e'en so! I have the London disease they call love. I am sick *of* my husband, and *for* my gallant." (Wycherley's *Country Wife.*)

Here *of* and *for* seem almost placed in opposition; at least their effects in the sentence appear to be very different; for, by the help of these two prepositions alone, and without the assistance of any other words, she expresses the two contrary affections of loathing and desire. The truth, however, is, that the author, if it had pleased him, might have used *of* where he has employed FOR, and FOR where he has put *of*. This is evident from the following quotation from the *Sad Shepherd:*

> *Marian.* Come, Amie, you'll go with us.
> *Amie.* I am not well.
> *Lionel.* She's sick *of* the young shepherd that bekist her.

In the same manner we may, with equal propriety, say, "We are sick *of* hunger;" or, "We are sick *for* hunger." And in both cases we shall have expressed precisely the same thing, with only this difference, that, in the former sentence, we declare sickness to be a *consequence;* in the latter we declare hunger to be a *cause*. But to return to the Country Wife, that poor lady seems to have had a complication of distempers; she had at least two disorders; a sickness *of loathing*, and a sickness *of love*. She was sick *for* disgust, and sick *for* love. She was

Sick *of* disgust *for* her husband.
Sick *of* love *for* her gallant.
Sick *for* disgust *of* her husband.
Sick *for* love *of* her gallant.

In the first sentence, as thus stated, sickness is declared to be the *consequence* of disgust, of which her husband is declared to be the *cause*. In the second, sickness is declared to be the *consequence* of love, of which her gallant is declared to be the *cause*. In the third sentence, disgust is declared to be the *cause* of her sickness, and the *consequence* or *offspring* of her husband. In the fourth, love is declared to be the *cause* of her sickness, and the *consequence* or *offspring* of her gallant.

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[1] These are complex terms because they are verbs. Each denotes an affirmation and time; and, combined with these, *came* and *falls* denote *motion*, and *hangs* denotes *rest*.

[2] *Under* and *beneath*, though by the sound they seem to have little connection, are yet in fact almost the same word, and may very well supply each other's place. *Under* is nothing but *on-neder*, and *beneath* is compounded of the imperative *be* and the noun *neath*. *Neath* uncompounded having slipped away from our language, would perhaps be unintelligible, had not the nouns *nether* and *nethermost* still continued in common use. *Neath*, Anglo-Saxon, *neothan*, *neothe;* Dutch, *neden;* Danish, *ned;* German, *niedre;* and Swedish, *nedre* and *neder;* is undoubtedly as much a substantive, and has the same meaning, as the word *nadir*. In common language it denotes the bottom.

Prepositions.

Thus, then, it appears, that though the first two of these sentences, taken entire, convey the very same meaning with the last two, yet the import of the preposition *for* is as different from that of *of*, as *cause* is from *consequence*.[1] When two words or sentences are linked together by the former of these prepositions, the object expressed by the last word or sentence is declared to be the *cause* of that which is expressed by the preceding; when two words or sentences are linked together by the latter preposition, the object expressed by the first word or sentence is declared to be the *consequence of*, or to *proceed from*, the object expressed by the second. It is therefore a matter of perfect indifference to the sense whether we say "sickness *of* hunger," or "sickness *for* hunger;" "the man, *of* he speaks little, is wise," or "the man is wise, *for* he speaks little." By means of the preposition *of*, we declare sickness to be the *consequence* proceeding from hunger, and wisdom to be the *consequence* we infer from the man's speaking little; by means of *for*, we declare hunger to be the *cause* of sickness, and the circumstance of speaking little to be the *cause* from which we infer the man's wisdom. In the one sentence, *of* is to be considered as a noun in apposition to *sickness;* in the other, as a noun in apposition to *the man is wise* taken abstractedly as a noun. In the one sentence *for* (id est, *cause*) is to be considered as a noun in apposition to *hunger;* in the other, as the same noun in apposition to *he speaks little* taken abstractedly as a noun.

In the foregoing use of prepositions, we have seen how they are applied by way of juxtaposition; that is to say, where they are prefixed to a word without becoming a part of it. But they are used also by way of composition; that is, they are prefixed to other words so as to become real parts of them. Thus in Greek we have ἐπιστασθαι; in Latin, *intelligere;* and in English, *UNDERstand*. So also, to *FOREtell*, or *OVERact*, to *UNDERvalue*, to *OUTgo;* and in Greek and Latin other instances innumerable. In this case the prepositions commonly transfuse something of their own peculiar meaning into the word with which they are compounded. For example, if we suppose some given space, E and EX signify *out of* that space; PER, *through it;* IN, *within it;* SUB, *under it.* Hence, E and PER, in composition, augment: *Enormis* is something not simply big, but big in excess; something got out of the rule, and beyond the measure. *Dico*, "to speak;" *Edico*, "to speak out;" whence *Edictum*, "an edict," something so effectually spoken that all are supposed to hear and to obey. On the contrary, IN and SUB diminish and lessen. *INjustus*, *INiquus*, "UNjust, INequitable;" something that lies within justice and equity, that reaches not so far, that falls short of them. *SUBniger*, "blackish;" *SUBrubicundus*, "reddish; *tending* to black, and *tending* to red; but yet *under* the standard, and *below* perfection.

Before we dismiss this part of our subject, we shall make the same general remark upon prepositions which we formerly made on conjunctions, viz. that the precise import of each can with certainty be known only by tracing it to its source in some word of known and determinate meaning, either in the language where the preposition itself has place, or in some parent or cognate tongue. And it may be laid down as an infallible rule, that where different languages use the same or a similar particle, that language ought to be considered as its legitimate parent, in which the true meaning of the word can be found, and where its use is as common and familiar as that of any other verbs and substantives. When prepositions can be traced to such sources as these, no room can be left for disputes concerning their meaning. In carrying on this etymological pursuit, we find advantages in the nature of prepositions which conjunctions do not afford us. *With* and *without*, *from* and *to*, with many other words belonging to this class, have meanings directly opposite and contradictory to each other. If, then, by the total or partial extinction of an original language, the root of any one preposition be lost, whilst that of its opposite remains, the philosopher ought to be satisfied with reasoning from contrariety, as nothing is more evident than that the meaning of a word is known when we know with precision the meaning of its opposite. When we meet, however, with a luckless preposition of which no root is left to be dug up, and which has itself no direct opposite in the language, nothing remains but that we inquire for what purpose it is used by the best writers both ancient and modern; and if we can fix upon one meaning which will apply, however awkwardly, to all the places where it occurs, or to the greater part of them, the probability is, that we have discovered the true and original meaning of the preposition;[2] and by keeping that meaning constantly in view, we shall ourselves be enabled to use the word with perspicuity and precision.

Interjections.

3. *Of Interjections.*

Besides the above parts of speech, there is another acknowledged in all the languages of Europe, called the *interjection;* a word which cannot be comprehended under any of the foregoing classes. The genuine interjections are very few in number, and of very little importance, as they are thrown into a sentence without altering its form either in syntax or in signification. In the words of Mr Horne Tooke, the brutish inarticulate interjection has nothing to do with speech, and is only the miserable refuge of the speechless. The dominion of speech, according to the same author, is erected on the downfall of interjections. Without the artful contrivances of language, mankind would have nothing but interjections with which to communicate orally any of their feelings. "The neighing of a horse, the lowing of a cow, the barking of a dog, the purring of a cat, sneezing, coughing, groaning, shrieking, and every other involuntary convulsion with oral sound, have almost as good a title to be called parts of speech as interjections. In the intercourse of language, interjections are employed only when the suddenness or vehemence of some affection or passion returns men to their natural state, and makes them for a moment forget the use of speech; or when, from some circumstance, the shortness of speech will not permit them to exercise it." The genuine interjection, which is always expressive of some very strong sensation, such as AH! when we feel pain, does not owe its characteristical expression to the arbitrary form of articulation, but derives its whole force from the tone of voice and modification of countenance and gesture. Of consequence, these tones and gestures express the same meaning, without any relation whatever to the articulation they may assume; and are therefore universally understood by all mankind. Voluntary interjections are used in books only for embellishment, and to mark forcibly a strong emotion. But where speech can be employed, they are totally useless, and are always insufficient for the purpose of communicating thought. Dr Beattie ranks *strange, prodigious, amazing, wonderful, O dear, dear me*, &c. when used alone, and without apparent grammatical syntax, amongst the interjections; but he might with as much propriety have considered *hardly, truly, really*, and even many Latin verbs, as interjections; for these too are often used alone to supply the place of whole sentences. The truth is, that all men, when suddenly and violently agitated, have a strong tendency to shorten their discourse by employing a single word to express a sentiment. In such cases, the word employed, whether noun, adjective, or verb, would be the principal word of the sentence, if that sentence were completed; and the agitation of the speaker is such, and the cause of it so obvious, that the hearer is in no danger of mistaking the *sense*, and can himself supply the words which are wanting. Thus, if a person, after listening to a romantic narrative, were to exclaim, *strange!* would any man of common sense suppose, that the word *strange*, because uttered alone, had lost the power of an adjective and become an interjection? No, surely; every one sees that the exclamation is equivalent to, "that is *strange*," or "that is a *strange* story." Real interjections are never employed to convey truth of any kind. They are not to be found amongst laws, in books of civil institutions, in history, or in any treatise of useful arts or sciences; but in rhetoric and poetry, in novels, plays, and romances, where in English, so far from giving pathos to the style, they have generally an effect that is disgusting or ridiculous.

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[1] Junius derives *for* from the Greek προ; Skinner from the Latin *pro;* but I believe, says Mr Horne Tooke, that it is no other than the Gothic substantive FAIRINA, *cause.* He imagines also that *of*, in the Gothic and Anglo-Saxon *af*, is a fragment of the Gothic and Saxon words AFARA and AFORA, *posteritas*, *proles.* In a word, he considers *for* and *of* as nouns or substantives; the former always meaning *cause*, the latter always meaning *consequence*, *offspring*, *successor*, *follower*, &c. If this account of these words be just, and we have no doubt of it, the prepositions *for* and *of* are in syntax to be considered as nouns in apposition with other nouns, or with sentences taken abstractedly as nouns.

[2] For instance, let us suppose that Mr Horne Tooke's derivation of *for*, from the Gothic substantive FAIRINA, is fanciful and ill founded: yet there can be little doubt but *cause* is its true and original meaning, when it is found, that of sixteen examples brought by Greenwood and forty-six by Johnson, of different significations of the word *for*, there is not one where the noun *cause* may not be substituted instead of the preposition *for;* sometimes indeed awkwardly enough, but always without injury to the sense. Even where *for* seems to be *loco alterius*, which Lowth asserts to be its primary sense, it will be found to be *cause*, and nothing else. Thus, "He made considerable progress in the study of the law before be quitted that profession *for* this of poetry;" that is, "before he quitted that profession, this of poetry" being the *cause* of his quitting it.

Having now analysed every part of speech which can be necessary for the communication of thought, or which is acknowledged in any language with which we are acquainted, we shall dismiss the subject, after annexing an abstract, which may present at one view the several classes and subdivisions of words. Of the different modes of dividing the parts of speech, as well as of the little importance of systematic classifications, we have already declared our decided opinion; but for the sake of those who may think differently from us, we shall in the abstract subjoined adopt Mr Harris's classification as far as it is intelligible; after informing our readers that Mr Horne Tooke admits only three parts of speech, the article, the noun, and the verb, and considers all other words as corruptions or abbreviations of the two last of these.

GRAMMATICAL ABSTRACT,

Exhibiting a Systematic View of Words, as they are commonly arranged into distinct Classes, with the Subdivisions under each Class.

All language is composed of words, each of which may be defined, a sound significant of some idea or relation. These words may be arranged into four general divisions, namely,

I. SUBSTANTIVES; which are all those words that are expressive of things which exist, or are conceived to exist, of themselves, and not as the energies or qualities of any thing else. These may be divided into two orders, viz.

1. NOUNS, properly so called, being the names of all those things which exist, or are conceived to exist. These may be divided into three kinds, each of which admits of the subdivisions after mentioned, viz.

Natural, or those which are used as the names of natural substances; such are (genus) *animal;* (species) *man, dog;* (individual) *Alexander, Cyrus, Cerberus, Argus.*

Artificial, or the several names of artificial objects; such as, (genus) *edifice;* (species) *house, church;* (individual) *Vatican, St Peter's, St Paul's.*

Abstract, or those which are the names of qualities considered as abstracted from their substances; such as, (genus) *motion;* (species) *flight, course;* (individual) the *falcon's flight*, the *greghound's course.*

Nouns of all kinds admit of the following accidents, viz.

Gender, which is a certain affection of nouns denoting the sex of those substances of which they are the names. For as in nature every object is either male or female, or neither the one nor the other, grammarians, following this idea, have divided the names of beings into three classes. Those which denote males are said to be of the *masculine* gender; those which denote females, of the *feminine* gender; and those which denote neither the one nor the other, of the *neuter* gender. The English is the only language of which the nouns are, with respect to sex, an exact copy of nature.

Number. As there is no object in nature single and alone, and as by far the greater part of nouns are the names of whole classes of objects, it is evident that every such noun ought to have some variation, to denote whether it is one individual of the class which is meant, or more than one. Accordingly we find, that in every language nouns have some method of expressing this. If one be mentioned, the noun is used in that form which is called the *singular* number; if more than one, it is used in a different form, which is called the *plural* number.

Cases. All nouns, excepting proper names, are general terms; but it is often necessary to use those general terms for the purpose of expressing particular ideas. This can be done only by connecting the general term with some word significant of a quality or circumstance peculiar to the individual intended. When that quality or circumstance is not expressed by an adjective, it is in English and most modern languages commonly connected with the noun by the intervention of a preposition; but in the Greek and Latin languages the noun has cases to answer the same, and even in English the noun has, besides the nominative, one case to denote possession.

2. PRONOUNS, which are a species of word invented to supply the place of nouns in certain circumstances. They are of two kinds, viz.

First, the prepositive; so called because they are capable of leading a sentence. These are divided into three orders, called the pronouns of the

First person. The pronoun of this person, in English *I*, denotes the speaker as characterized by the present act of speaking, in contradistinction to every other character which he may bear. It is said to be of the first person, because there must necessarily be a speaker before there can be a hearer; and the speaker and hearer are the only persons employed in discourse.

Second person. The pronoun of this person, in English *thou*, denotes the person addressed as characterized by the present circumstance of being addressed. It is said to be of the second person, because in discourse there cannot be a hearer till there be a speaker. The pronouns of the first and second persons have number and cases, for the same reason that nouns have these accidents; but in no language have they any variation denoting gender. The reason is, that sex, and all other properties and attributes whatever, excepting those just mentioned as descriptive of the nature of these pronouns, are foreign from the mind of the speaker when he utters *I* or *thou* in discourse.

Third person. The pronouns of this person, *he, she, it,* are employed to denote any object which may be the subject of discourse different from the speaker and the hearer. They are improperly said to be of any person; for there can be but two persons employed in discourse, the speaker and the party addressed. They are, however, pronouns; since they stand by themselves, and are the substitutes of nouns. *He* is the substitute of a noun denoting a male animal; *she,* of a noun denoting a female animal; and *it,* of a noun denoting an object which has no sex. All these, like the pronouns personal, admit of number and cases; but there is this peculiarity attending them, that though in every case of the singular number the distinction of gender is carefully preserved, in the plural it is totally lost in some languages; *they, theirs,* and *them* being the nominative, possessive, and accusative cases of *he,* of *she,* and of *it.*

Secondly, the subjunctive; so called, because they cannot lead a sentence, but only serve to subjoin a clause to another previously enunciated. Of this kind are

Which and *who.* This subjunctive pronoun may be substituted in the place of any noun whatever, whether it be expressive of a genus, a species, or an individual; as, the animal *which,* the man *who,* Alexander *who,* &c. Nay, it may even become the substitute of the personal pronouns themselves; as when we say, I *who* now write, you *who* now read, thou *who* readest, he *who* wrote, she *who* spoke; where it is observable, that the subjunctive *who* adopts the person of that prepositive pronoun which it represents, and affects the verb accordingly. *Who* and *which,* therefore, are real pronouns, from substitution; and they have this peculiarity besides, that they have not only the power of a pronoun, but also of a connective of the same import with that which in English is expressed by the preposition *of.* The word *that* is now used indifferently for *who* or *which,* as a subjunctive pronoun; but it was originally used only as a definitive, and as such it ought still to be considered in philosophical grammar.

II. ATTRIBUTIVES; which are those words that are expressive of all such things as are conceived to exist, not of themselves, but as the attributes of other things. These are divided into,

1. Verbs, or those words which are expressive of an attribute and an assertion; as, *I wrote.*

The attributes expressed by verbs have their essence in motion or its privation; and as motion is always accompanied by time, therefore verbs are liable to certain variations called TENSES, viz.

The *present,* which represents the action of the verb as going on, and as contemporary with something else; as, *I write,* or *I am writing,* either just now, or when you are reading. The *præter-imperfect,* which represents the action of the verb as having been going on but not finished in some portion of past time; as, *I was writing,* no matter when, yesterday, last week, or last year. The *aorist of the past,* which represents the action of the verb as finished in some indefinite portion of past time; as, *I wrote,* or *did write,* yesterday, or last week. The *præter-perfect,* which represents the action of the verb as just *now* finished, or as finished in some portion of time within which the present instant is comprehended; as, *I have written* this day or this week. The *plusquam-perfect,* which represents the action of the verb as having been finished in some portion of time within which a determinate past instant was comprehended; as, *I had written* last week before I saw you. The *first future,* which represents the action of the verb as to be going on at some indefinite future time; as, *I shall write* or *be writing* to-morrow, or next week. The *second future,* which represents the action of the verb as to be completed at some definite future time; as, *I shall have written* when you come to-morrow, next week, next month, or next year.

Affirmation is the essence of every verb, insomuch that all verbs may be resolved into the substantive verb *is,* and another attributive. But a man may affirm something of the action of the verb directly, something of his liberty or capacity to perform that action, or something of his wish that another should perform it. To denote these several kinds of affirmation, all verbs have what grammarians call MODES, viz. the *indicative,* to denote the first kind of affirmation; as, *I write:* the *subjunctive,* to denote the second; as, *I may* or *can write:* the *imperative,* to denote the third; as, *write thou,* or *do thou write.* Besides these, grammarians have given to every verb a mode, called the *infinitive;* as, *to write.* But this seems on every account to be improperly styled a mode. Nay, if affirmation be the essence of verb, the infinitive cannot be considered as any part of the verb at all, for it expresses no affirmation. It is indeed nothing more than an abstract noun denoting the simple energy of the verb in conjunction with time.

Verbs have likewise been distinguished into the following kinds, according to the nature of the attribute of which they are expressive, namely, 1*st, Active-transitive,* or those which denote an action that passes from the agent to some external object; as Cæsar *conquered* Pompey: 2*d, Active-intransitive,* or those which express that kind of action which has no effect upon any thing beyond the agent himself; as, Cæsar *walked:* 3*d, Passive,* or those which express not action but passion, whether pleasing or painful; as, Portia *was loved,* Pompey *was conquered:* 4*th, Neuter,* or those which express an attribute that consists neither in action nor in passion; as, Cæsar *stood.*

2. Participles, or those words which are expressive of an attribute combined with time. In English there are only two participles; the present, as *writing,* which expresses the action of the verb *to write,* as going on; and the past, as *written,* which expresses the action of the same verb as finished, and therefore past in time. In Greek and Latin there is a future participle, by which the attribute is represented as being in a state of exertion at some future time; as, *γϱαψων, scripturus,* about to write.

3. Adjectives, or those words which express as inhering in their substances the several qualities of things, of which the essence consists not in motion or its privation; as, *good, bad, black, white, large, small,* and the like. As attributes are the same whether they belong to males or females, to one object or to many, adjectives ought in strictness to admit of no variation respecting sex or number; and in English they actually admit of none. Some qualities, however, are of such a nature, that one substance may have them in a greater degree than another; and therefore the adjectives denoting these qualities admit in most languages of a variation which grammarians call the degrees of comparison. Thus Plato was *wise,* Socrates was *wiser* than he, but Solomon was *the wisest* of men. There is a species of adjectives derived from nouns, and even from pronouns; for we say, *the Pompeian* party, *a brazen* trumpet, and *my* book, which are phrases equivalent to "the party of Pompey, a trumpet of brass, and the book of me."

4. Adverbs, or those words which, as they denote the attributes of attributes, have been called *attributives of the second order,* to distinguish them from verbs, participles, and adjectives, which denote the attributes of substances, and are therefore called *attributives of the first order.* Adverbs are divided into two kinds, viz.

First, Those which are common to all attributives of the first order, that is, which coalesce equally with verbs, with participles, and with adjectives. These may be divided into adverbs of *intension* and *remission,* or of *quantity continuous;* as *moderately, vastly, exceedingly,* &c. These, like adjectives of a similar nature, admit of the different degrees of comparison. Of *quantity discrete;* as, *once, twice, thrice,* &c. These are not, in strictness of speech, adverbs, being in reality the possessive cases of one, two, three, &c. Of *relation;* as *more, most, less, least, equally, proportionally,* &c.

Second, Those which are confined to verbs properly so called, and which are of the following kinds: Of *time;* as, *then, when, afterward, now,* &c.: of *place;* as, *here, there, where, hence, whence,* &c.; and also adverbs derived from prepositions; as, *upward, downward,* &c.: of *intensions* and *remissions peculiar to motion;* as, *speedily, hastily, slowly,* &c. We have given adverbs a place amongst the parts of speech necessary for the communication of thought; but it may be doubted whether they be entitled to this distinction. English adverbs at least seem to be nothing more than corruptions of nouns, adjectives, and verbs.

III. DEFINITIVES; which are all those words that serve to define and ascertain any particular object or objects as separated from others of the same class. These are commonly called ARTICLES, which are divided into two kinds, viz.

1. INDEFINITE, as *a* or *an,* which is prefixed to a noun or general term, to denote that but one individual is meant of that genus or species of which the noun is the common name. This article, however, leaves the individual itself quite indeterminate. Thus, *man* is the general name of the whole human race; *a* man is one individual, but that individual is unknown. *Any* is prefixed to a noun either in the singular or plural number, when it is indifferent as to the truth of the proposition what individual or individuals be supposed; thus, "*any* man will be virtuous when temptation is away." *Some* is prefixed to nouns in the plural number, to denote that only part of the species or genus is meant, leaving that part undetermined; thus, "*some* men are great cowards."

2. DEFINITE, as *the,* which is prefixed to a noun, to denote one individual of the species of which something is predicated that distinguishes it from every other individual. Thus, "*the* man that hath not music in himself is fit for treasons." It is used before nouns in both numbers, and for the same purpose; for we may say, "*the men* who have not music in themselves are fit for treasons." *This,* prefixed to a noun in the singular number, denotes an individual as present and near at hand; as, "*this* man beside me." *That,* prefixed to a noun in the singular number, denotes an individual as present but at a little distance; as, "*that* man in the corner."[1]

Besides these, there are many other articles both definite and indefinite.

IV. CONNECTIVES, or those words which are employed to connect other words, and of several distinct parts to make one complete whole. These may be divided into two kinds, viz.

1. CONJUNCTIONS, by which name are distinguished all those connectives which are commonly employed to conjoin sentences. These have been divided into two kinds, called *conjunctives,* or those words which conjoin sentences and their meanings also; and *disjunctives,* or those words which, at the same time that they conjoin sentences, disjoin their meanings. Each of these general divisions has been again subdivided; the former into copulatives and continuatives, the latter into simple disjunctives and adversative disjunctives. But the general division is absurd, and the subdivisions are useless. Conjunctions never disjoin the meaning of sentences, nor have any other effect than to combine two or more simple sentences into one compound sentence. If those simple sentences be of opposite meanings before their combination, they will continue so after it, whatever conjunction be employed to unite them. In nature, different truths are connected, if they be connected at all, by different relations; and therefore, when the sentences expressive of those truths are connected in language, it must be by words significant of those natural relations. Thus, accidental addition is expressed by the conjunction *and;* as when we say, "Lysippus was a statuary, *and* Priscian was a grammarian." The unexpected junction of contrary truths is expressed by *but;* as, "Brutus was a patriot, *but* Cæsar was not." The relation of an effect to its cause is expressed by *because;* as, "Rome was enslaved *because* Cæsar was ambitious." The relation of an effect to a cause of which the existence is doubtful, is expressed by *if;* as, "you will live happily *if* you live honestly:" the relation of a cause to its effect, by *therefore;* as, "Cæsar was ambitious, *therefore* Rome was enslaved." The idea of simple diversity is expressed by *either* and *or;* "*either* it is day *or* it is night." Contrariety between two affirmations, which, though each may be true by itself, cannot both be true at once, is expressed by *unless;* as, "Troy will be taken *unless* the Palladium be preserved." Coincidence of two affirmations apparently contrary to each other is expressed by *although;* as, "Troy will be taken *although* Hector defend it."

2. PREPOSITIONS, or those connectives of which the common office is to conjoin words which refuse to coalesce; and this they can do only by signifying those relations by which the things expressed by the united words are connected in nature. The first words of men, like their first ideas, had an immediate reference to sensible objects; and therefore there can be no doubt but that the original use of prepositions was to denote the various relations of body. Afterwards, when men began to discern with their intellect, they took those words which they found already made, prepositions as well as others, and transferred them by metaphor to intellectual conceptions.

Prepositions viewed in this light are

Either *proper,* or those which literally denote the relations subsisting amongst the objects of sense, such as the accidental junction of two things between which there is no necessary connection; as, "a house *with* a party wall." The separation of two things which we should expect to find united; as, "a house *without* a roof, a man *without* hands." The relation subsisting between any thing and that which supports it; as, "the statue stands *upon* a pedestal." The relation of higher and lower; as, "the sun is *above* the hills," "to support uneasy steps *over* the burning marl," "the sun is set *below* the horizon," "the shepherd reclines *under* the shade of a beech tree." The relation between any thing in motion and that in which it moves; as, "the rays of light pass *through* the air." The relation between any thing continued, whether motion or rest, and the point of its beginning; as, "the rays of light proceed *from* the sun," "these figs came *from* Turkey," "that lamp hangs *from* the ceiling." The relation between any thing continued and the point to which it tends; as, "he is going *to* Italy," "he slept *till* morning." The relation between an effect and its cause; as, "I am sick *of* my husband and *for* my gallant."[2]

Or *metaphorical.* For as those who are above others in place have generally the advantage over them, the prepositions which denote the one kind of superiority or inferiority, are likewise employed to denote the other. Thus we say of a king, "he ruled *over* his people;" and of a soldier, "he served *under* such a general."

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[1] These two articles have plurals; *these* is the plural of *this,* and *those* the plural of *that.*

[2] Conjunctions and prepositions are indeed employed only to connect sentences and words; but it may be doubted whether they be parts of speech distinct from nouns, verbs, and adjectives.

INTERJECTIONS are a species of words which are found perhaps in all languages on earth, but which cannot be included in any of the classes above mentioned; for they are not subject to the rules or principles of grammar, as they contribute nothing to the communication of thought. They may be called a part of that natural language with which man is endowed, in common with other animals, to express or allay some very strong sensation; such as, *ah!* when he feels pain. In this view the interjection does not owe its characteristical expression to the arbitrary form of articulation, but to the tone of voice, and the modifications of countenance and of gesture with which it is uttered; it is therefore universally understood by all mankind. In discourse interjections are employed only when the suddenness or vehemence of some affection returns men to their natural state, and makes them for a moment forget the use of speech. In books they are thrown into sentences without altering their form either in syntax or in signification; and in English this is generally done with a very bad effect, though the writer no doubt employs them with a view to pathos or embellishment.

To the masterly and instructive treatise on the Theory of Language, which is here reprinted, it does not seem to be either necessary or desirable that any large supplement should now be added. Historical or Comparative Grammar—that special department of philology which traces the history of particular languages, and disentangles their mutual relations—has in the present age made vast advances, if it might not rather be said to be a science almost altogether new. But there has not, and could not have been, a similar progress in that first and fundamental department of philology on which Historical Grammar rests—the recent developments of Universal Grammar may safely be asserted not to have yet stretched, in any leading section, beyond points reached in the foregoing dissertation. It is true, indeed, that a science like Universal Grammar, directly dependent on mental laws, and on not a few mental laws which are far from having been satisfactorily evolved by the psychologers or metaphysicians themselves, cannot in all quarters be free from discrepancies of opinion. But, if there were here room or fit occasion for a systematic exposition of the relations between our article *Grammar* and the most modern phases of philological inquiry, both special and general, the commentary, fairly conducted, would make two things appear very clearly. On the one hand, the results of late investigations into the history of particular tongues, while they would give rise to very few corrections, and to none that are at all important, would exhibit many additional proofs and illustrations of doctrines taught in the article. On the other hand, a comparison with later attempts to develop the universal theory of language, would show that several doctrines, now so currently recognised as to be even trite, were propounded or proved for the first time, either in this treatise, or in the oral teaching of the distinguished thinker and philologer, from whose prelections its materials are announced as having been mainly derived.

One part only of Dr Hunter's philological system has the advantage of being published authoritatively in his own words: and, perhaps, in the preceding dissertation, this part is less clearly set forth than the rest; because his own enunciation of it was not made in print till late in his life, and because it involves several fine and peculiar steps of analysis. The part in question is his Theory of the Verb, which probably contains no doctrine not to be found in the foregoing pages, but which, nevertheless, should also be studied as a whole in his own statement of it. That statement, in the shape of an "Introductory Essay on the Moods and Tenses of the Greek and Latin Verb," is affixed to the several impressions of Dr Hunter's edition of Ruddiman's *Latin Rudiments;* and some specific illustrations from the tenses of the Greek verb appeared in the ninth volume of *Transactions of the Royal Society of Edinburgh.*

A complete generalization of this Theory of the Verb, such as to fit it exactly to its place in a system of Universal Grammar, would be a very ambitious undertaking; while it would be liable to the risk of incorporating, with the opinions of the venerable scholar himself, others which might not really be his. A few sentences, however, attempting to explain the outline of the theory, may be useful as a clue to some of the views stated in the body of the article.

1. The separate consideration of the element of Time is the key to all the intricacies presented by the Verb.

2. Two only of the three possible Modes of Time are expressed *directly* by the verb. These are, the Present and the Past. Those forms of the verb which deal with the Future do not express it directly: they merely enable us to *infer* it. This is seen most easily through the auxiliary forms prevalent in such languages as our own. Our "will" expresses directly nothing more than resolution, and our "shall" nothing more than obligation; but futurity is naturally and necessarily inferred, in regard to the action or suffering to which the resolution or the obligation relates.[1]

3. In all tenses of the verb Time is expressed, not Absolutely, but *Relatively;* that is, relatively to those two points, the present and the past. "If," says Dr Hunter, "we separate the Time from the other circumstances involved in those forms of the Greek and Latin verb called the Moods and Tenses, the Time thus separated, or separately attended to, will in every one of them be found to be either the Present or the Past. One primary object of those forms seems to have been, to give the present and the past as two *fixed points* of time, with a reference to which all the other ideas involved in them are to be estimated and determined. They are all past, present, future, contingent, &c., with reference to one or other of these two fixed points."

4. It is implied in the preceding propositions, that the Moods of the verb cannot be rightly analysed, until the relations of the Tenses have been clearly brought to light.

5. For the dissection of the Moods, however, a second principle is required, which may be stated broadly thus. That which forms the radical part of a verb into a Mood (a flexional termination in some languages, an auxiliary or group of auxiliaries in others) is commonly said to modify the radical part of the verb. But the opposite view is the correct one. The radical part of the verb modifies that by which it is formed into a mood; the radical part modifies the flexion or auxiliary. The Modal part of the expression really contains the leading assertion, whose varieties are thus comparatively few; the Radical part of the verb modifies and varies the meaning of the assertion, according to an indefinite multiplicity of occasions. Whatever opinion may be adopted as to the origin and history of the [Greek and Latin] Flexions, no doubt can be entertained that they are similar in their nature to our Auxiliaries; that the terminations contain the *generic* part of the expression, and are *modified* by the radical part of the verbs combined with them." Thus, in the expression "*Amem*, I may love," the generic assertion is made by "*—em*, I may;" and this assertion is specificated by "*Am*—, love."

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[1] Besides classical and other illustrations of the inferential character of the future tense, the fact is curiously exemplified by our own mother-tongue. In the Anglo-Saxon verb, one and the same form does duty both as present and as future, the context determining which of the two is intended.

6. This analysis, when followed out to its consequences, is maintained to carry with it the doctrine, that there is only one true Mood, namely, the Indicative. Our English auxiliaries are again convenient as examples. "I am, or I am not; I do, or I do not;" expressions affirming or denying existence and action,—are readily admitted to be indicatives. But so, likewise, are expressions like these: "I may, or I may not; I can, or I cannot;" which affirm or deny liberty and power; and which affirm or deny liberty and power quite as positively as the other expressions affirm or deny action and existence. "To consider certain of those forms as exclusively Indicative or Assertive, and others as not so, seems to be founded completely in misapprehension, and tends to perplex and mislead. "I may write," "I might write," are equally Assertions as "I do write" and "I did write." The thing indicated or asserted is different; but, in so far as assertion is concerned, they are completely similar; they stand on precisely the same footing."

7. The result of the examination of the moods, in its application to the classical languages and our own, is, in skeleton, briefly this. Our common Auxiliary Verbs, "am, do, have, shall, will, may, can," assert, respectively, existence, action, possession, duty or obligation, volition, liberty or possibility, ability or power; "and they are all verbs of the *present* time or tense, each of them having a correspondent form appropriated to *past* time." The Flexional Forms of the Greek and Latin verbs imply or involve those auxiliaries, and contain the same assertions; and each of them "will be found, like the auxiliaries which they involve, to have two corresponding forms, the one predicating those attributes of the *present* time, the other of the *past*."

8. The manner in which this analysis of the moods is applied in detail to the modifications expressed by the tenses, will be best learned from Dr Hunter's own treatise. But, in the preceding article, in the section on the verb, the particulars are worked out with so much of general adherence to the principles just explained, that, with no further aid than these few general propositions, the application of the two laws jointly cannot be difficult.

GRAMMONT, a town of Belgium, province of East Flanders, on both sides of the Dender, 21 miles S.S.E. of Ghent. It is a walled town, and contains two churches, several chapels, a town-hall, hospital, college, and several schools. It has manufactures of lace, cotton yarn, linen and woollen goods, leather, soap, paper, and tobacco; as well as bleaching and dyeing works, breweries, and distilleries. Pop. (1851) 7816.

GRAMMONT, COUNT. See HAMILTON.

GRAMPIANS, a mountain chain in Scotland. See SCOTLAND.

GRAMPUS, an animal of the cetaceous order. See index to MAMMALIA.

GRAN (Hung. *Esztergom*, anc. *Strigonium*), a royal free city of Hungary, capital of a cognominal county, on the right bank of the Danube, nearly opposite the mouth of the river Gran, 26 miles N. by W. of Buda. This was long the residence of the Hungarian monarchs, and the finest city in Hungary, till almost annihilated by the attacks of the Turks. These held it for seventy years previous to 1683, when they were finally expelled by John Sobieski of Poland. It is now the seat of the archbishop and prince-primate of Hungary. The cathedral, the palace of the archbishop, and the houses of the chapter, occupy the summit of a high and precipitous rock, the site of an ancient fortress, of which only portions of the walls now remain. The cathedral, commenced in 1821, and only recently finished, is said to be the most splendid building in Hungary. Gran, with its several suburbs, contains about 12,000 inhabitants, who are chiefly employed in the weaving and dyeing of woollen cloths.

GRAN CANARIA. See CANARY ISLANDS.

GRANADA, sometimes called Upper Andalucia, is bounded on the E. and S. by the Mediterranean and Murcia, and on the N. and W. by Andalucia. It is situated between N. Lat. 36. 16. and 38. 4., and between W. Long. 1. 38. and 5. 30. Its greatest extent from E. to W. is about 200 miles, and from N. to S. about 140. The area is 9630 square miles English; and the population (in 1849) amounted to 1,157,584. The form of this province is an irregular triangle, with the base to the E. on Murcia, and the apex to the S.W. towards the Straits of Gibraltar. Granada is beautifully diversified with majestic mountains, extensive plains, and rich valleys, all fringed with a tropical maritime border. The Sierra Nevada chain extends throughout the province, from N.E. to S.W., under the names of Ronda, Antequerra, Orca, Huescar, and Sierra Nevada, "with its diadem of snow," which, in its highest point, the Cerro de Mulhacen, a little S.E. from Granada, is 12,762 feet above sea-level. All this chain has an elevation of more than 9900 feet, and above this height is covered with perpetual snow. Thus, under a latitude of 37°, eternal snow and the temperature of Africa are combined; hence every variety of vegetable production from the lichen to the cotton plant and sugar-cane is found here. Towards the south the mountains gradually decline to the Sierra de Gador, near Almeria, where the elevation is 7800 feet. At this extremity, near Macael, stands the famous rock Filabers, 2000 feet high, and 4 miles in circuit, consisting of one solid mass of white marble. The secondary mountains are of several kinds; but many of them are formed of marble of various colours, red, black, white. About 8 miles from Granada, on the banks of the Xenil, there is a quarry of beautifully veined green serpentine, capable of receiving a fine polish. In the mountains immediately surrounding the city of Granada occur many kinds of alabaster, some of which are as transparent and brilliant as Oriental cornelians; there are also quarries of jasper, and a considerable variety of precious stones. Some lead, copper, and silver mines still exist, and several of them were worked by the Moors. In the sands of the Darro gold is found; and mineral waters, chiefly chalybeate and sulphureous, are abundant in the province, yet few of them have been analyzed. The most famous of them are those of Alhama (with a temperature of 118° Fahr.), Almeria, and Javal-cohol. As might be expected, the climate of Granada is cold in the mountainous districts, temperate in the plains, and extremely hot and sultry in the valleys. The hot wind called Soláno, which blows from the S.E., is here attended with pernicious effects. It shrivels up the vegetation, and affects the human body with the sensations of strong fever; assassinations, murders, and suicides, are most frequent during the prevalence of this wind. The snowy range is a perpetual alembic of fertilizing water, which is beautifully commensurate with the heats; for the hotter the weather the more copious do the waters become from the melting of the snow. This water is wealth; for the soil of the plains, though light, becomes very productive under the combined effect of moisture and warmth. Here the succession of crops is continuous, and the hemp is the finest in the world. Agriculture, though much degenerated since the expulsion of the Moors, still forms the wealth of the province, which teems with corn and wine, oil, silk, and delicious fruits, in great abundance. The line of irrigation divides the desert from the paradise; all lying within its influence is green and fruitful;

all beyond it is brown and barren. Agriculture is more flourishing in this province, however, than in any other part of Spain. The *Vega* of Granada is considered the richest plain in the kingdom. The estate of the Duke of Wellington is formed of part of this rich plain, and is occupied by nearly 300 tenants. This estate is so managed as to form an excellent model for Spanish agriculturists. The principal assistance rendered to the crops is the irrigation of the soil, which is accomplished by conveying streams along the more elevated side of every field by means of embankments, in which sluices are cut, which convey the water into small rills, which occur at short intervals, so as to flood the whole field with ease in the hot season. The preservation of manure is carefully attended to. It is collected in large pits, well rammed to prevent leaking; and as soon as well rotted it is distributed in an almost liquid state over the land. This is according to the old Moorish mode, which has always proved the best. This manure is not applied to the production of corn, but is used for gardens, melon-grounds, and mulberry plantations. The most abundant grain crops are raised by the mere assistance of irrigation, without any manure; and the average annual produce of land well watered is fifty bushels of wheat per acre English. Near the rivers in the lower grounds considerable quantities of rice are cultivated, but often before sowing the rice a crop of hemp or flax is taken from the land. The breeding and fattening of cattle, however, is much more attended to by the Spanish than the cultivation of cereals. In winter the cattle are pastured in the uplands, where grass is best; but no hay is made by the farmers; and after harvest, which occurs in June, the flocks and herds are fed in the stubble fields. The horses of Granada are inferior to those of Córdova, but the asses are very fine animals, and are highly esteemed in all the eastern countries of Europe. The wool produced in this province is coarse, and of comparatively little value. The best sailcloth is made from the hemp of Granada, which has a very strong fibre. The mulberry tree is cultivated solely for the sake of its leaves as food for the silk-worm. In the Vega as much silk is produced as furnishes employment to 1500 persons; and the manufactures in Granada alone require a supply of 120,000 lbs. annually.[1] The mountains surrounding Granada itself are well adapted for the nurture of the vine; but so badly managed are all things connected with its cultivation, that the wine is of very inferior quality, and mostly has the flavour of the sheep-skins with tarred seams in which it is carried from the vineyards. The Tierno, Moscatel, and Malaga, however, which are made in other parts of this province, are excellent wines, and in high repute. Though olive-trees are extensively cultivated, yet sufficient oil is not produced for home consumption. The sugar-cane is especially cultivated around Velez-Malaga, and is of excellent quality, quite equal to that of the West Indies for size and juiciness. The foreign trade is chiefly carried on from the ports of Malaga and Almeria, and consists in exports of sumach, lead, kali, dried fruits, almonds, lemons, anchovies, oil, and wine; while the chief imports are cloths, mercery, hardwares, &c. The internal commerce consists chiefly in exchanging dried fruits, corn, and wine, for silk and oil.

The people of Granada, like the rest of the Andalucians, are generally considered by the Castilians as the Gascons of Spain. The women are rather handsome and very attractive. The features and complexion of the people generally indicate traces of their mixed Moorish descent. The posterity of those Moors who professed Christianity in order to escape persecution are chiefly to be found here; and they are at present equally as bigoted as the Spaniards themselves. In the Alpujarras, however, there still remain a few scattered families of that unfortunate race who still secretly cling to the doctrines of the Korán, and reluctantly concede an external conformity to the Roman Catholic creed. Since the fall of the last Moorish kingdom in 1492, when Granada was united to the crown of Castile, this province has been governed by the Castilian laws. At Almeria resides a captain-general, as well as the civil and military provincial authorities; but the law-courts were transferred to Albacete in 1835. In order to protect the province from the corsairs of the African coast, watch-towers are erected along the shores at short distances from the mouth of the Rio-Frio to the Straits of Gibraltar.

This province contains 18 cities or towns; 300 villages; and about 200 convents of both sexes. Thirty-five of these religious houses are in the city of Granada.

Granada, a city of Spain, and the capital of a province of the same name, is situated on the Xenil, at the influx of the Darro. The Moorish name of this famous city is Karñattah, "the city of strangers," composed of the Arabic *Kar*, the same as the Celtic *caer*, or *cahir*, "an eminence," or what is built on it, and *nattah*, "a pilgrim," or "stranger."[2] Others consider it the name of a local goddess. At the Moorish invasion one of Tarik's generals gave Karñattah, or Granada, to the Jews, whence it was called Karñattah-el-Yahood. It occupied the site of the modern Torres Bermejas, and ranged above the Campo del Principe, being quite distinct from Illiberis (which in Basque means "new city"), with which it has been often confounded. Illiberis was built on the Sierra Elvira.[3] Granada stands partly on level ground near the river, at an elevation of 2445 feet above the sea, and partly on the slopes of two adjacent hills. It is divided into four quarters—the Alhambra with the fauxbourg Churna; the City properly so called; the Albaycin fauxbourg; and the Antequeruela fauxbourg. Of these the city proper is surrounded by high walls, flanked by towers now in ruins; the Alhambra and the Albaycin have separate walls and ramparts; but the Antequeruela is quite open. On the summit of the Alhambra Hill stand the magnificent remains of the regal palace, which attest the perfection of art among the Moors, as well as the splendour of their princes during their palmy days in the Peninsula. (See Alhambra.) The Albaycin occupies the other hill; the Antequeruela is the chief residence of the working classes; the town proper occupies the space between the two hills, and extends into the plains. The streets are generally narrow and tortuous; but the houses are tolerably well built, while their oriental structure and antiquity render them objects of great interest. There are several handsome squares, and a number of public fountains in the town. Though the great object of attraction is the Alhambra, Granada contains several other edifices worthy of notice. The cathedral, though an irregular and heavy building, is profusely ornamented with jasper and coloured marble. It is surmounted with a dome resting on twelve arches upheld by as many pilasters, beneath which stands its richly decorated high altar. In the adjoining royal chapel are numerous fine monuments, among which are those of their "Catholic majesties," Ferdinand and Isabella. The church of Nuestra Señora de las Angustias has a splendid high altar and two magnificent towers. The church of San José is an elegant modern edifice built on the site of a very ancient one, of which the tower still stands. Among the other public buildings of Granada may be mentioned the unfinished palace of the Emperor Charles; the monastery of San Gerónimo, founded by the famous Gonzalo de Córdova, whose remains were deposited in a splendid mausoleum in its church; the old Carthusian convent, situated

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[1] It is estimated that 1 lb. of silk is produced by 1500 worms, and that a mulberry tree ten years old will barely supply food for as many worms as yield 7 lbs.

[2] Casiri, *Bib. Esc.* ii. 247.

[3] Ford's *Handbook of Spain*, iii. 124.

New Granada.

on an eminence in the suburbs, and adorned with paintings by Murillo, Morales, and Cano; the Generalife, a Moorish palace, surrounded with gardens and fountains; the episcopal palace; the university; and the general hospital. Its manufactures are unimportant; the chief being silk and coarse woollen stuffs, hats, and paper. It has, also, a royal manufactory for saltpetre and gunpowder. The trade of the city is insignificant, and carried on entirely in the weekly markets, which are lively and well attended. The roads to Granada are kept in wretched repair, so that during the rainy season it is nearly isolated from the rest of the world.

Granada was founded by the Moors in the tenth century, near the site of the ancient Illiberis, and at first belonged to the kingdom of Córdova. In A.D. 1235 it became the capital of the new kingdom of Granada, and rose to almost unparalleled splendour. Its population at this time is said to have amounted to 500,000. In 1491, when it had become the last stronghold of the Moors in Spain, it mustered the extraordinary number of 60,000 men to defend it against the Christian forces of Ferdinand and Isabella. The besiegers, after innumerable deeds of valour on both sides, gained possession of the city, January 2, 1492, when the banner of Castile first floated on the towers of the Alhambra. The Moors still continued to constitute the great body of the inhabitants till 1610, when they were expelled from all parts of Spain; and in no part of the kingdom was this severe and impolitic proceeding more keenly felt than in Granada, which has never recovered from its effects. Pop. (in 1845) 70,025.

Ginez Perez de Hita, *Historia de loz Moros de Granada*; Washington Irving, *A Chronicle of the Conquest of Granada*, London, 1829, 2 vols. 8vo; Luis de Marmol, *Historia de los Moriscos de Granada*, Malaga, 1600, folio; Diego Hurtado de Mendoza, *Guerra de Granada que hizo Felipe II. contra los Moriscos*; Romey, *Historie d'Espagne depuis les premiers temps jusqu' à nos jours*, Paris, 1839–47, vols. i.–vii. But especially—Madoz, *Diccionario Geografico-Estadistico-Historico de Espana*, Madrid, 1847–1854: this is the most elaborate and trustworthy historical, geographical, and statistical work on Spain. See also the fine plates of *Antiquedades Arabes de Granada y Córdoba*, and the magnificent volume of Murphy.

GRANADA, *New*, is the most important of the three republics into which the South American republic of Colombia resolved itself at the dissolution of that confederation in 1831. Till 1810 it was a vice-royalty under the Spanish crown, but subsequently a part of the republic of Colombia, the middle and western portions of which it now embraces. New Granada is bounded on the N. by the Caribbean Sea, on the E. by the republic of Venezuela, on the S.E. by Brazilian Guiana, on the S. by the republic of Ecuador, and on the W. by the Pacific Ocean. It lies mostly between the equator and 12. N. Lat., and between 70. and 83. W. Long. Area about 480,000 square miles.

Several offshoots of the Andes traverse the western and larger portion of the republic; but the eastern portion belongs to the immense *llanos* or planes of the Orinoco. On the borders of Ecuador, not far north of the town of Pasto, the great chain of the Andes separates into two branches—the western branch, called the Cordillera de la Costa, running parallel to the coast of the Pacific; and the other to the east, containing several *paramos* or elevated plains, as well as the sources of the Japura and Putumayo, affluents of the Marañon. Further north rise the Rio Grande or Magdalena, and its largest tributary the Cauca, which flow nearly due S. to N., and fall into the Caribbean Sea by deltoid mouths nearly seven miles broad. Again, in N. Lat. 1. 50., the Eastern Cordillera parts, forming two branches nearly parallel, inclosing the broad, rich valley of the Rio Grande. Of these chains, the most easterly, stretching to the Sierra Nevada de Merida, along the right bank of the Rio Grande, is called the Eastern Cordillera de Cundinamarca; the valleys of the Rio Grande, and its tributary the Cauca, are separated by the Central Cordillera; and the valley of the Cauca is separated from the Choco districts by the Western Cordillera. These three Cordilleras are by some designated respectively—Cordillera de la Suma Paz, from the colossal groupe of this name near Santa Fe de Bogotá; Cordillera de Quindiu; and Cordillera de Choco. The eastern chain does not exceed 13,000 feet in elevation so long as the central one rises to the perpetual snow-line; but at the point where the Western Nevadas cease, the eastern chain rises to the snow limit (N. Lat. 5. 5.), and is collectively the most elevated of the three Cordilleras. The Peak of Tolima (N. Lat. 4. 46.), which rises to the height of 18,270 feet, and is the culminating peak of the Andes in the northern hemisphere, belongs to the Quindiu chain. The Sierra Nevada de Santa Marta, which extends along the coast between the Cundinamarca and the Quindiu chains, does not properly belong to the Andes. About 30 miles from the shore this Sierra rises abruptly from the plains between the Sea of Maracaybo and the Gulf of Darien to the height of nearly 19,500 feet. The vast tract of country between the Western Andes and the Pacific contains the basins of the rivers San Juan and Atrato, as well as a narrow tract along the sea-shore. This narrow strip has a soft, alluvial, and very fertile soil, but is almost always in a swampy state from the incessant rains which drench it, and render it most insalubrious, especially for Europeans. Hence it is abandoned almost exclusively to native tribes and a few negroes, who are employed in washing the gold sand found along the western declivity of the Andes in considerable quantity, and is here and there intermixed with platinum. The most southern of the table-lands which extend along the western declivities of the Eastern Andes, as well as those of Tunja and Bogotá, are at an average elevation of 9000 feet above sea-level; and on them are cultivated the cereals and fruits of Europe, as well as the root called aracacha. Those further north are much less elevated, and adapted to the cultivation of tropical grains, fruits, roots, coffee, sugar, tobacco, and cotton. The low country, extending between the plateaux of Cucuta and Girona and the mountain group of Santa Marta, is mostly covered with extensive forests, and almost destitute of population from the insalubrity of the climate, caused by the almost incessant rains, numerous swamps, and frequent inundations. It contains the extensive lake of Zapatosa.

The *llanos* or plains of the Orinoco extend over the entire tract, stretching away to the western banks of the Orinoco and to the Cassiquiare, between the Rio Negro on the S. and the Rio Apure on the N. As far south as the Vichada, the northern part is a complete level, averaging only 300 feet above sea-level near the mountains, whence it gradually but almost imperceptibly declines towards the Orinoco. With the exception of a few palms that occur at great intervals all over the plain, and some low bushy trees along the rivers, this district is quite destitute of trees. During the rainy season, which is from April till November, rain falls in torrents, accompanied with fearful thunderstorms, which usually occur between two and four o'clock in the afternoon; but the contrast is very striking in December, January, and February, when a cloud never crosses the sky. This immense plain is not at all fit for cultivation; but innumerable herds of cattle and horses find abundant pasture on it during the rainy season, though they suffer much during the dry months from November till April. The wet season is, on an average, 8° Fahr. hotter than the dry, and the mean annual temperature is 80° Fahr. The part of this great plain south of the River Vichada is covered with immense forests, infested with numerous wild beasts; and it is somewhat hilly in several districts, especially between the rivers Negro and Guaviare, where steep rocks start out of the plain abruptly to an elevation of from 300 to 600 feet. No breeze ever passes over this part of the plain, and its temperature averages three or four degrees above that of the northern portion. In it also rain falls every day in the year, except during December and January, sometimes in the form of dense mist, and oftener in great torrents. Such is the state of the climate, that the most S.E. part of it, inclosed by the Atabapo, Negro, Orinoco, and Cassiquiare, is uninhabited, though covered with enormous forest-trees. At all seasons since A.D. 1788 the navigation between the Atlantic and the Pacific has been practicable for boats by means of a canal dug in the Raspadura Ravine between the two rivers, under the superintendence of a monk.

The principal rivers of New Granada are the Magdalena and Cauca, which run their whole course within the territory of the republic, taking their rise in the Andes near the southern frontier, and, after flowing nearly the entire length of the country from S. to N., unite in one channel, and discharge their combined waters through a delta by three channels into the Caribbean Sea, about W. Long. 75. Besides these two principal streams, a large number of the tributaries of the Orinoco, having their sources in the different ranges of the Andes, drain the *llanos* of the east. Of these the principal are the Apure, Meta, Vichada, Guaviare, Rio Negro, and Japura on the mutual boundary with Ecuador. The lakes of New Granada are inconsiderable; the most celebrated is the Guatavita, not far from the city of Bogotá, into which, it is affirmed, large treasures were thrown by the natives during the Spanish invasion and conquests.

The mineral riches of New Granada are considerable, and mostly occur in the western declivity of the three chains of the Andes. They consist of salt-rock, lead, iron, copper, mercury, platinum, silver, and gold. Along all the central and western declivity of the Andes gold is found, and is obtained by washing the sand of the rivers as well as that on the sides and foot of some hills. It is found on the plateaux of Cucuta and Girona in the Eastern Andes, where silver also is obtained in considerable quantity. There are also some very rich mines in the mountain region between the Rios Cauca and Magdalena N. of N. Lat. 5½. Platinum is found in the western declivity of the Western Andes, and mercury in the valley of Santa Rosa, near Antioquia, and near the Pass of Quindiu in the Central Andes. Copper is found in the Eastern Andes, near Pamplona, and N. of Tunja. Iron and coal occur in the mountains bordering on the table-lands of Bogotá, and lead in various parts of the Eastern Andes. In some mountains N.E. of Bogotá large masses of rock-salt are found, and it is worked by the government. Large quantities of salt are furnished also by salt-springs in the same mountains.

From the great diversity of surface, soil, and climate of New Granada, the natural productions are extremely varied, embracing almost every variety found in the temperate as well as in the tropical zone. The chief objects of culture over the table-lands of Bogotá, and the district north of it along the western slopes of the eastern range, are the cereals as in Europe, the aracacha-root, and potatoes; but in the river-valleys, and on the coast-plains, maize is the chief grain cultivated with rice, sweet potatoes, and plantains. As articles of commerce are cultivated coffee, cotton, cocoa, tobacco, some sugar, and indigo. The forests abound with numerous kinds of useful timber trees; but those converted into articles of export are the logwood, Brazil, Nicaragua, and fustic trees, which grow most abundantly in the forests of the Santa Marta chain. The balsam of Tolu, so named from a village near Cartagena, is collected largely on the banks of the Rio Sinu, and ipecacuanha on those of the Rio Magdalena; cinchona, or Peruvian bark, is obtained in large quantities in the region of the Sierra de Santa Marta, as well as in several other places; cochineal of the finest quality is procured from the banks of the Sogamozo. Previous to the discovery of this country by Europeans, horses and cattle were unknown in these regions; but now tasajo, or jerked beef, and hides, as articles of commerce, are furnished by the immense herds of cattle which the *llanos* support; and mules, horses, and cattle are exported to the West Indies.

The population of New Granada are descendants of the Spaniards who have settled there during the three last centuries, and some of the native tribes intermixed with a few negroes. Very different degrees of civilization are found among the native tribes. Before the invasion of the Spaniards, those of the table-lands along the Eastern Andes had organized a political system and made some progress in the simpler arts of civilization. These, with the Indians in the valley of the Upper Magdalena, are still the best husbandmen in the republic. Between the Pacific and the Western Andes, nearly all the population are descendants of the aboriginal native tribes, whose progress in the arts of civilized life is very small, and almost exclusively owing to the few Spanish priests scattered among them as missionaries. None but the descendants of Europeans dwell in the treeless *llanos;* and their occupation is the care of the herds of mules, horses, and cattle. Wandering Indians, still in a very barbarous state, occupy the southern wooded portion of the *llanos*. The numbers of the respective races occupying New Granada have been estimated by Hubner as follows:—

White Caucasians	450,000
Native civilized Americans	301,000
Negroes	80,000
Metis (descendants of Spaniards and natives)	999,000
Mulattoes	283,000
Samoyes	120,000
Zambos (in Magdalena)	100,000
Quadrones	30,000
Total estimated population in 1853	2,363,000

Agriculture holds the first place in the industry of New Granada. Rice, cotton, tobacco, cocoa, sugar, and tropical fruits, are among the productions of the coast region; while the elevated plains yield maize, wheat, and all the products of a temperate zone. The cultivation of the soil, however, is carried on very carelessly; and reclaimed land bears but a small proportion to the whole. On the *llanos* towards the Orinoco, almost the sole occupation of the people is the rearing of cattle and horses. Agriculture is chiefly in the hands of the converted Indians, who manifest a very decided predilection for these labours of peace. Manufacturing industry is of so little importance that it can hardly be said to exist in the republic. It is limited to home-made coarse woollens and cottons, adapted for the use of the lower classes only. At Bogotá the capital, and the other principal towns, indeed, straw-hats, carpets, and some other articles are made, but in no case does the native industry become commensurate with the demands of the country, so that nearly all manufactured goods in use are imported. Mining is carried on, but only to a very inconsiderable degree. There is a silver mine at Santa Ana, in Bogotá, the only one now worked; and gold is collected in a few localities. Emeralds, diamonds, and pearls, are also obtained. The salt mines of Zipaquira are, however, extensively worked. With the exception of this last, the mining business of the country is left entirely to the poor and ignorant.

The principal ports of New Granada are,—on the Caribbean Sea, Santa Marta, Cartagena, Chagres, Rio de la Hacha, and Portobello; on the Pacific, Panamá and Buenaventura. Steamers now navigate the Magdalena; and the only railway in the country is that from Aspinwall to Panamá.

The commerce of this republic was much more extensive before its independence than at present. This arises from almost incessant internal war, the unsettled state of the government, and the inadequate means of communication with the interior, which, for want of roads, cannot export its superabundant produce. Another great hindrance is the swampy insalubrious nature of the climate over the tracts bordering on the sea, endangering the lives of those who traverse them. So thoroughly inaccessible is the valley of the Upper Cauca, which is the most fertile tract in the republic, that none of its produce can be exported except what is carried over its inclosing mountains on the backs of men. It is everywhere surrounded by lofty mountains, and the Cauca becomes unfit for navigation on issuing from the valley. The exports of New Granada average annually about L.900,000; while the imports somewhat exceed L.1,000,000. The total value of the exports from New Granada to the United Kingdom in 1854 was L.376,065; of imports therefrom L.284,695; of which L.270,722 were goods of British manufacture. The trade of the interior is carried on chiefly by mule-carriage, the roads being exceedingly bad; but of late years considerable improvement has been made in this respect.

New Granada enjoys a republican form of government, based on the written constitution of 1832, which was a close copy of the constitution of the United States of North America. On this, however, some amendments have since been made. Every man born in the country, able to read and write, and that without distinction of class or colour, is a citizen; and foreigners are naturalised at the age of twenty. The supreme government is centralized, and not as in the United States federal. The legislature consists of a chamber of deputies, with 65 members, elected by the people, and a senate of 39 members, elected by provincial colleges. The president, in whom the chief executive power is vested, is chosen for four years. Justice is administered by an independent judiciary, consisting of a supreme court, and provincial and other inferior courts; and all judges are appointed by the president, with the consent of the senate. Representation is based on population, but each province must be represented by at least one deputy. All religious sects are tolerated in the state, but the Roman Catholic is the only religion that receives support from the public treasury. They do not, however, recognise the supremacy of the Pope—the Archbishop of Bogotá being considered the head of the church. The bishops of Cartagena, Mompox, Neyva, Pamplona, Santa Marta, and Popayan, are his suffragans, and exercise authority in their particular dioceses. Education, formerly greatly neglected, has of late years received the attention of government, and the public generally have become alive to its great importance. Public schools, on the Lancasterian system, are established in all the large towns. In Bogotá there is a university; and in the provincial capitals colleges, or high schools, have been established. Bogotá has also an observatory, a public library, and several special schools; and in several places associations have been formed for the promotion of science, art, and literature. Much, however, is still wanting to a complete educational system.

The armed force of the republic is still small. The army proper consists of less than 2000 men; while the active militia does not amount to 6000. In time of war, however, every male adult is liable to military service. The navy is only fit for coast service.

The war of the revolution bequeathed to the state a bankrupt treasury and a heavy debt. In 1852 the national liabilities amounted to $37,060,888; and this sum is being constantly increased by unsatisfied interest, and a deficiency in the annual receipts. The expenditure in 1851–2 amounted to $2,145,779, while the receipts were $1,553,513.

The republic of New Granada is now divided into five departments, which are again subdivided into 18 provinces:—

Cundinamarca, containing the four provinces of Bogotá Antioquia, Neyva, and Mariquita.

Boyaca, containing also four, Pamplona, Socorro, Tunja, and Casanare.

Magdalena, also four, Cartagena, Santa Marta, Rio Hacha, and Mompox.

Cauca, also four, Pastos, Popayan, Choco, and Buenaventura.

Istmo, two, Panamá and Veragua.

The principal towns:—In Cundinamarca—Bogotá, the capital not only of the department but of the republic, having a population of about 40,000; Honda, which has about 5000 inhabitants; Rio Negro, 6000; Mariquita, a small town near rich mines of gold, west of Honda; Neyva, pop. 4000; Timana, 2000—both these are noted for their plantations of cacao, and gold is washed near Timana—Ibague has a college, and is situated nearly 4900 feet above sea-level, at the foot of the Central Andes; in the valley of the Cauca are Antioquia, pop. 4500, and Madellin, 9000.

In Boyaca—Tunja, the capital, has a population of about 7000; Socorro, 12,000; Rosario de Cucuta, a pretty large town carrying on an active commerce in cacao, sugar-cane, coffee, and cotton; Pamplona, with 4000 inhabitants, and several gold mines in its vicinity.

In Magdalena—Cartagena, the capital; Mompox, pop. 10,000; Ocaña, 8000; Santa Marta, 3000; Ciudad de la Hacha, 3000; west of this town, along the coast, pearls were formerly fished.

In Cauca—Popayan, the capital, has about 20,000 inhabitants. It is situated 5824 feet above sea-level, near the sources of the Cauca river; and the volcanoes Porace and Sotara are in the vicinity; Cali, in the vale of Cauca, from which the chief road over the Western Andes leads to Buenaventura on the Pacific; Buenaventura, a collection of a few miserable huts built on posts, and yet it is the only port that supplies the valley of the Cauca and Popayan with wares, and it has mostly several vessels anchored there, both coasters and foreign. Atacames and Barbacoas are small harbours also on the Pacific. Pasto, with a population of 5100, stands at an elevation above the sea of 8580 feet in the Andes, near the boundary of Ecuador, on a fine plain near the foot of a very restless volcano.

In Istmo—Los Santos has a population of about 1600; David, 2800 inhabitants; Panamá, 6000; and Santiago, 2200.

History.

New Granada was discovered by Columbus 1498–1502. Different governments having been established throughout the country, a vice-royalty was at length, in 1732, formed of what is now the republics of Ecuador and New Granada. In 1810 the Spanish authority was thrown off, and an incessant war against that power maintained until 1824, when the Spaniards were finally vanquished. Bolivar, the most distinguished leader of the Spanish-American revolution in 1818, proposed the union of Venezuela with New Granada; and when the Congress of Angostura met early in 1819, the fundamental law was enacted, which established the republic of Colombia, and which was inaugurated on the 17th December of the same year. This union was never cordial, and lasted only ten years. In November 1829, Venezuela seceded from it; and in May 1830, Ecuador also withdrew. The central part of Colombia constituted itself the Republic of New Granada, 21st November 1831. In 1832 the constitution was promulgated, and the republic divided into provinces. Under the constitution, New Granada became an integral state, and the powers of government were divided into legislative, judicial, and executive, each independent of the other. The provinces secured to themselves municipal bodies, having powers over all local legislation. In 1843 the constitution was reformed, but without any variation in the organization of the government. On January 1, 1852, slavery was entirely abolished, and no slave has been born in the republic since 1821. In 1855 the Isthmus of Panamá was constituted a state under the name of Istmo, subject to the national government, however, in certain specified affairs.

GRANADA, a town of Central America, state of Nicaragua, on the N.W. bank of the lake of Nicaragua. By means of the lake and the river S. Juan, it communicates with the Caribbean Sea, and thus carries on a considerable trade. Pop. about 12,000.

GRANADA, FRAY LUIS DE, a celebrated Dominican friar, one of the greatest of the ascetic writers of Spain, was born in 1505, and died in 1588. His father was one of those whom Ferdinand the Catholic induced by valuable privileges and immunities to settle in Granada after the conquest of the Moors. At five years of age Luis was left a destitute orphan by the death of both his parents; but the Conde de Tendilla, alcalde of Alhambra, struck with the singular intelligence of the child, took him under his protection and had him educated with his own sons. Having completed his nineteenth year, Luis determined to devote himself to the Church, assumed the habit of the preaching friars in the convent of Santa Cruz, and became the first evangelical orator of his day. In vain did the queen offer him the bishopric of Viseu, and afterwards nominate him to the metropolitan church of Braga: he declined all ecclesiastical honours and emoluments in order that he might spend his life in what appeared to him a sphere of humble but extensive usefulness.

Luis de Granada wrote several things in Latin; but his *Guide to Sinners*, his *Meditations for the Seven Mornings and Evenings of the Week*, and his *Symbol of Faith*, which are all in the vernacular, are his most celebrated works. His friend, and predecessor of the same school, Juan de Avila, had created, so to speak, a powerful, deeply-coloured language for embodying religious sentiment, and Granada beautified it by retouching it with light and shade, giving it additional harmony, fluency, and dignity. These authors long seem to have been considered the great models for Spanish prose; and though we cannot enter into the rapture of the Spanish critics in extolling the power and pathos of their effusions, yet we may mention those on the sufferings and death of the Saviour as exquisite specimens. The *Descent into Hell*, to emancipate the spirits there imprisoned, we consider the finest specimen of the style and eloquence of Luis de Granada. This is justly considered one of the most sublime passages in the Spanish language. Fray Luis de Granada lived to the age of 83, honoured by all ranks, and died in a convent at Lisbon, where he had spent his declining years in strict seclusion.

GRANARD, a market-town of Ireland, county of Longford, 65 miles W.N.W. of Dublin. It has a parish church, a Roman Catholic chapel, dispensary, market-house, barracks, and union workhouse. Near the town is the Mote of Granard, an artificial mound, with vestiges of an encampment. Pop. (1851) 1805, besides 1855 in workhouse.

GRANARY, a building to store corn in. Granaries are generally built of brick, with quarters of timber wrought in the inside, to which the boards, with which the inside of the granary must be lined, are nailed so close to the bricks that there may be no space left for vermin to harbour in. There is an advantage in having many storeys, because the shallower the corn lies the better, and the more easily it is turned.

The two great requisites in the erecting of granaries are—to make them sufficiently strong, and to give them an exposure to the most drying winds. In many parts of England, particularly in Kent, corn is treated in the following manner. To separate it from dust and other impurities after it is threshed, it is tossed with shovels from one end to the other of a long and large room; the lighter substances fall down in the middle of the room, and the corn only is carried from side to side or from end to end of it. After this the corn is screened; and being then brought into the granary, it is spread about half a foot thick, and turned from time to time, about twice in a week; the screening of it is also repeated once a week. This sort of management is continued about two months, after which it is laid a foot thick for two months more; and during this time it is turned once a week, or twice if the season be damp, and now and then screened. After about five or six months, it is raised to two feet thickness in the heaps, and then turned once or twice in a month, and screened from time to time. After a year, it is laid two and a half or three feet deep, and turned once in three weeks or a month, and screened proportionally. When it has lain two years or more, it is turned once in two months, and screened once a quarter; and however long it be kept, the oftener the turning and screening are repeated the better will the grain be preserved. It is proper to leave an area of a yard wide on every side of the heap of corn, and other empty spaces into which the corn may be turned and tossed as often as required. In Kent two square holes are made at each end of the floor, and a round one in the middle, by means of which the corn is thrown out of the upper into the lower rooms, and so up again, that it may be the better turned and aired. The screens are made with two partitions, to separate the dust from the corn, which falls into a bag; and when sufficiently full this is thrown away, while the pure and good corn remains behind. Corn has by these means been kept thirty years; and it is observed, that the longer it is kept the more flour it yields in proportion to the corn, and the purer and whiter the bread is, the superfluous humidity alone evaporating in the keeping. At Zurich in Switzerland corn has been kept eighty years, or longer, by methods of a similar description.

The public granaries at Danzig are seven, eight, or nine storeys in height, and have a funnel in the midst of each floor, to let down the corn from one to another. They are built so securely, that though every way surrounded with water, the corn contracts no damp, and the vessels have the convenience of coming up to the walls to be loaded. The Russians and others preserve their corn in subterranean granaries of the figure of a sugar-loaf, wide below and narrow at top, the sides being well plastered, and the top covered with stones. They are careful to have the corn well dried before it be laid into these storehouses, and often dry it by means of ovens, especially where the summer dry weather is too short to effect this sufficiently. This method of storing grain has been practised in many countries from remote antiquity; and in Sicily, in particular, at the present day, many of the granaries are simply excavations in the calcareous rock.

Some recommend that the roofs of granaries should be composed of tiles, because in the worst seasons, when the regular apertures cannot be opened with safety, there will always be a considerable inlet for fresh air at their joinings, and also an issue for the exhalations given out by the grain; while others prefer a very close roof, as of lead or zinc, for the perfect exclusion of insects and vermin. If there happen to be any windows to the south, care must be taken to shut them in moist weather, and in the time of the hot southern winds. There must be no cellar or other damp place under a granary, nor should it ever be built over stables; for in either of these cases the corn will certainly suffer by the exhalations—be rendered damp in the one, and ill-tasted in the other.

M. Duhamel and Dr Hailes have recommended various contrivances for ventilating or blowing fresh air through corn laid up in granaries or ships, in order to preserve it sweet and dry, and to prevent its being attacked by weevils or other insects. This may be done by nailing wooden bars or laths on the floor of the granary, about an inch distant from each other when they are covered with hair-cloth only; or at the distance of two or three inches when coarse wire-work, or basket-work of osiers, is laid under the hair-cloth, or when an iron plate full of holes is laid upon them. These laths may be laid across other laths, nailed at the distance of fifteen inches, and two or more inches deep, that there may be a free passage for the air under them. The under laths must come about six inches short of the wall of the granary at one end, on which a board is to be set edgewise, sloping against the wall; for by this disposition a large air-pipe is formed, which having an open communication with all the interstices between and under the bars, will admit the passage of air below forcibly through a hole at the extremity, and consequently carry off the moist exhalations of the corn. The ventilators for supplying fresh air may be fixed against the wall, on the inside or outside of the granary, or under the floor, or in the ceiling; but wherever they are fixed, the handle of the lever that works them must be out of the granary, otherwise the person who works them would be in danger of suffocation when the corn is fumigated with burning brimstone, as is sometimes done for destroying weevils. Small moveable ventilators will answer the purpose for ventilating corn in large bins in granaries, and may easily be moved from one bin to another. If the granary or corn-ship be very long, the main air-pipe may pass lengthwise along the middle of it, and convey air on both sides under the corn. In large granaries, double ventilators laid upon each other may be fixed at the middle and near the top of the granary, that they may be worked by a windmill fixed on the roof of the building, or by a water-mill. The air is conveyed from the ventilators through a large trunk or trunks, reaching down through the several doors to the bottom of the granary, with branching trunks to each floor, by means of which it may be made to pass into a large trunk along the adjoining cross-walls; and from these trunks several lesser trunks, about four inches wide, branch off at the distance of three or four feet from one another, and reach through the whole length of the granary, their farther ends being closed. Seams of one-tenth or one-twelfth of an inch should also be left open at the four joinings of the boards, where they are nailed together, that the air may pass through them into the corn. In some of these lesser trunks there may be sliding shutters, to stop the passage of the air through those trunks which are not covered with iron, or to ventilate one part of the granary more briskly than others, as there may be occasion. There should also be wooden shutters, hung on hinges at their upper part, so as to shut close of themselves; and these should be fixed to openings in the walls of the granary on their outside; by which means they will readily open to give a free passage for the ventilating air, which ascends through the corn, but will instantly shut when the ventilation ceases, and thereby prevent the admission of damp from the external air. The ventilation should be made only in the middle of dry days, unless the corn, when first put in, be cold and damp.

GRAND CANAL. See Ireland.

GRAND ISLAND, an island in the Niagara River, United States of North America. Its lower extremity is about four miles above the Niagara Falls. It is about nine miles in length by six in breadth, having an area of about 17,400 acres. The soil is fertile; the surface is level, and mostly covered with a heavy growth of timber.

GRAND RAPIDS, a town in the United States of North America, capital of Kent county, Michigan. It is finely situated on the left bank of the rapids of the Grand River, forty miles from its mouth and sixty miles W.N.W. from Lansing. This is one of the most important and flourishing inland towns of the state, and a place of much activity in trade and manufactures. Steamboats run daily from this place to Grand Haven at the mouth of the river, where they meet the lake steamers. Grand Rapids was founded in 1833, and incorporated in 1850. Pop. (1853) about 5000.

GRAND RIVER, in the state of Michigan, the largest river lying wholly within the state. It rises in the Washtenaw and Hillsdale counties by two branches, which unite in Jackson county. Thence it pursues a very winding course, generally in a westward direction, to Lake Michigan. It is about 270 miles in length, and is about 320 yards wide at its mouth. There are several smaller streams of this name in the United States.

GRAND SERJEANTRY, an ancient species of tenure, whereby the tenant was bound, instead of serving the king in the wars, to do some special honorary service to the king in person; as to carry his banner, sword, or the like; or to be his butler, champion, or other officer, at his coronation.

GRANDEE (Span. *grande*), a nobleman of the highest rank. This term was originally applied in Spain to those great lords of the court on whom was conferred the privilege of remaining covered in the presence of the king. In some Spanish families this honour is hereditary.

GRANDOLLA, a town of Portugal, prov. of Alentejo, 30 miles S.S.E. of Setubal. It is situated in a plain west of the Serra de Grandolla, and is celebrated for its annual fair and the ruins of an old castle in its vicinity. The surrounding country abounds in fruits of the finest quality, and an active trade is carried on in these, and wines and oil of excellent quality manufactured here. Pop. nearly 3000.

GRANGE, an ancient term for a granary, and originally applied to the storehouse in which religious tithes paid in grain were deposited. It was also used in a more extended sense for a whole farm, with all its appendages of barns, stables, &c.

GRANGEMOUTH, a seaport-town of Scotland, county of Stirling, on the Carron and the Forth and Clyde Canal, a quarter of a mile from the Firth of Forth, and 11 miles S.S.E. of Stirling. It has a custom-house, extensive quays and warehouses, and a dry dock. The chief exports are iron goods, coal, grain, wool, linen yarn, and cotton and woollen goods; imports, timber, hemp, flax, tallow, &c. The harbour is commodious, but is not accessible to vessels drawing above twelve feet of water. Pop. (1841) 1488. The population of 1851 is included in Falkirk.

GRANGER, James, a well-known biographer, who has himself been left without any memorial. The time and place of his birth, and the condition of his parents, are equally unknown. He studied, however, at Christ Church, Oxford, which he probably left without taking a degree; and having entered into holy orders, was presented to the vicarage of Shiplake in Oxfordshire, which appears to have been his only preferment. In the dedication of his *Biographical Dictionary*, which was published in 1769, he informs us that his name and person were at that time known to few persons, as he had the good fortune to retire early to independence, obscurity, and contentment. In 1772 he published a sermon entitled *An Apology for the Brute Creation*, in which he strongly censured cruelty to animals; but which, owing to the mention made in it of horses and dogs, seems to have excited disgust amongst the purists of that time. In 1773 he presented to the public another sermon on the "Nature and Extent of Industry," which, notwithstanding a strange dedication, was more favourably received. But his principal work, indeed that by which alone he is now known, is his *Biographical History of England*, from the time of Egbert the Great to the Revolution, a production of very considerable merit, which occupied him many years, and of which he lived to see two editions sold. In this work he has only given biographies of those persons of whom some engraved portrait had been executed; and this circumstance, joined to the success which it met with, seems to have had the effect contemplated by the author, namely, to create a taste for collections of portraits. The *Biographical History* was first published in 1769, in four thin vols. quarto; but the second and subsequent editions have been published in octavo. On the 14th April 1776, whilst at the communion table in the act of administering the sacrament, Granger was seized with an apoplectic fit, and died next morning.

GRANICUS, in *Ancient Geography*, a small river of Asia Minor, rising in Mount Ida in the Troad, and flowing northwards into the Propontis, which it enters opposite the island of Proconnesus. Its historical is greater than its geographical interest; for it was the scene of two very famous battles, the first gained by Alexander over the Persians in 334 B.C., and the second by Lucullus over Mithridates in 74 B.C. The Granicus is probably represented by the modern Kodsha-su, though some writers identify it with the *Dimotico.*

GRANITE, a compound rock, constituting the lowest of the geological formations, according to older geologists; but it has lately been found resting even on secondary formations in the Alps. It (essentially) consists of quartz, felspar, and mica. Its great durability as a material for building is attested by many of the ancient Egyptian monuments, in which the stone exhibits no appearance of decay even after a lapse of 3000 years. There are some granites, however, which shake and crumble down in a very few years, particularly those in which felspar predominates. This rock becomes refractory to work after it has been some time quarried; and it is usual to keep it for some time under water before it is wrought into ornamental objects. See MINERALOGY and GEOLOGY.

GRANJA (LA) DE TORREHERMOSA, a royal town of Spain in the province of Estremadura. It is situated in a very beautiful plain, and its streets and houses are regularly and commodiously built. The vicinity abounds with excellent water, fruits, honey, and yields abundance of cereals. The town contains one large and two small squares, a parish church, a town-house, a prison, and a primary school. It has manufactures of woollen and linen cloth, and a considerable trade in cattle, wool, and corn. Pop. about 2000.

GRANOLLERS, a royal town of Spain, in the province of Cataluña, 20 miles N. by E. of Barcelona, on the left bank of the rivers Besos and Congost. It is not well built, has narrow, badly-paved streets, four squares, a large parish church, a chapel, two schools, a town-house, hospital, prison, and storehouse. Its manufactures are hempen shoes, linen, woollen, earthenware, and cotton fabrics; and its principal trade is in corn, fruits, wool, and cattle. Pop. about 2500. Two annual cattle fairs are held here.

GRANTHAM, a municipal and parliamentary borough and market-town of England, county of Lincoln, on the right bank of the Witham, 22 miles S.S.W. of Lincoln. The parish church is a spacious Gothic edifice of the thirteenth century, surmounted by an elegant spire 273 feet high, and has an elaborately carved font, and some splendid monuments. At the free grammar-school, founded by Bishop Fox, Sir Isaac Newton received part of his education. Grantham has also a guildhall, with a spacious assembly room, a gaol, house of correction, savings-bank, dispensary, several dissenting places of worship, and national and other schools. The principal trade is that of malting, which is carried on to a great extent. Market-day, Saturday. It is governed by a mayor, four aldermen, and twelve councillors, and returns two members to parliament. Pop. (1851) of municipal borough, 5,375; of parliamentary borough, 10,873.

GRANULATION of metals, an operation simply performed by slowly pouring the melted mass through an iron cullender into water, which is kept in agitation by means of a bundle of twigs. By this method metals may be reduced to minute grains.

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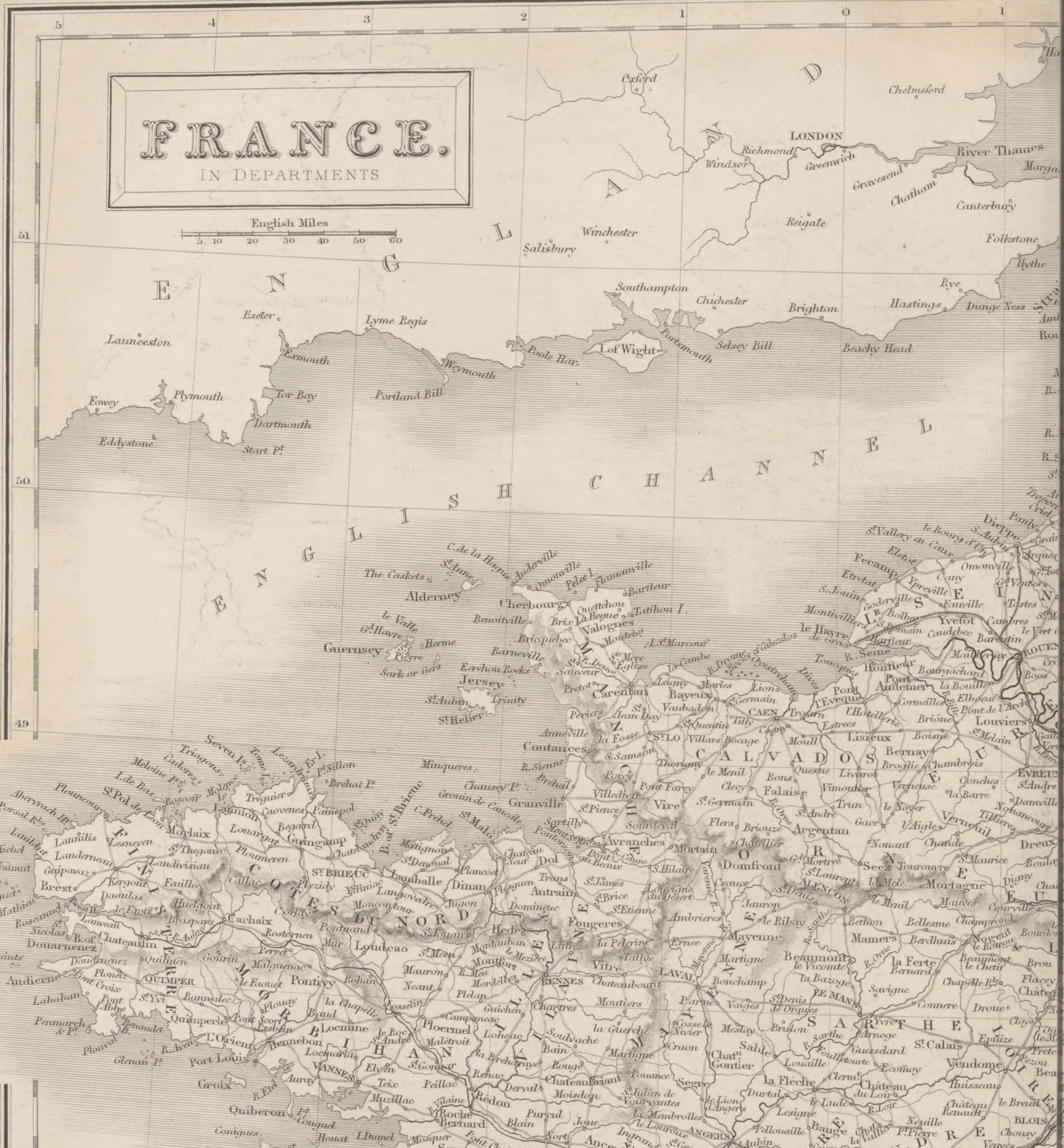
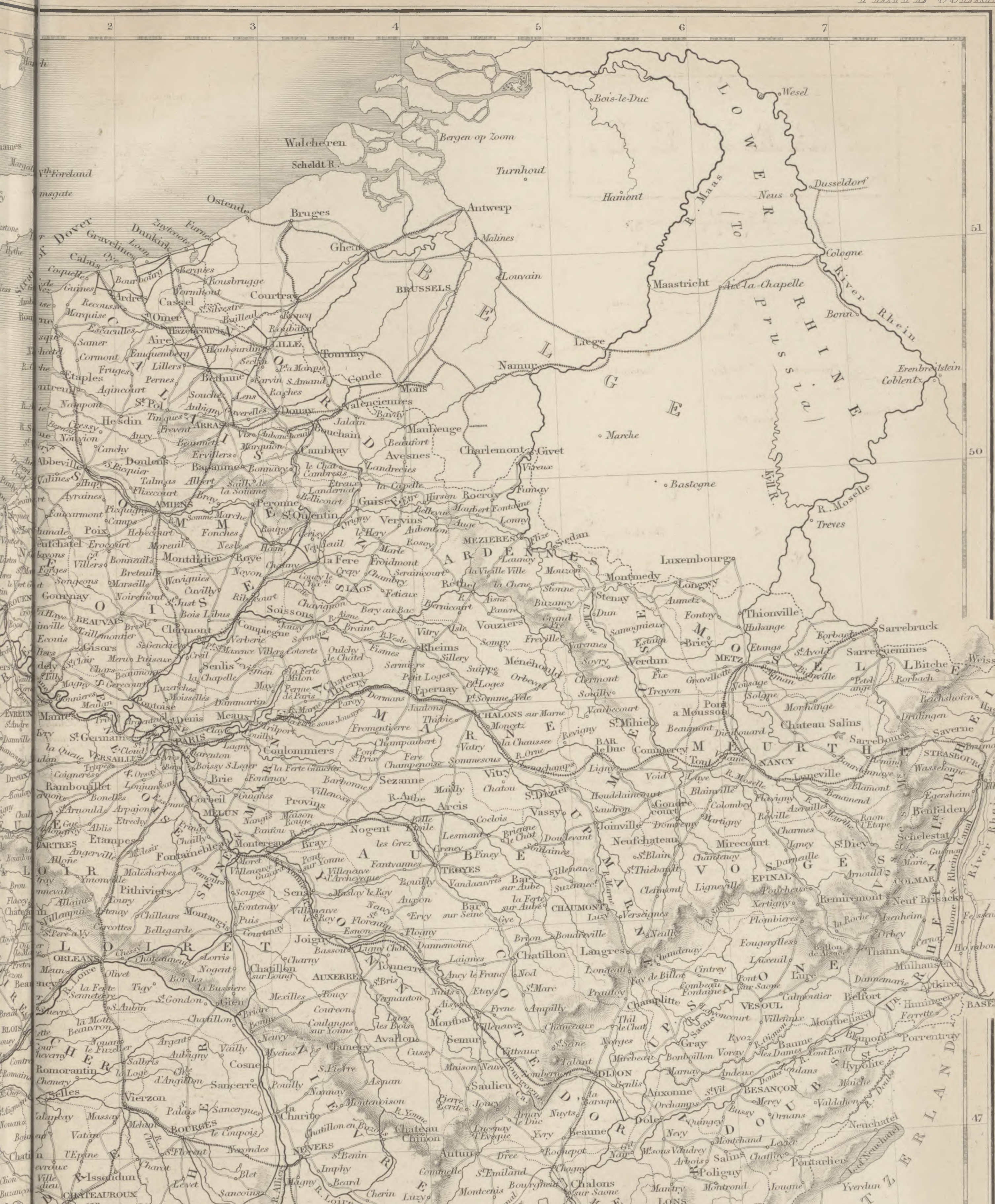


FRANCE.

IN DEPARTMENTS

FRANCE, NORTH

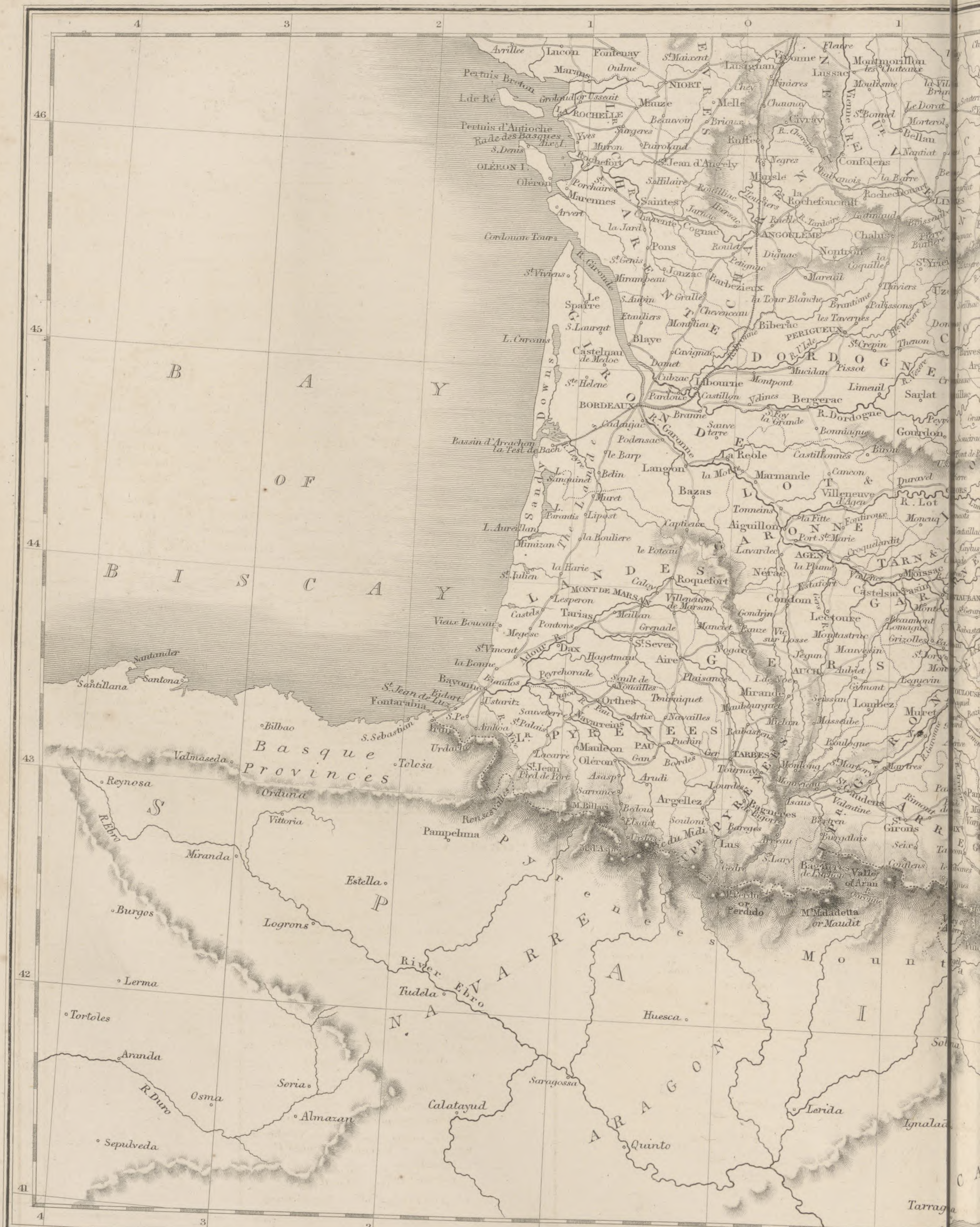
Edinburgh, Published by A.



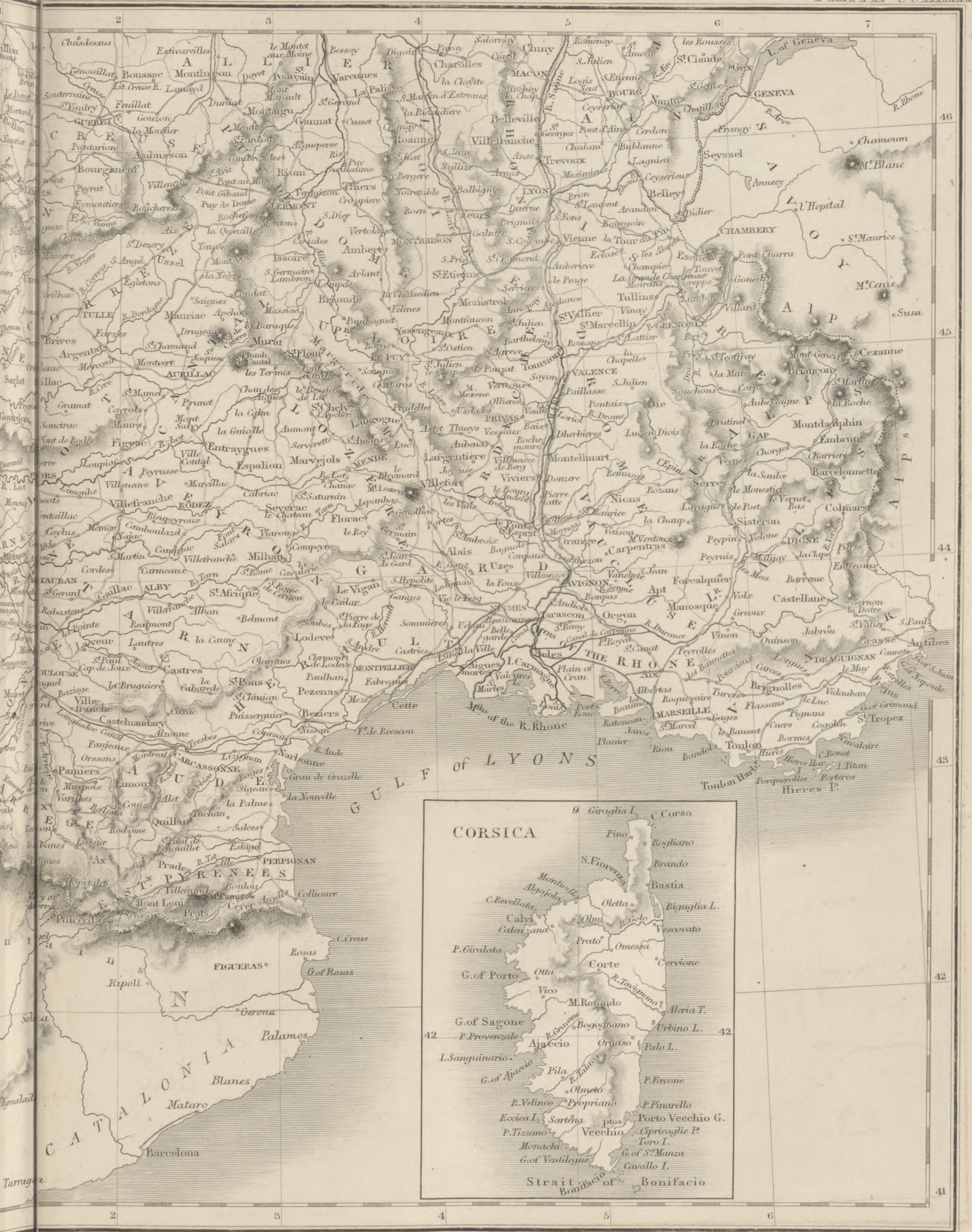
ORTHERN PART.

gh, Publd. by A. & C. Black.

FRANCE, SOUT



Edinburgh, Publishe



Published by A. & C. Black.

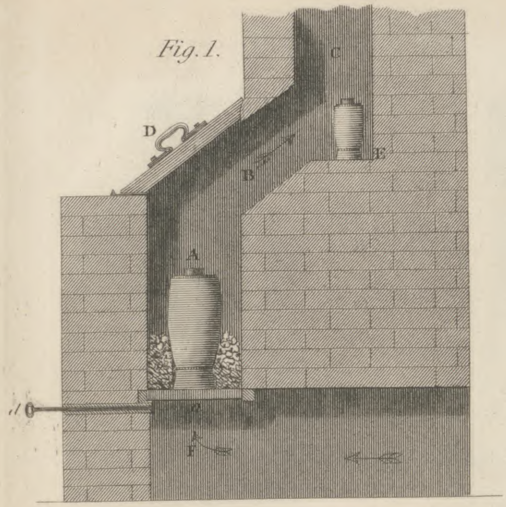
Engraved by S. Hall, Bury Str. Bloomsbury

FURNACE.

PLATE CCLXIV.

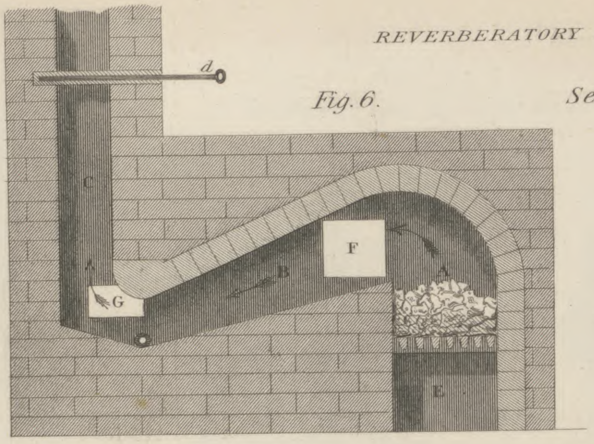
COMMON AIR, OR MELTING FURNACE.

Fig. 1.



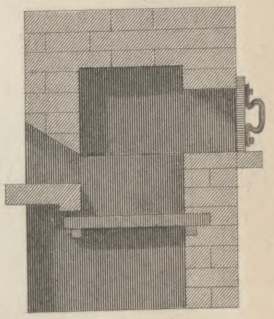
REVERBERATORY FURNACE.

Fig. 6.



Sections.

Fig. 7.



Plan.

Fig. 8.

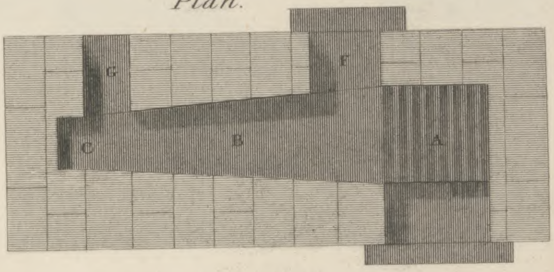
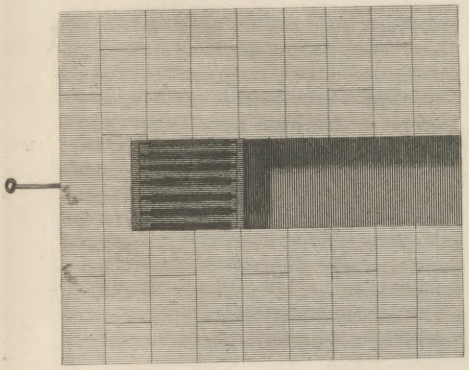


Fig. 2.



BRASS FOUNDERS MELTING FURNACE.

Fig. 4.

Section.

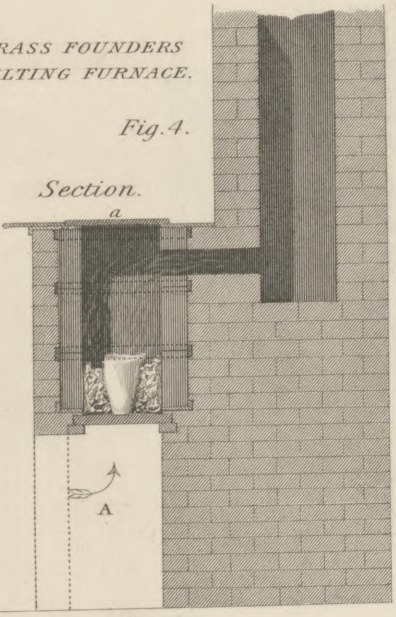
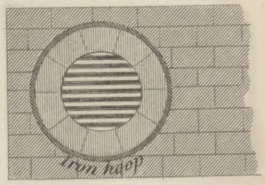
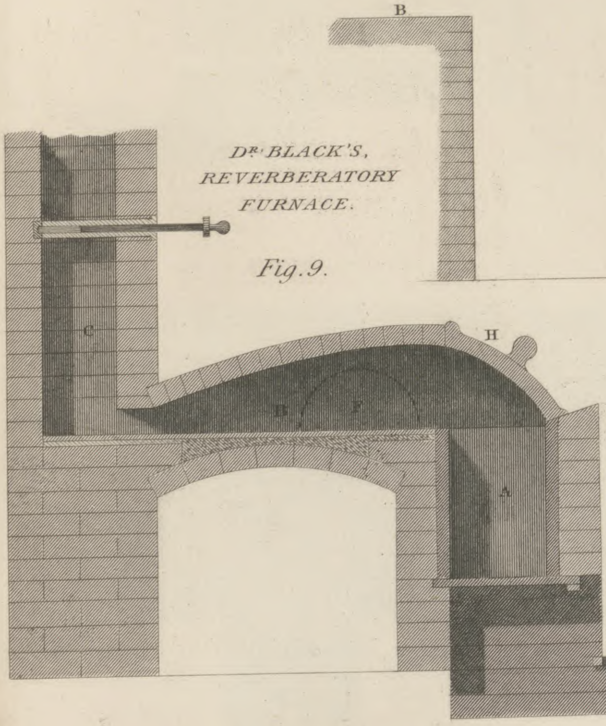


Fig. 5.
Plan.



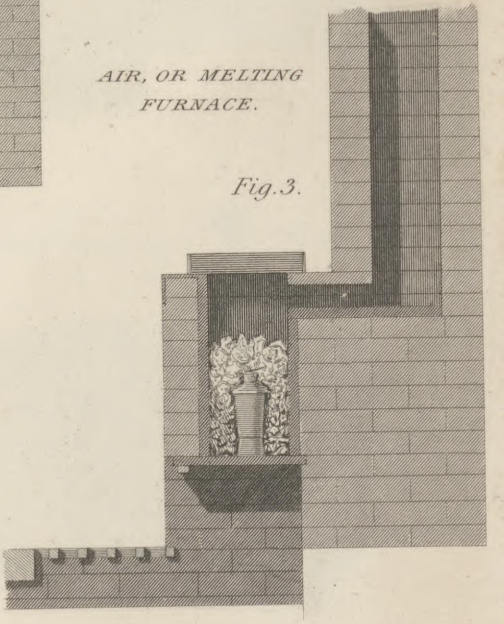
Dr. BLACK'S, REVERBERATORY FURNACE.

Fig. 9.



AIR, OR MELTING FURNACE.

Fig. 3.



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FURNACE.

PLATE CCLXV.

MUFFLE FURNACE.

Fig. 7.

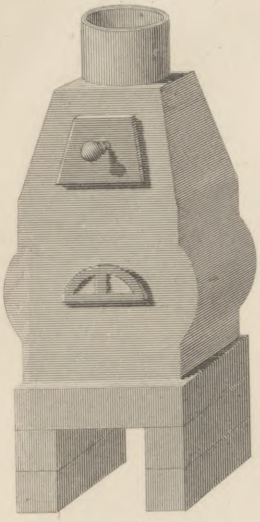


Fig. 9.

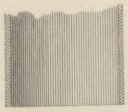
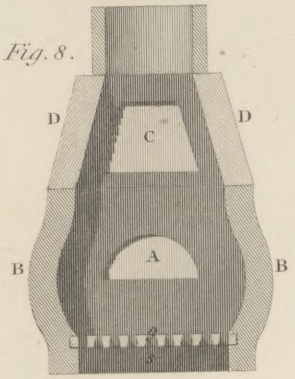


Fig. 8.



ENAMELLERS MUFFLE FURNACE.

Fig. 5.

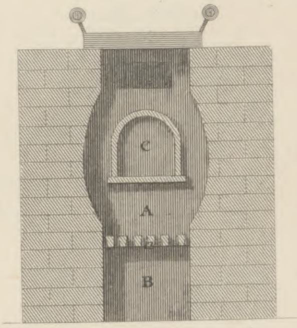


Fig. 6.

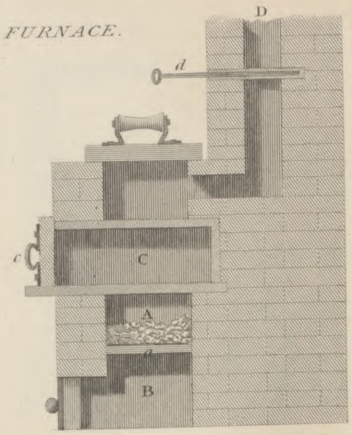
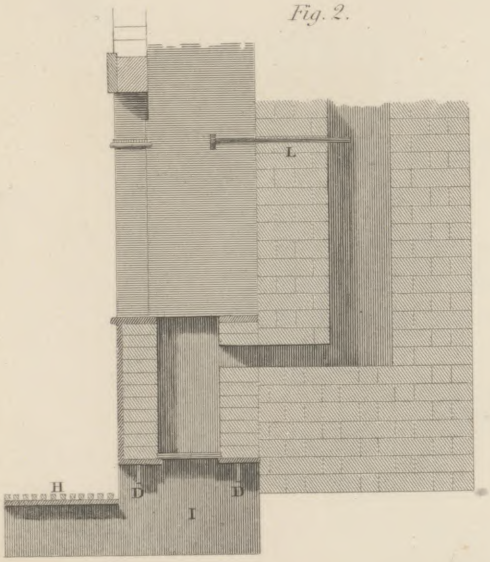


Fig. 2.



MR MUSHET'S FURNACE.

Fig. 1.

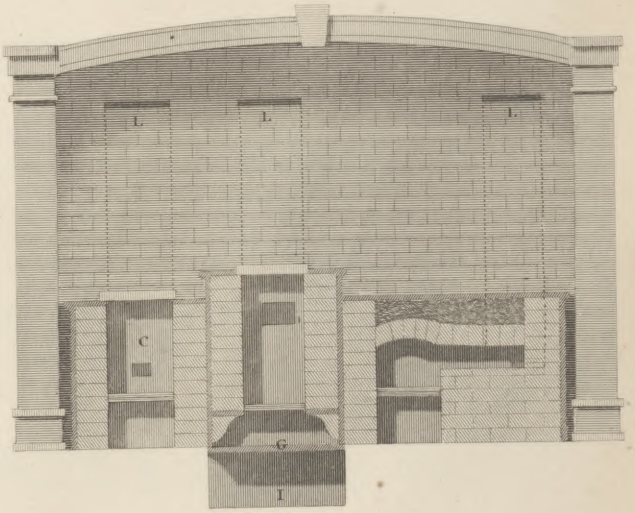
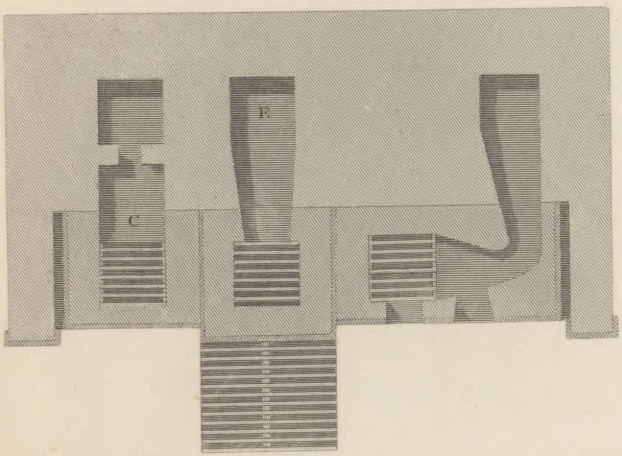
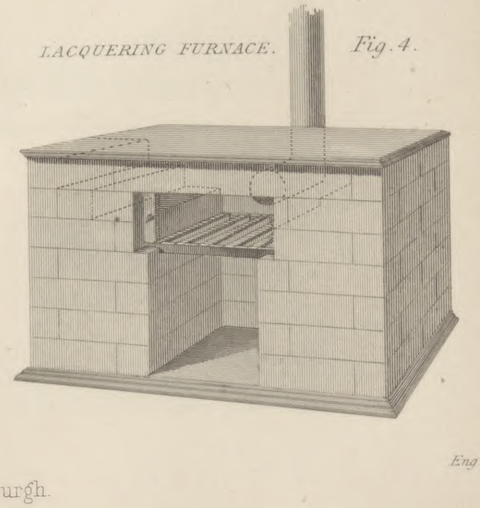


Fig. 3.



LACQUERING FURNACE.

Fig. 4.



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FURNACE.

PLATE CCLXVI.

Fig. 1.

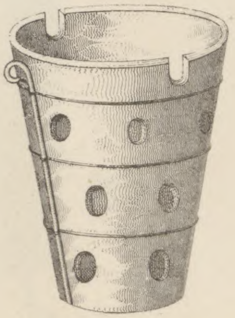

Fig. 8.

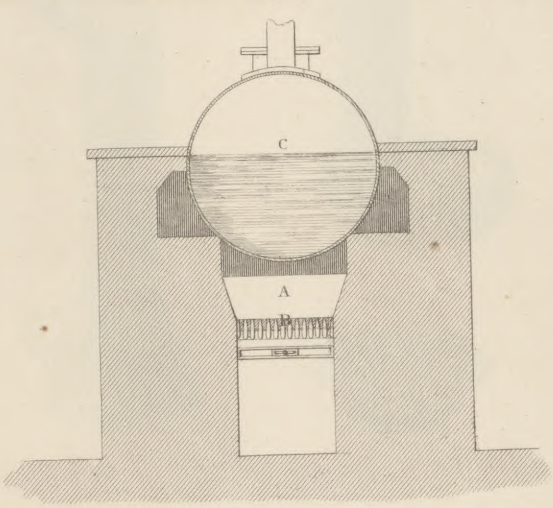

Fig. 7.

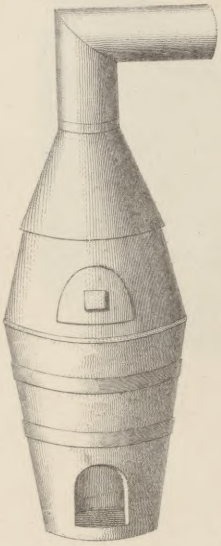

Fig. 4.

Fig. 3.

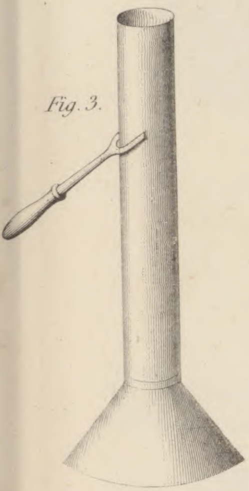

Fig. 6.

Fig. 2.

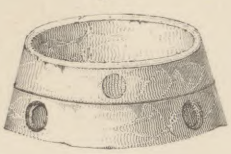

Fig. 5.

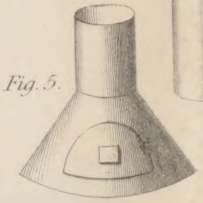

Fig. 9.

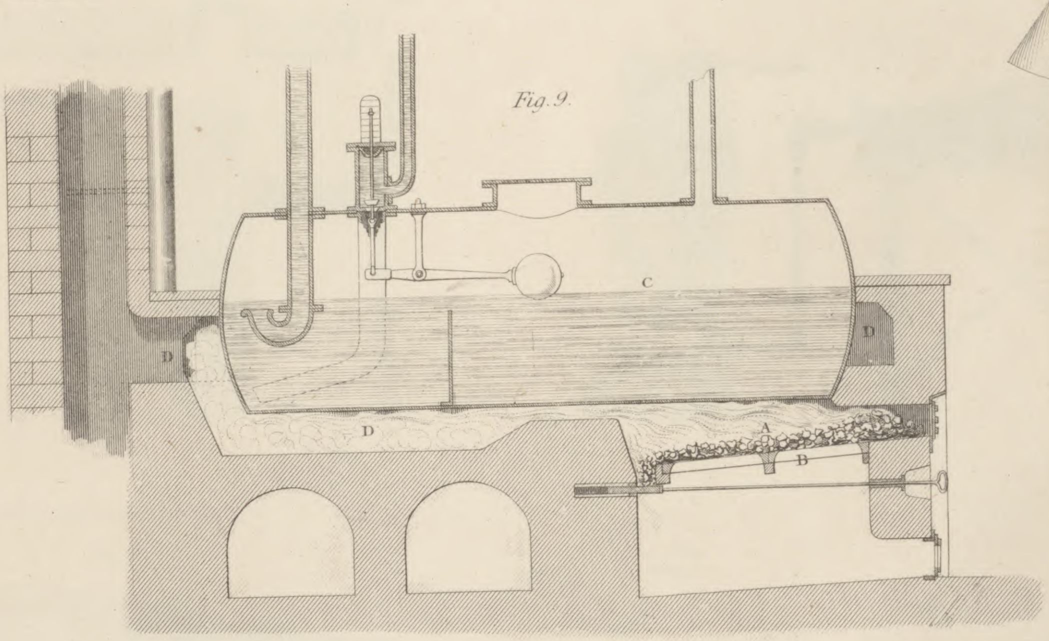

Fig. 11.

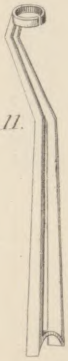

Fig. 13.

Fig. 10.

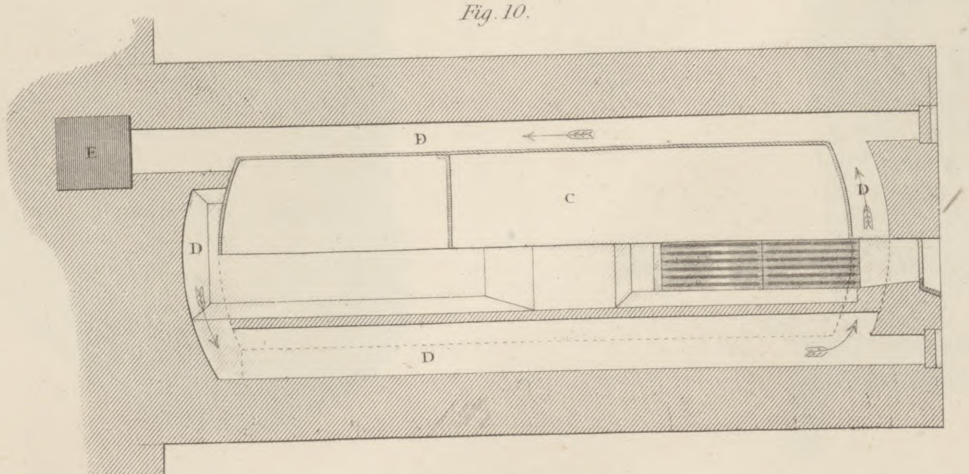

Fig. 12.

Fig. 14.

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FURNACE.

PLATE CCLXVII.

Fig. 1.

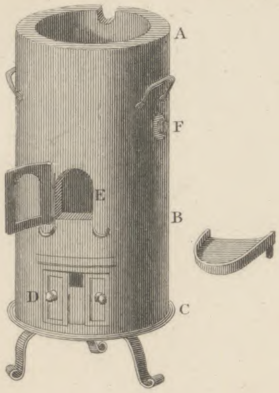


Fig. 2.

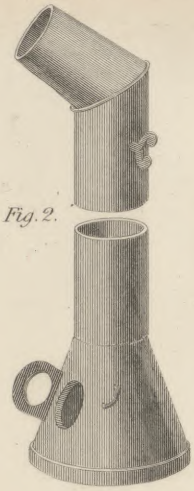


Fig. 3.

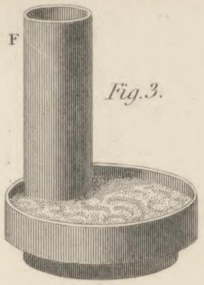


Fig. 5.

Fig. 4.

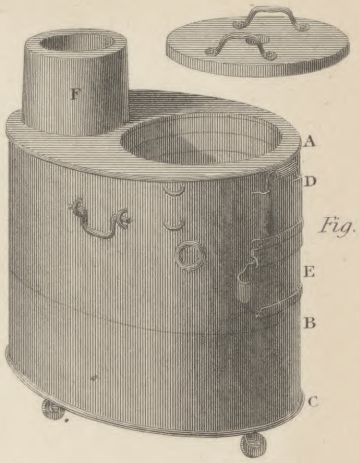


Fig. 6.

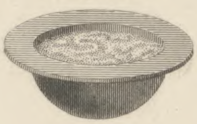


Fig. 8.

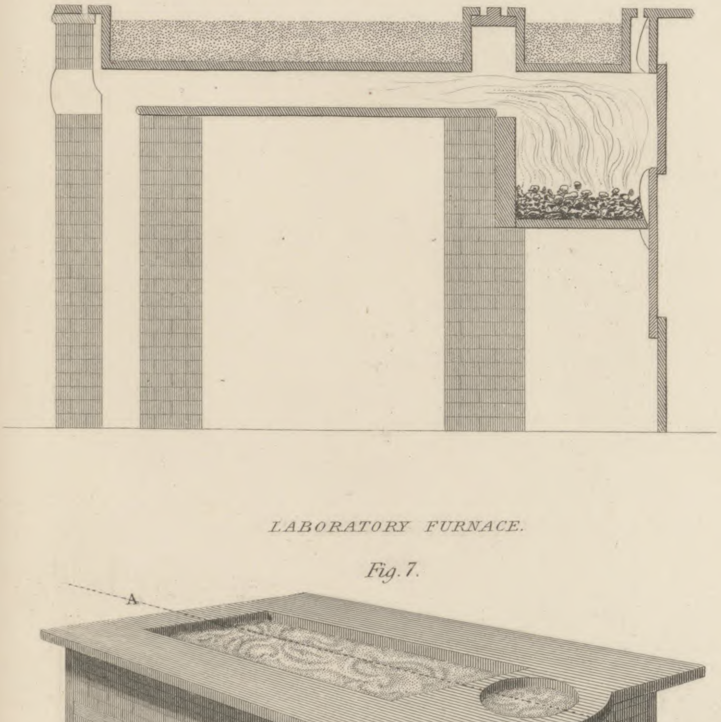
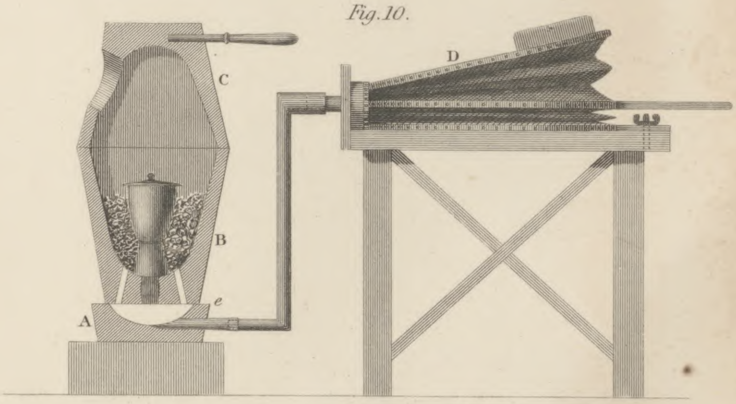


Fig. 10.



LABORATORY FURNACE.

Fig. 7.

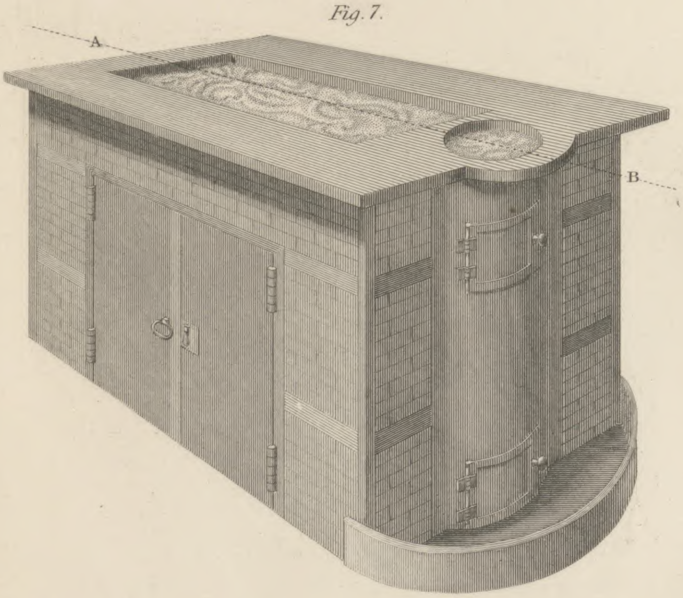


Fig. 9.

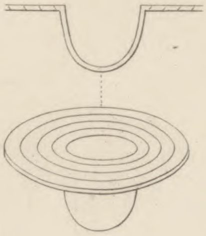
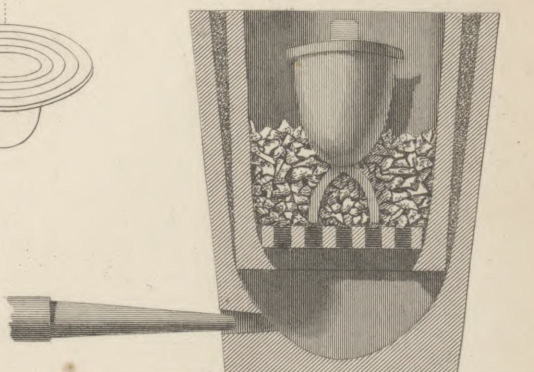


Fig. 11.



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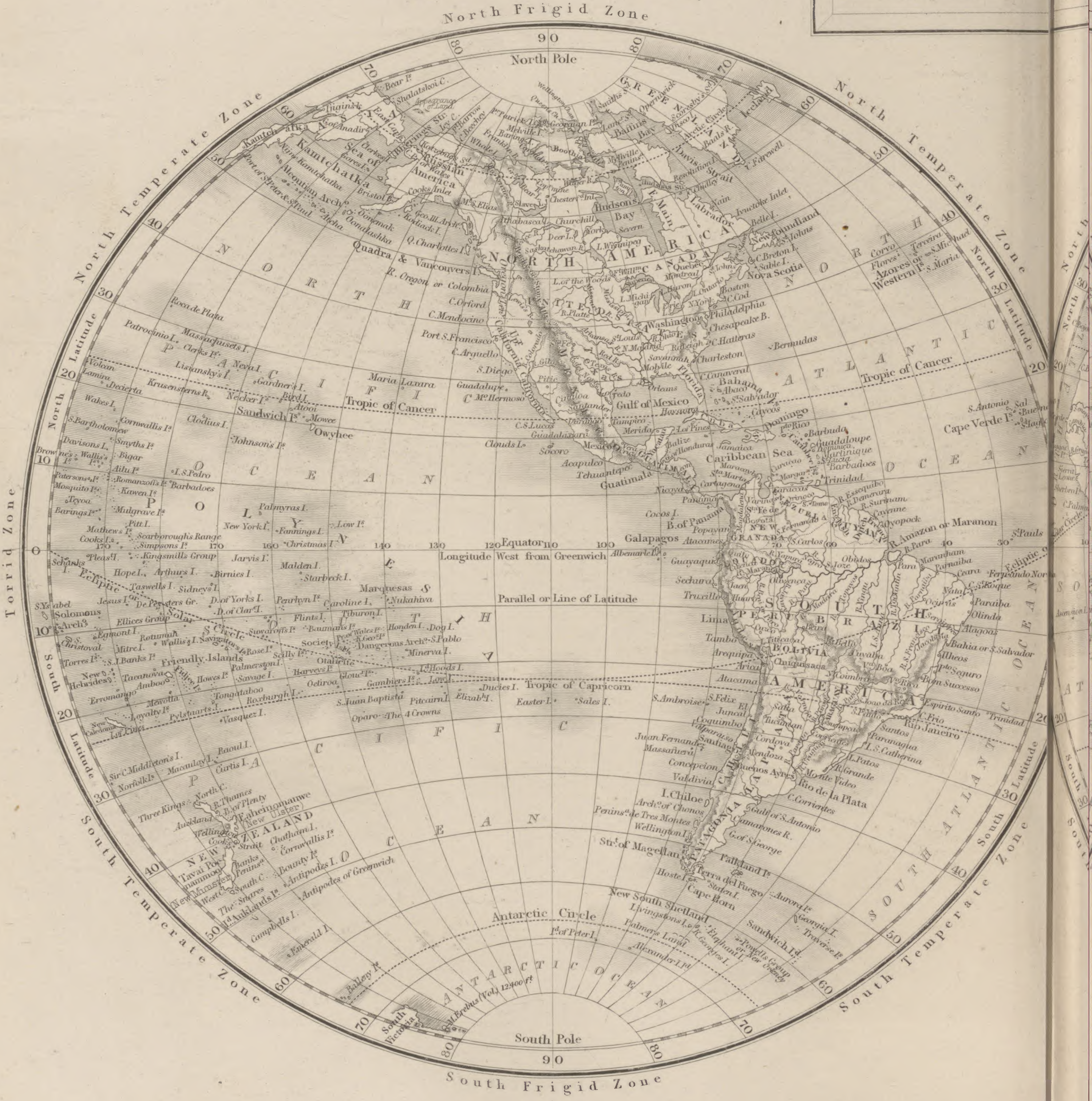
Eng^d. by G. Aikman, Edin^r.

THE WO

WESTERN HEMISPHERE.

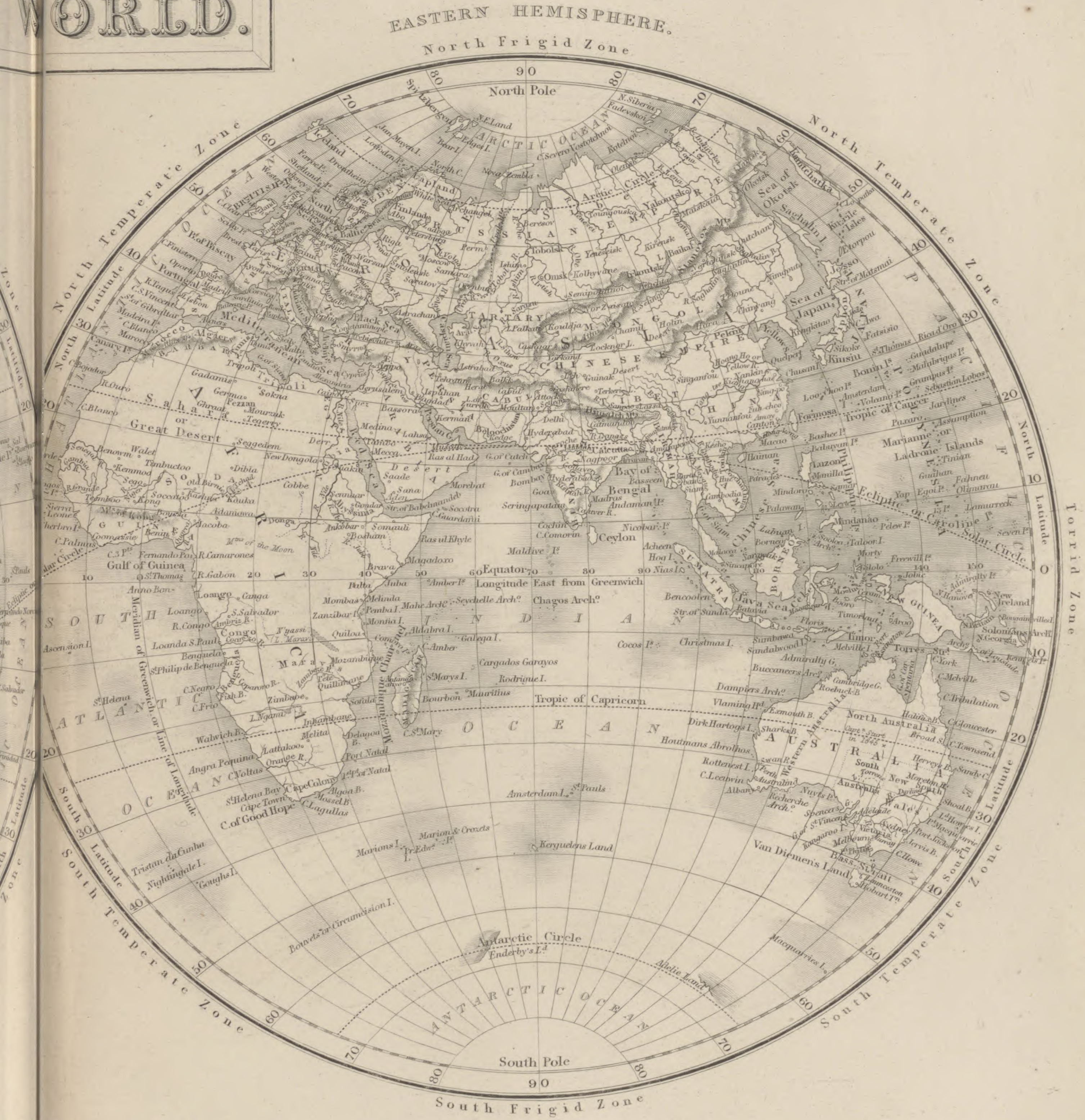


Engraved by S. Hall

Edinburgh, Publ

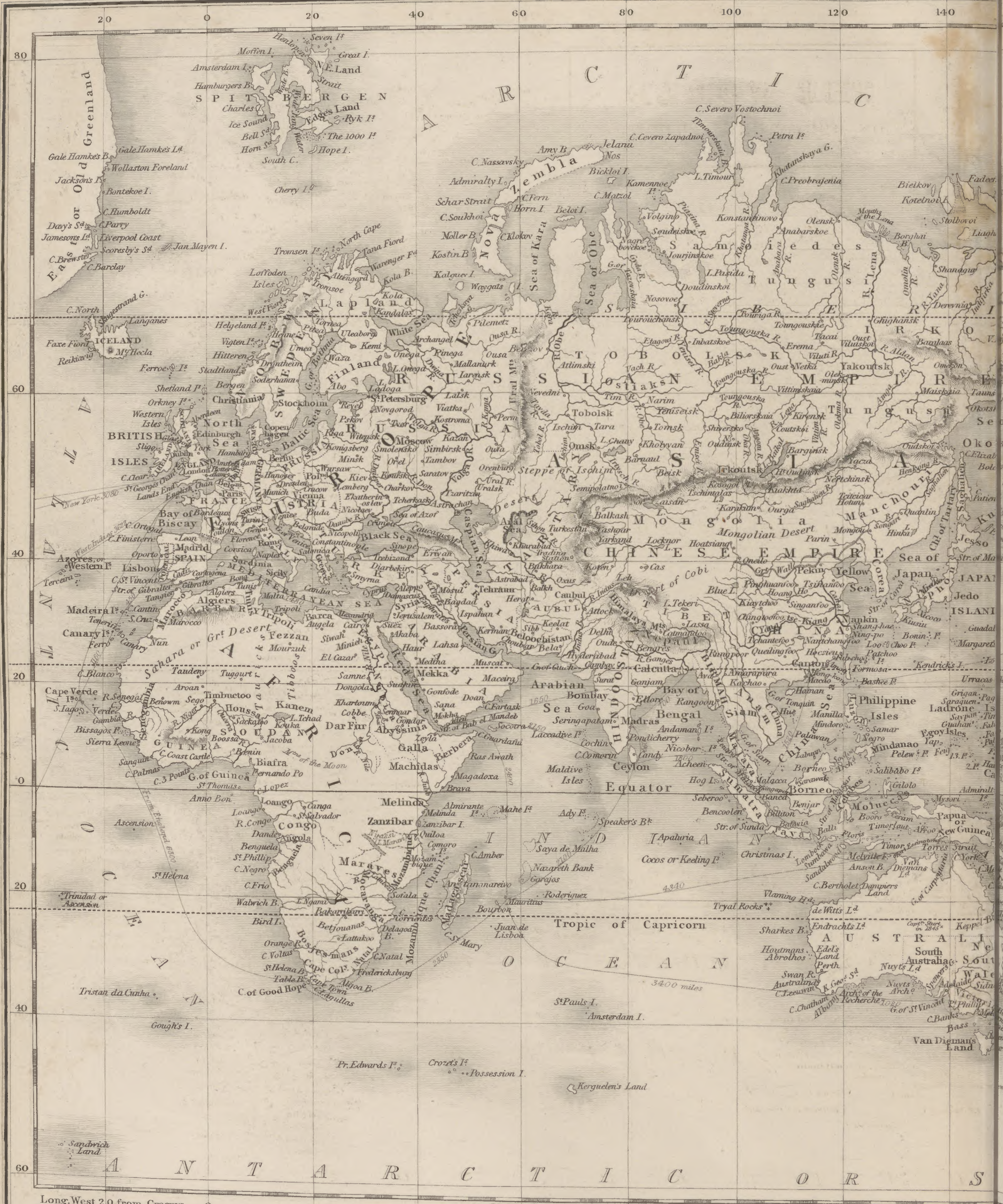
PLATE CCLXVIII.

WORLD.



S. Hall, ury Str^t Bloomsbury.

gh. Publish'd by A. & C. Black.



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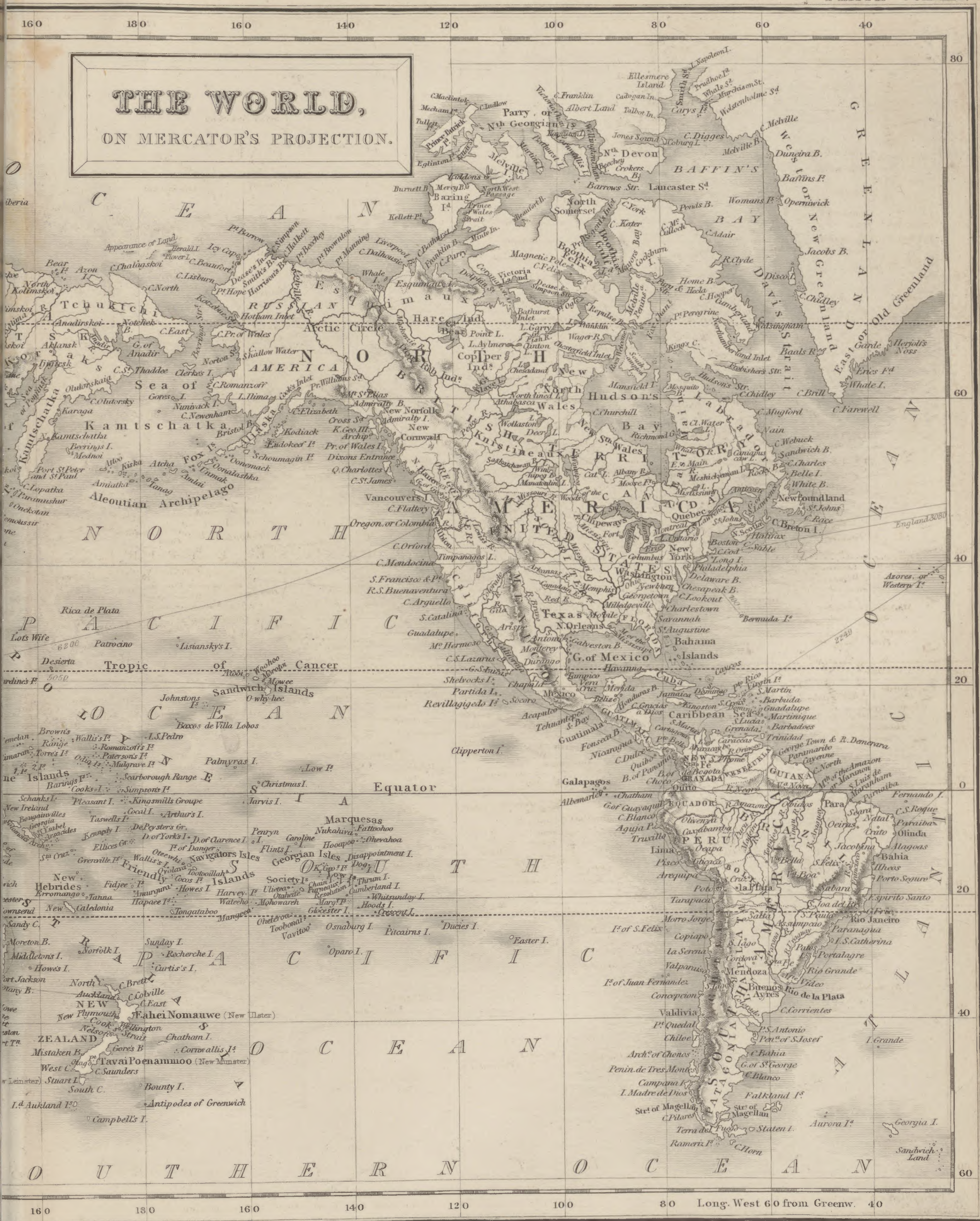
A R C T I C
O C E A N
Moffen I.
Seven Is
Great I.
N.E. Land
Amsterdam I.
Hamburgers B.
SPITSBERGEN
Charles
Ice Sound
Bell Sd
Horn Sd
Edge's Land
Ryk Is
The 1000 Is
Hope I.
South C.
East or Old Greenland
Gale Hamke's B.
Gale Hamke's Ld
Wollaston Foreland
Jackson's Is
Bontekoe I.
C. Humboldt
C. Parry
Davy's Sd
Jamesons Ld
Liverpool Coast
Scoresby's Sd
Jan Mayen I.
C. Brewster
C. Barclay
Cherry I.
C. Severo Vostochnoi
C. Cevero Zapadnoi
Petra Is
Khatanskaya G.
C. Preobrajenia
Amy B.
Jelanu
Nos
Bickloi I.
C. Nassavsky
Admiralty I.
Nova Zembla
Schar Strait
C. Fern
Horn I.
C. Soukhoi
Kamennoe Is
C. Matzol
Beloi I.
L. Timour
Moller B.
C. Klokov
Kostin B.
Kalguev I.
Waygats I.
Sea of Kara
Sea of Obe
North Cape
Tromsen Is
Tana Fiord
Warenger Fd
Kola B.
Loffoden Isles
Altengaard
Tromsoe
Lapland
Kola
Kandalax
C. North
Langanes
ICELAND
Mt. Hecla
Reikiavik
Faxe Fiord
West Fiord
Helgeland Fd
Vigten Is
Hitteren
Ferroe Is
Stadtland
Shetland Is
Bergen
Orkney Is
Christiania
Western Isles
Aberdeen
Edinburgh
North Sea
BRITISH ISLES
Sligo
Dublin
York
ENGLAND
London
C. Clear
St. George's Chan.
Lands End
English Chan.
Paris
FRANCE
Bay of Biscay
Bordeaux
C. Ortegal
C. Finisterre
Leon
Madrid
SPAIN
Oporto
Lisbon
C. St. Vincent
Str. of Gibraltar
Cadiz
Carthagena
Gibraltar
Tangier
Azores or Western Is
Terceira
Madeira Is
Canary Is
Teneriffe
Ferro
Marocco
Nun
C. Cantin
C. Blanco
Cape Verde Is
S. Iago
C. Verde
Gambia
Bissagos Is
Sierra Leone
R. Senegal
Senegambia
Benowm
Sego
Timbuctoo
Aroan
Houssa
Kong
SOUDAN
GUINEA
Boossa
Benin
Biafra
C. Coast Castle
C. Palmas
C. 3 Points
G. of Guinea
Fernando Po
St. Thomas
Lopez
Anno Bon
Sanguin
Loango
Loango
R. Congo
Congo
St. Salvador
Dande
Angola
Benguela
Benguela
St. Phillip
C. Negro
C. Frio
Wabrich B.
Bird I.
Orange R.
C. Voltus
St. Helena B.
Table B.
Cape Town
C. of Good Hope
C. Agullas
Cape Col.
Algoa B.
Fredericksburg
Natal
C. Natal
Bosjesmans
Lattakoo
Betjouanas
L. Ngami
Bakarikari
Delagoa B.
Corrientes
Sofala
Mocaranga
Maraves
Mozambique
Mozambique Chan.
Madagascar
C. St. Mary
Tananarivo
Comoro Is
Quiloa
Zanzibar
Zanzibar I.
Melinda
Melinda
Machidas
Galla
Magadoxa
Brava
Ras Awath
Berbera
C. Guardafui
Socotra
Str. of Bab el Mandeb
Zeyla
Abyssinia
Gondar
Sennaar
Cobbe
Khartoum
Dar Fur
Kanem
L. Tchad
Kouka
Jacoba
Mts. of the Moon
Tandeny
Tuggurt
Sahara or Grt. Desert
Fezzan
Mourzuk
AFRICA
Tripoli
Tripoli
BARBARY
Algiers
Algiers
Tunis
Bona
Barca
Augela
Siwah
Cairo
Minieh
El Cazar
Samne
Dongola
Nubia
Egypt
Suakin
Red Sea
Gonfode
Sana
Mokha
Aden
Doan
Maceira
C. Fartask
Mekka
Medina
Akaba
Haur
Suez
Lahsa
Muscat
ARABIA
Arabian Sea
Bombay
Goa
Seringapatam
Madras
Pondicherry
Cochin
C. Comorin
Ceylon
Candy
Laccadive Is
Maldive Isles
Equator
Ady Is
Speaker's Bk
Mahe Is
Almirante Is
Saya de Malha
Nazareth Bank
Garajos
Rodériguez
Mauritius
Bourbon
C. Amber
Juan de Lisboa
Tropic of Capricorn
Cocos or Keeling Is
Apaluria
Christmas I.
Tryal Rocks
Vlaming Hd
INDIAN
St. Pauls I.
Amsterdam I.
Tristan da Cunha
Gough's I.
Ascension
St. Helena
Trinidad or Ascension
Pr. Edwards Is
Crozet's Is
Possession I.
Kerguelen's Land
Sandwich Land
ANTARCTIC OCEAN
ETHIOPIAN OCEAN
Long. West 20 from Greenw.
Longitude 80 East from 100 Greenwich
New York 3080
West Indies 3600
From England 6800
1650
2150
2350
4340
3400 miles
2940
SWEDEN
NORWAY
Drontheim
Umea
Wasa
Tornea
Pitea
Uleaborg
Kemi
G. of Bothnia
Finland
Abo
Soderhamn
Stockholm
Copenhagen
Baltic Sea
Riga
Revel
St. Petersburg
L. Ladoga
L. Onega
Onega
White Sea
Archangel
Pinega
Mallanurk
Iarensk
Pilemeti
Ousa R.
Ousa
Novgorod
Pskov
Witepsk
Moscow
Smolensko
Minsk
Konigsberg
Hamburg
Berlin
Amsterdam
Hanover
Munich
Vienna
Cracow
Warsaw
POLAND
PRUSSIA
GERMANY
AUSTRIA
Buda
Lemberg
Kiev
Orel
Kursk
Charkov
Tambov
Simbirsk
Kazan
Kostroma
Viatka
Perm
Lalsk
Saratov
Don R.
Volga R.
Orenburg
Ufa
Ural R.
Uralsk
Tzaritzin
Astrachan
Tcherkask
Ekatherinoslav
Nicolaev
Odessa
Sea of Azof
Crimea
Caucasus Mts.
Caspian Sea
Black Sea
Constantinople
Sinope
Trebizond
Erivan
Smyrna
Salonica
Rome
Naples
Florence
Venice
Genoa
Turin
Milan
Toulon
Lyons
Corsica
Sardinia
Sicily
Malta
Candia
Cyprus
Aleppo
Damascus
Jerusalem
Syria
Diarbekir
Mosul
Bagdad
Bassora
Ispahan
Tehraun
Astrabad
Herat
Kerman
Shiraz
Persian G.
Beloochistan
Keelat
Sibi
Balkh
Bokhara
Khiva
Aral Sea
Turkestan
Kharabad
Cashgar
Yarkand
Oxus
Caubul
CAUBUL
Attock
Indus R.
Himalaya Mts.
Delhi
Oude
Benares
Hyderabad
Surat
Cambay
Calcutta
Ganjam
Bay of Bengal
Ellore
Andaman Is
Nicobar Is
R. Ganges
NEPAUL
Lassa
L. Tekeri
TIBET
HINDOSTAN
Leh
Desert of Cobi
Cas
Koten
Locknor
Hoatsiang
Ava
Amarapura
Kachao
BIRMAH
Rangoon
Siam
Annam
Cochin China
Gulf of Siam
Str. of Malacca
Malacca
Singapore
Sumatra
Benjur
Bencoolen
Baned
Billiton
Str. of Sunda
Batavia
Java
Sandalwood I.
Sumbawa
Lombock
Balli
Flores
Timorlaut
Timor
Borneo
Sarawak
Celebes
Molucca
Gilolo
Mysori
Booro
Ceram
Arroo
Papua or New Guinea
Torres Strait
C. York
G. of Carpentaria
Van Diemens Ld
Anson B.
Dampiers Land
C. Bertholet
de Witts Ld
Endrachts Ld
Sharkes B.
Houtmans Abrolhos
Edel's Land
Perth
Swan R.
Australind
C. Leeuwin
K. Geo's Sd
Albany
C. Chatham
Archo. of the Recherche
Nuyts Ld
Nuyts Archo.
AUSTRALIA
South Australia
Adelaide
Spencers G.
G. of St. Vincent
Pt. Phillip
C. Banks
Bass Str.
Van Diemans Land
Coast Sturt in 1845
Keppel B.
Philippine Isles
Manilla
Luzon
Mindoro
Samar
Negro
Mindanao
Palawan
Sooloo Archo.
Salibabo Is
Egoy Isles
Yap
Pelew Is
Ladrone Is
Grigan
Saypan
Guahan
Paraquen
Formosa
Bashee Is
Hainan
Tonquin
Hue
Canton
Macao
Hong-kong
Fuhchou
Hocsieu
Quelingfoo
Tchantcfoo
Nantchangfoo
Ningpo
Shanghae
Nankin
Kiang
Singanfoo
Chingtoofoo
Kiaytchoo
CHINA
Hoang Ho
Tsinanfoo
Pinghuanfoo
Yellow Sea
Corea
Pekin
Great Wall
CHINESE EMPIRE
Mongolia
Mongolian Desert
Parin
Mongol
Karakum
Ourga
Kiakhta
Selenginsk
Irkoutsk
Nertchinsk
Tchitscicar
Manchouria
Saghalien R.
Songari
Hinka
Quantin
Chl. of Tartary
Saghalien
Jesso
Sea of Japan
JAPAN
Nipon
Jedo
ISLANDS
Kiusiu
Loo Choo Is
Str. of Corea
Bonin Is
Balkash
Tashkend
Semipolatnoi
Steppe of Ischim
Beisk
Barnaul
Khobyvan
Tomsk
Omsk
Tobolsk
Tara
Ischim
L. Chany
Narim
Tim R.
Vach R.
Atlimski
Nevedni
Beresov
Obe R.
Ostiaks
Yeniseisk
Bilioiskaia
Shivertko
Oudinsk
Kirensk
Coutskoi
Barginsk
Vittimskaia
Toungouska R.
Yakoutsk
Olekminsk
Aldan R.
Maiskaia
Oudskoi
Okotsk
Sea of Okotsk
Tungusi
Tungusi
Samoiedes
Volgino
Soudinskoe
Nagrovskoe
Jourjinskoe
Konstantinovo
Anabarskoe
Olensk
Doudinskoi
L. Pasida
Tourouchansk
Nosovoe
Etagoui R.
Inbatskoe
Touruga R.
Toungouskoe
Erema
Viluti R.
Oust Viluskoi
Tacai
Oust Netka
Ghighansk
Bulaas
Omolon
Derevnia
Shangau
Yana R.
Lena R.
Mouth of the Lena
Bielkov
Kotelnoi I.
Fadeev I.
Stolbovoi
Liaghov
Borghai B.
SIBERIA
RUSSIAN EMPIRE
EUROPE
ASIA
Ural Mts.
Kama R.
Dwina R.
Obe R.
Irtysh R.
Kirghis Desert
Pacific

THE WORLD,

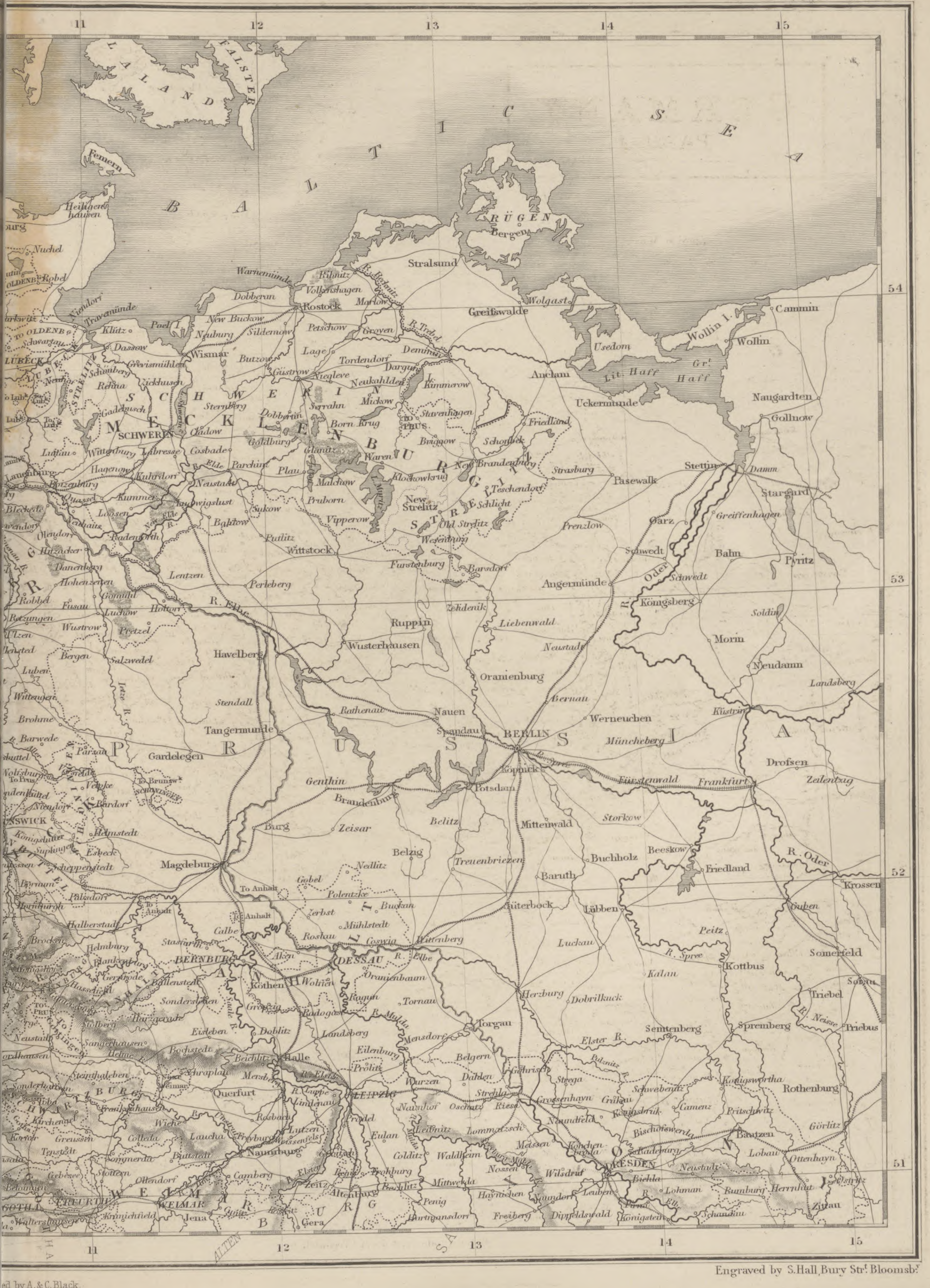
ON MERCATOR'S PROJECTION.



Engd. by G. Aikman, Edinr.

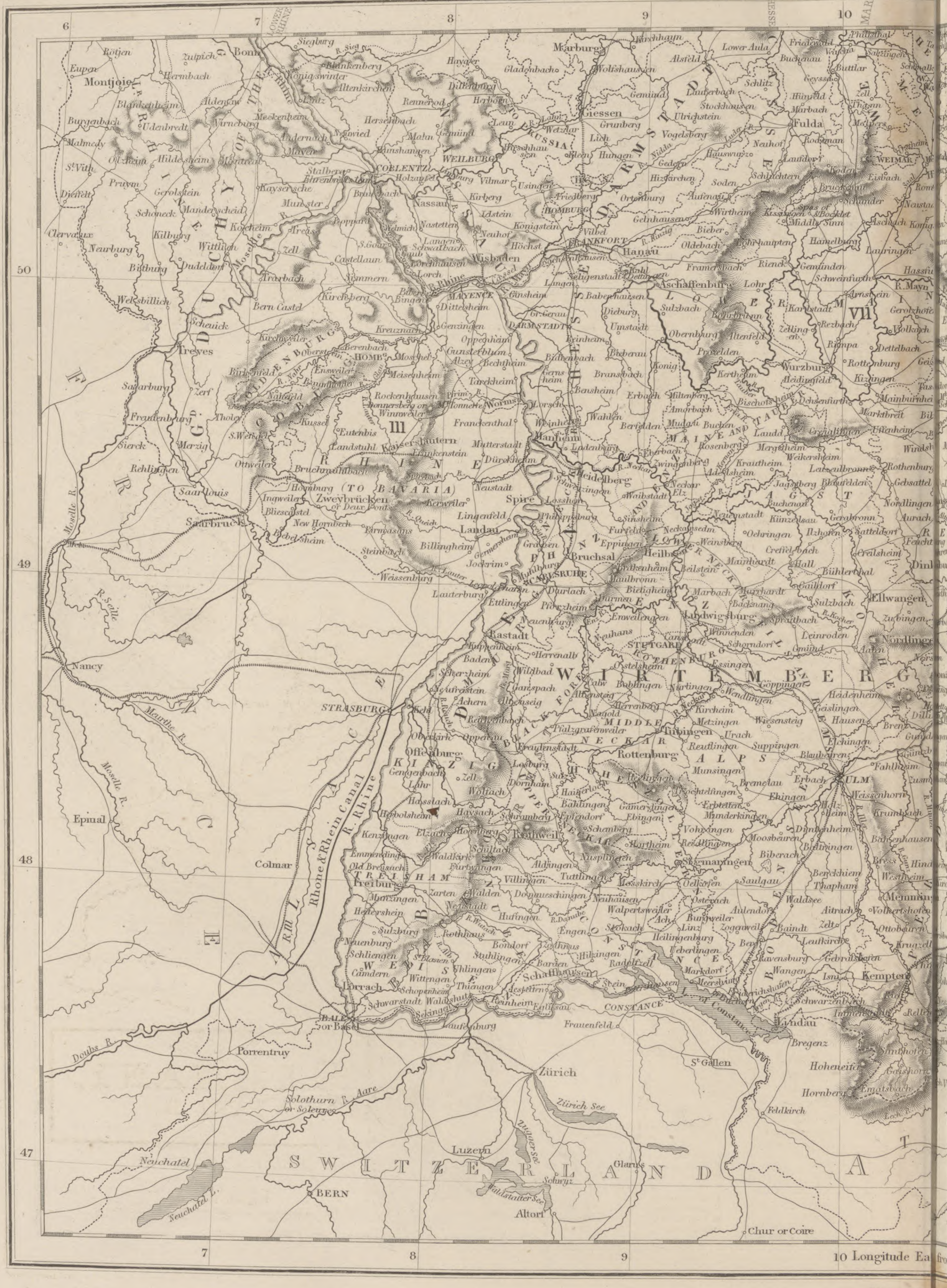
GERMANY, PART 1.

Edinburgh, Published by A

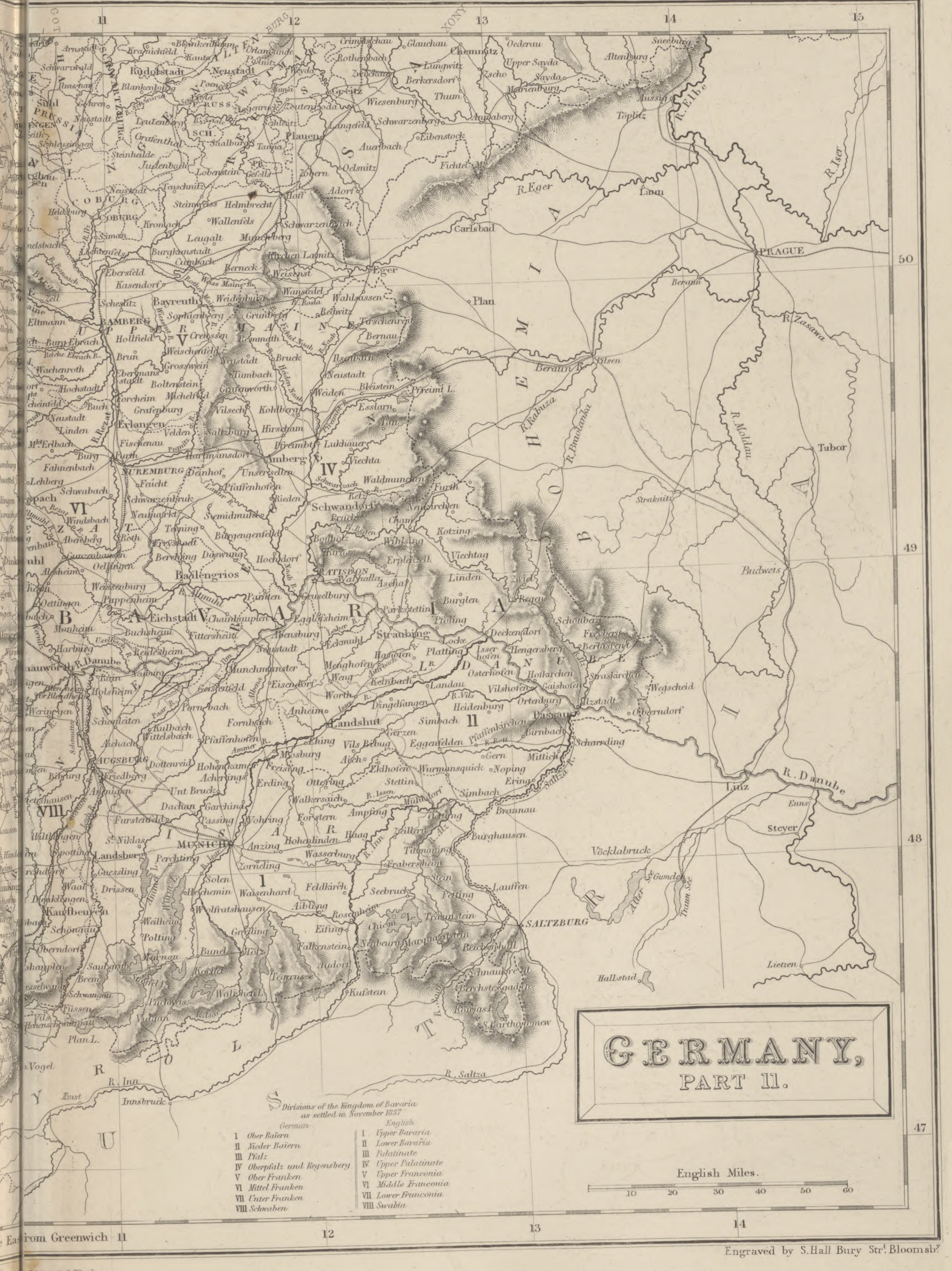


Engraved by S. Hall, Bury Strt. Bloomsbr.

urgh, Published by A. & C. Black.



Edinburgh, Published by



GERMANY,

PART II.

Divisions of the Kingdom of Bavaria as settled in November 1837

	German		English
I	Ober Baïern	I	Upper Bavaria
II	Nieder Baïern	II	Lower Bavaria
III	Pfalz	III	Palatinate
IV	Oberpfalz und Regensberg	IV	Upper Palatinate
V	Ober Franken	V	Upper Franconia
VI	Mittel Franken	VI	Middle Franconia
VII	Unter Franken	VII	Lower Franconia
VIII	Schwaben	VIII	Swabia

Engraved by S. Hall Bury Str^t. Bloomsb^y.

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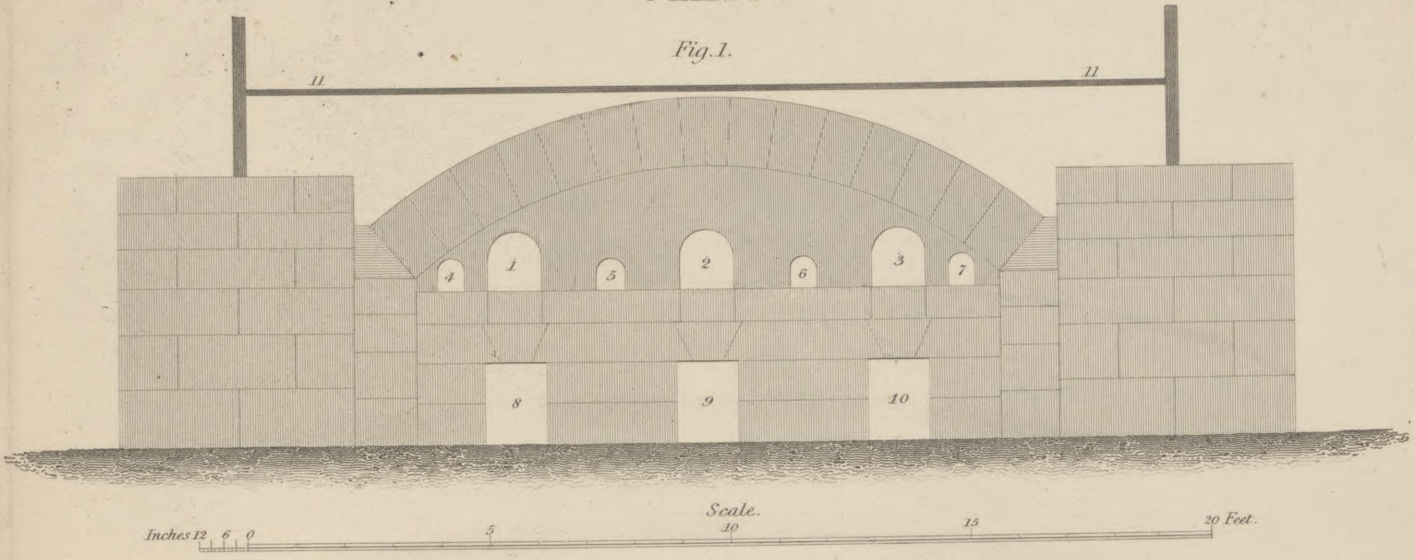
Fig. 1.



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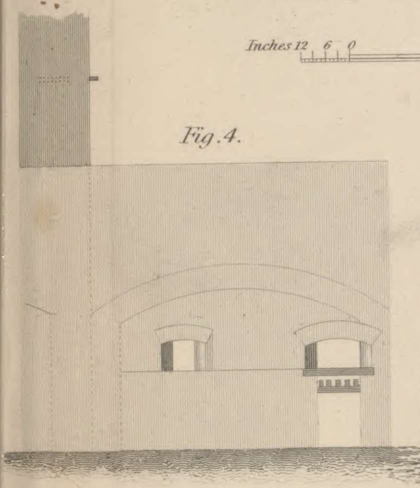

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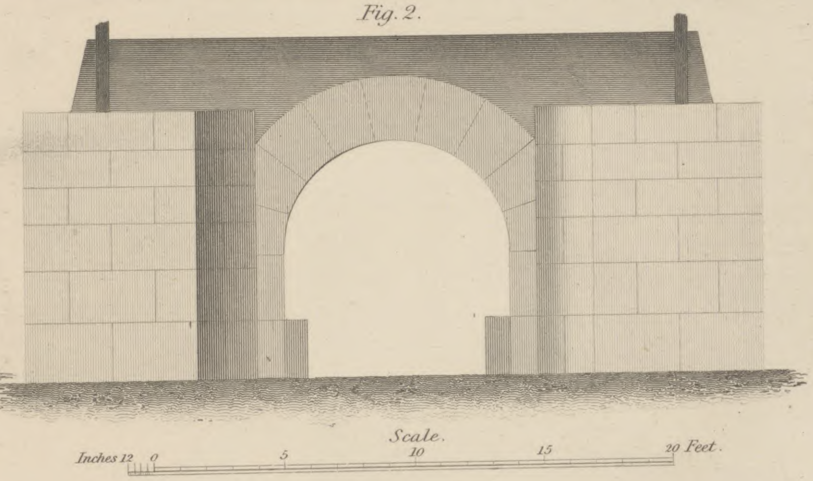

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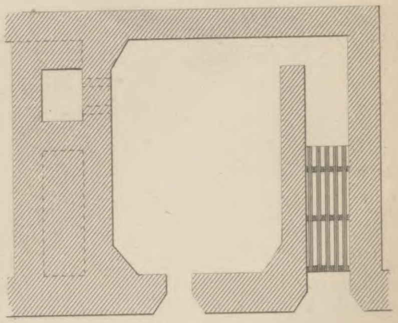
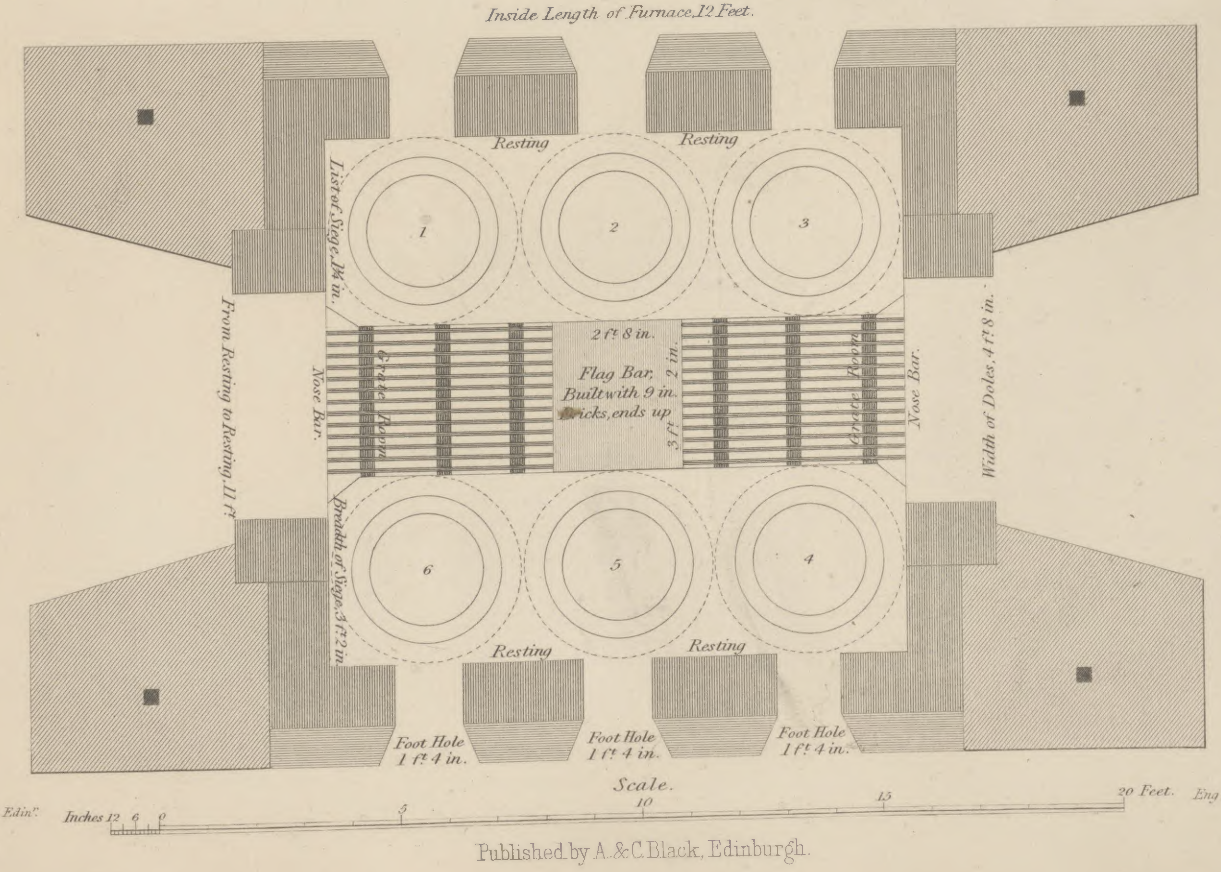


Fig. 3.

Inside Length of Furnace, 12 Feet.



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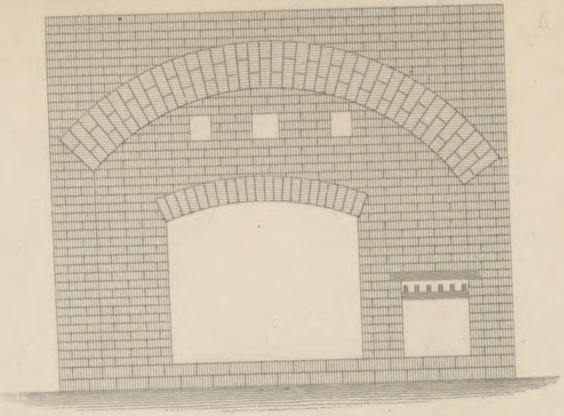
GLASS.

Fig. 1.



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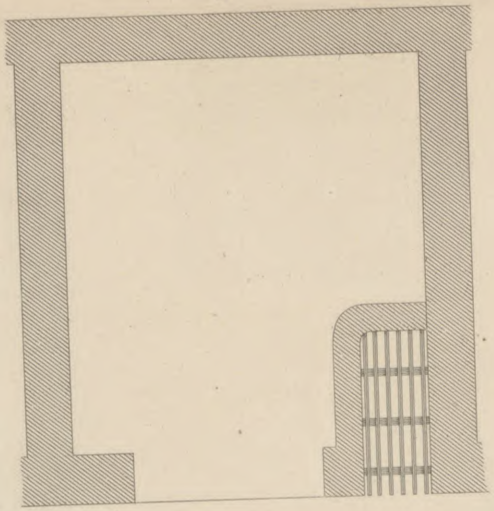

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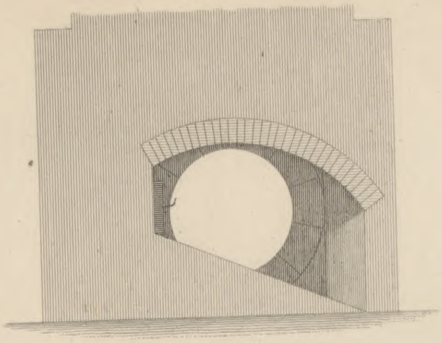

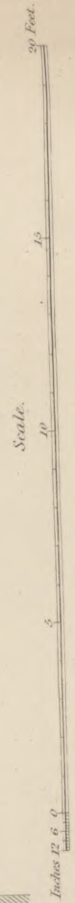

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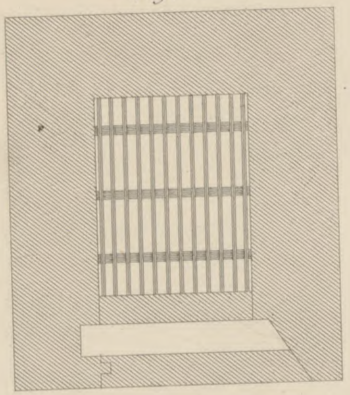

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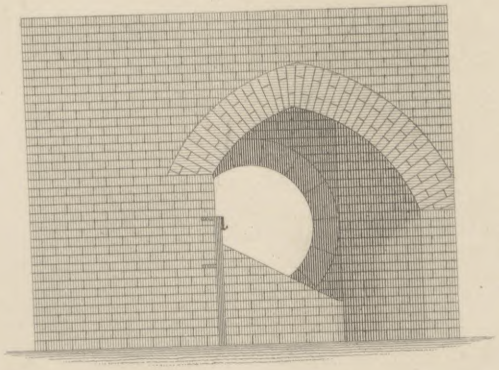

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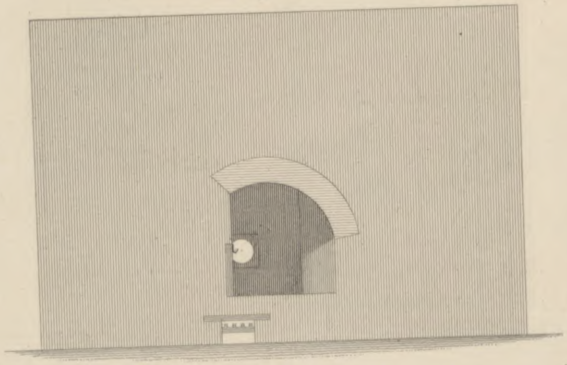

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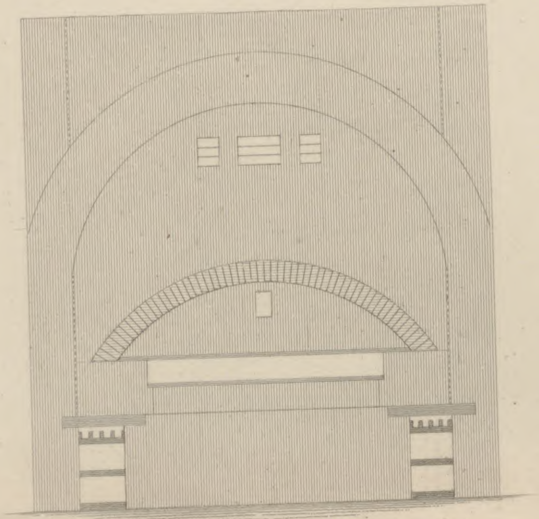

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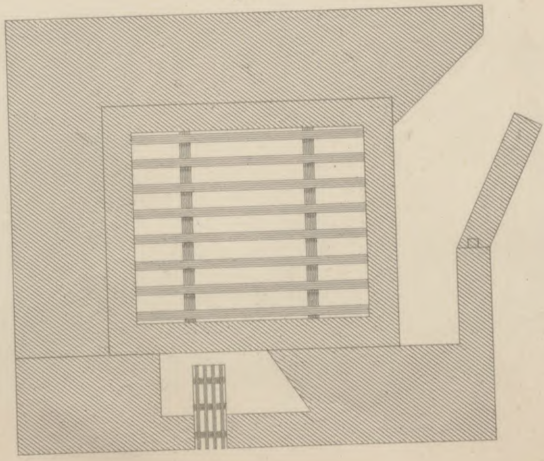

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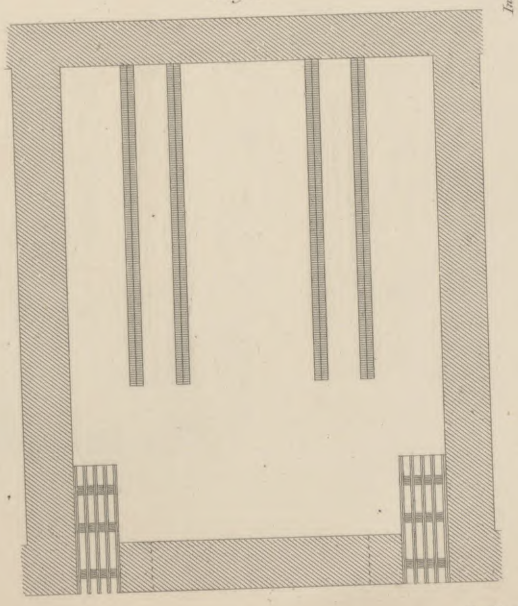

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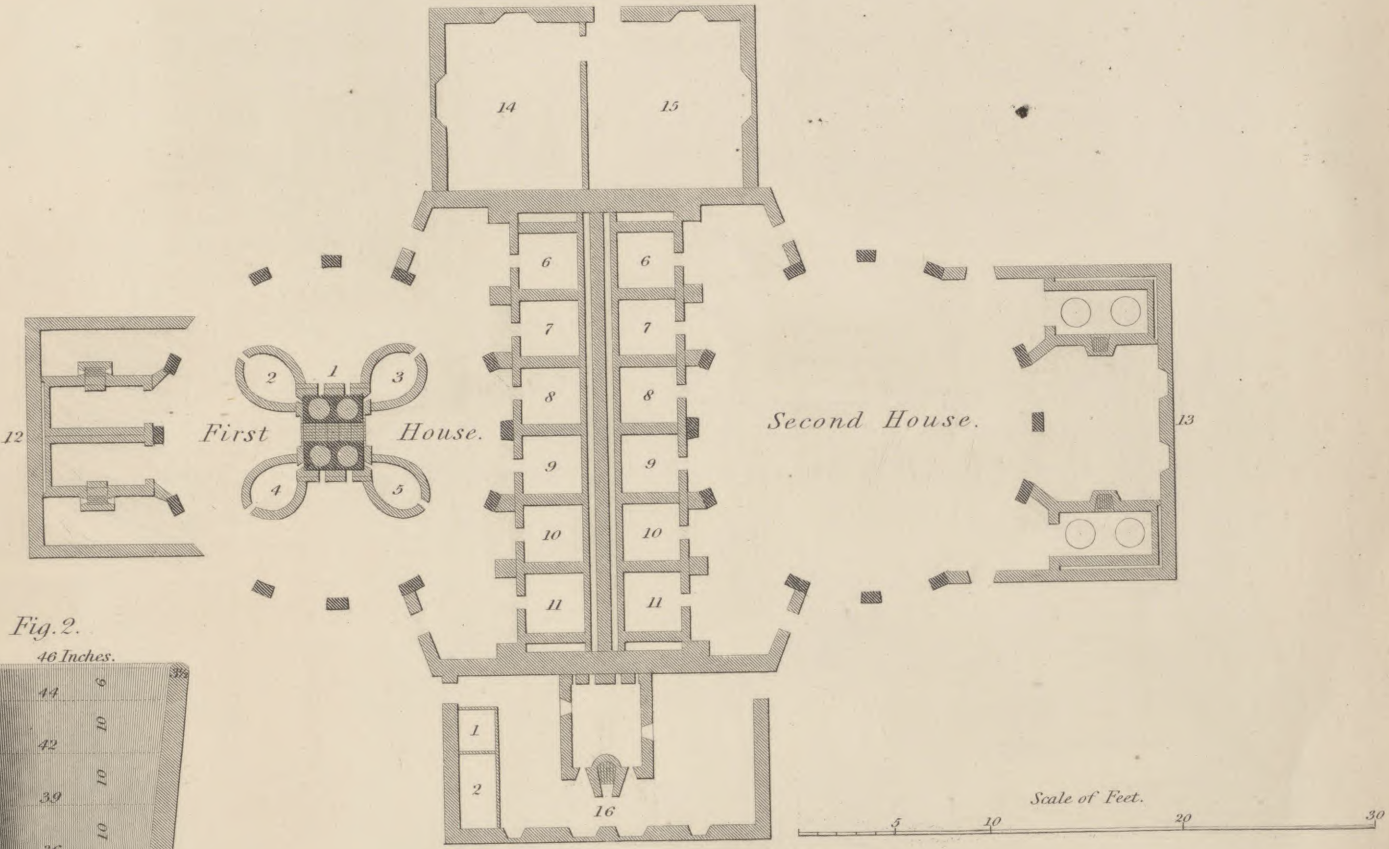
Fig. 3.



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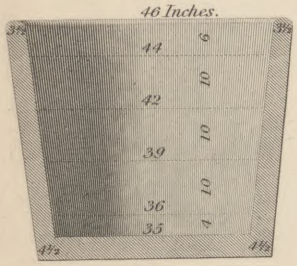

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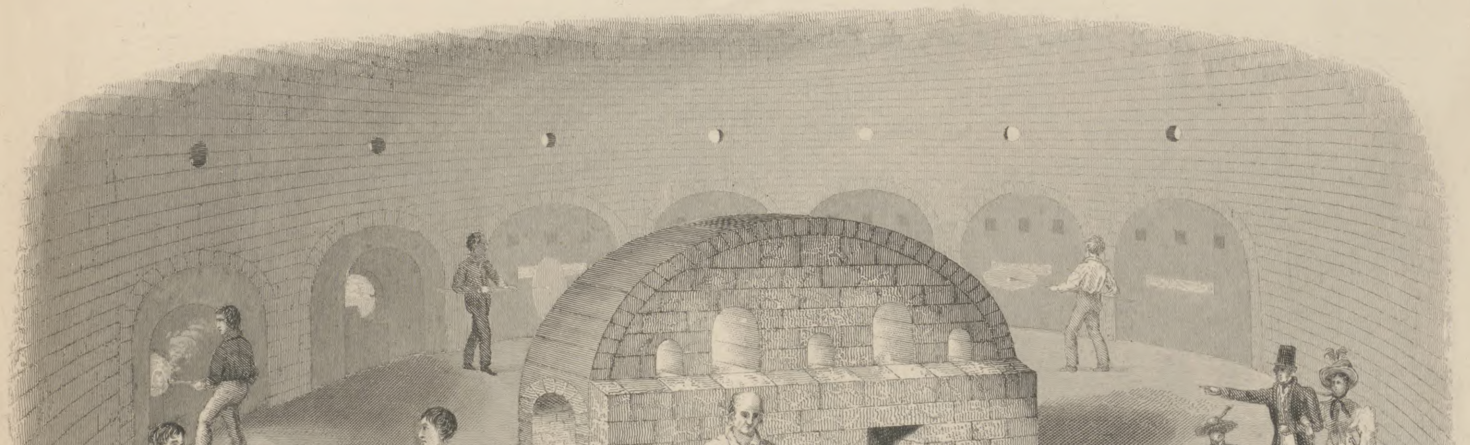

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Engd by G. Aikman.

INTERIOR OF A CROWN-GLASS HOUSE.

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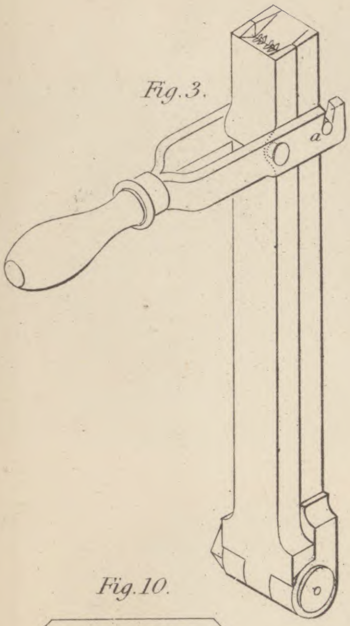
Fig. 3.



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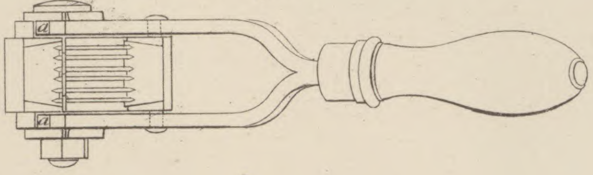

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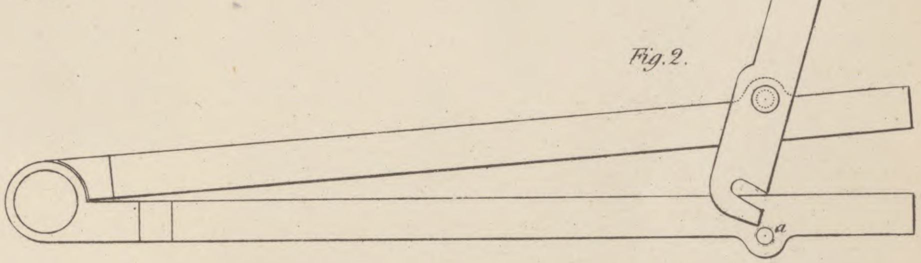

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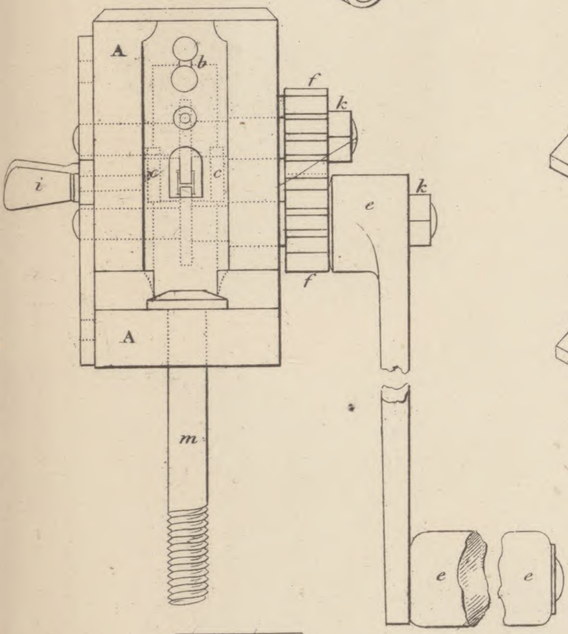

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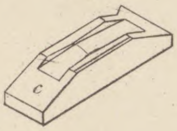

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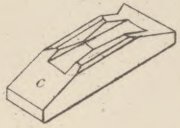

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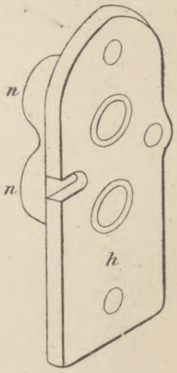

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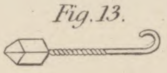

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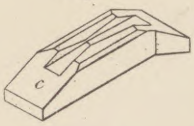

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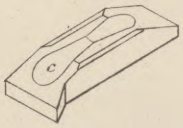

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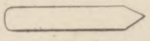

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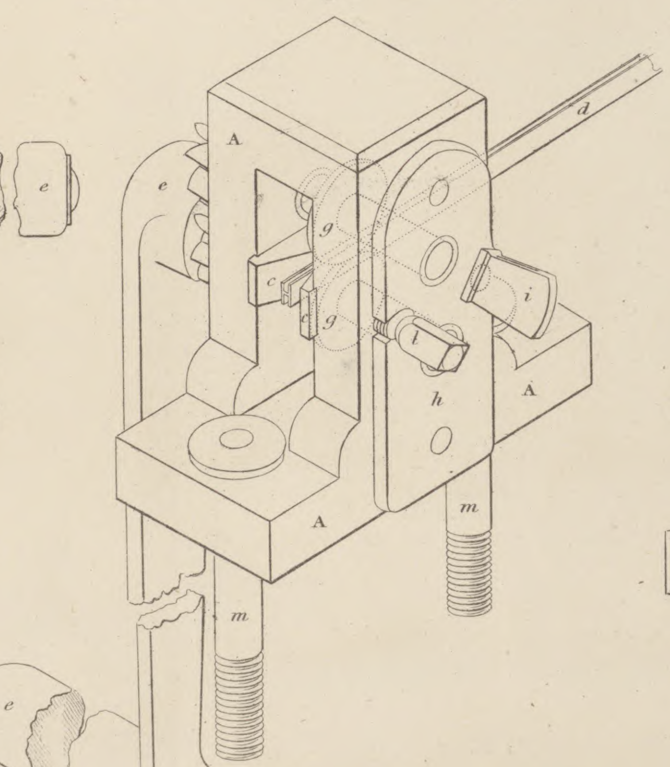

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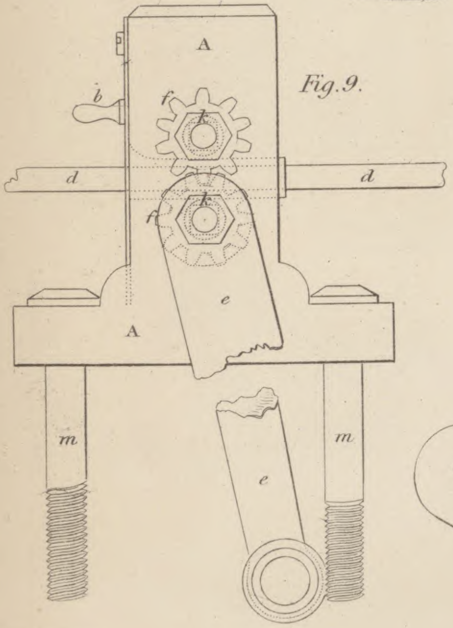

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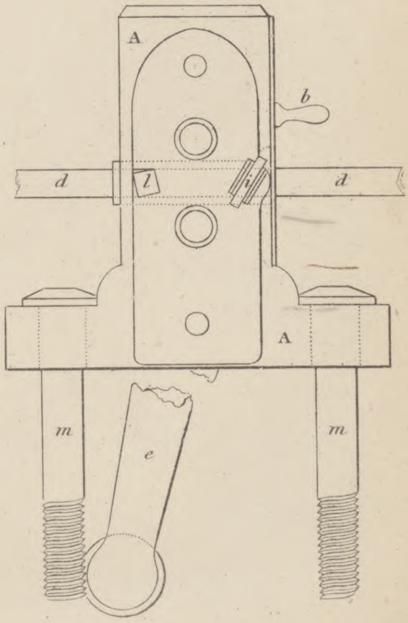

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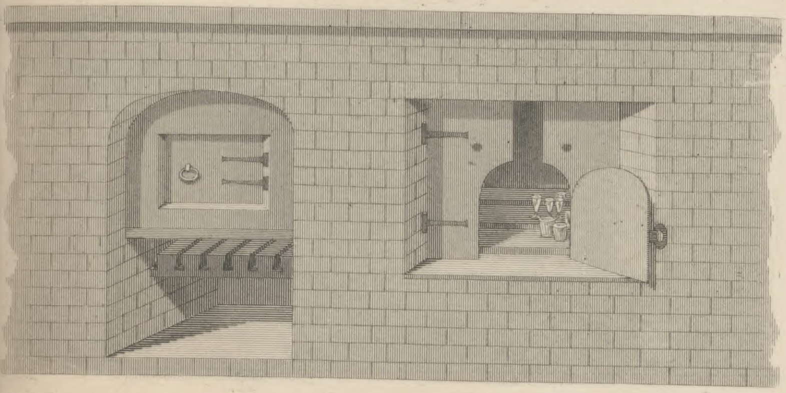
GLASS. *PLATE CCLXXVI.*

Fig. 3.



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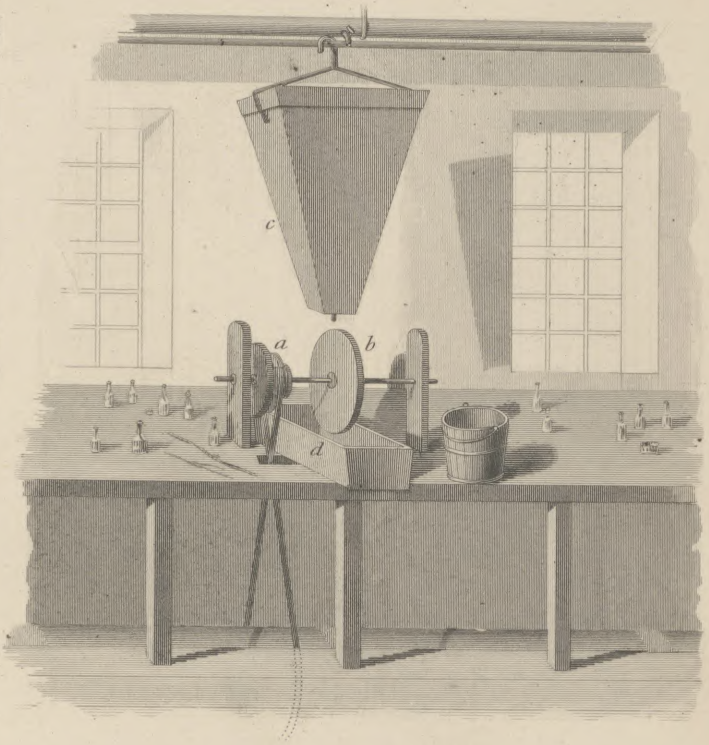

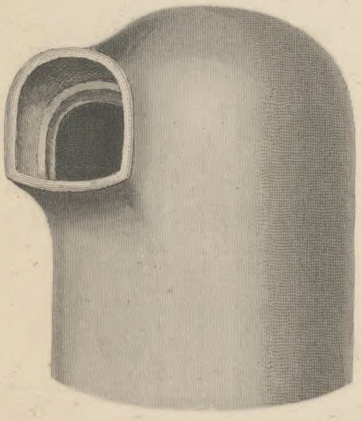

Fig. 2.

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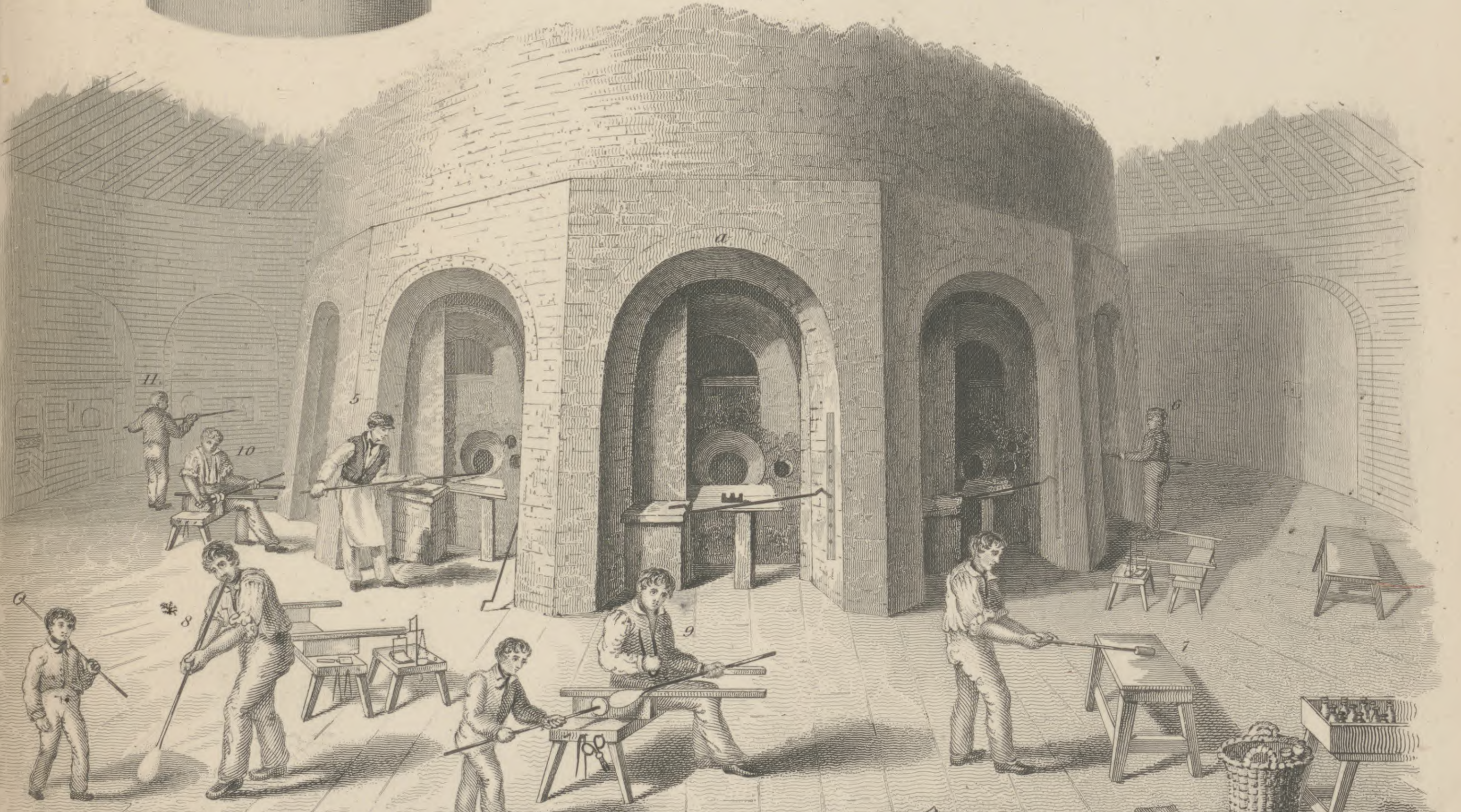

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FLINT-GLASS MANUFACTORY.

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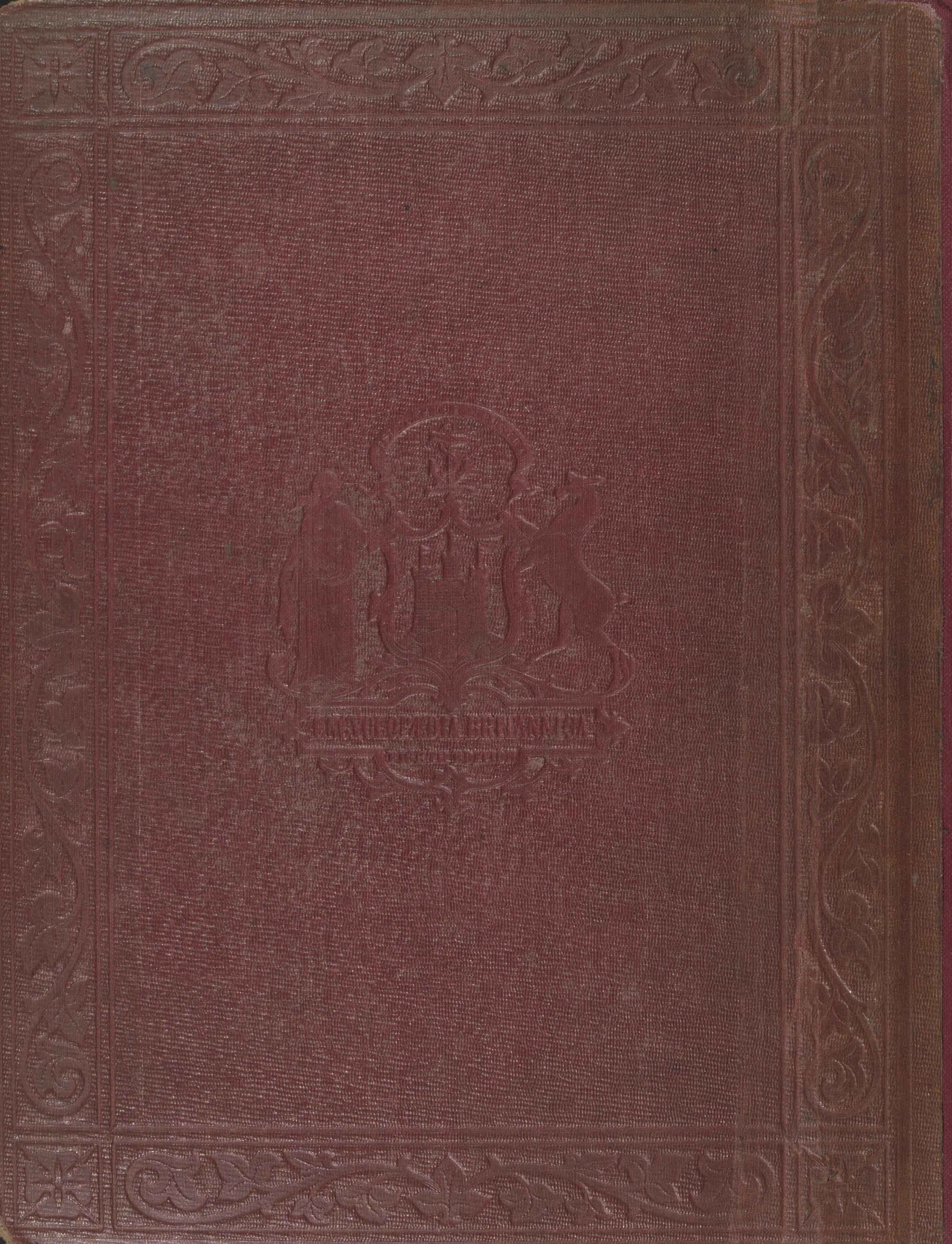
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